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Effect of Clinical Pathway Application on Stroke Patients' Outcomes

Abeer El Said Hassan El Sol¹, Asmaa Hamed Abd Elhy¹, Hassnaa Eid Shaban Mosa¹,
Yasser Ibrahim Fathy Mohamed², Rosa Khalil Mohammed Babikir³

¹Assistant Professor of Medical-Surgical Nursing, Faculty of Nursing, Menoufia University, Egypt, ²Doctor of Anesthesia, Intensive Care and Pain Management, Faculty of Medicine, Menoufia University, Egypt, ³Assistant Professor, Community of Health Nursing, Faculty of Nursing, the National Ribat University Sudan, ³Faculty of Applied Medical Sciences, Nursing department, Al-Baha University Kingdom of Saudi-Arabia

Abstract

A clinical pathway is a process for managing patient by states the goal and main elements of care based on Evidence Based guidelines, best intervention to enhance quality of care; outcomes and reduce length of patient's hospitalization.

Aim of the Study: To evaluate the effect of clinical pathway applications on stroke patients' outcomes.

Design: Quasi-experimental design was used to test the research hypothesis.

Subjects: A purposive sample of 78 patients, they divided randomly and alternatively into two equal groups 38 patients in each as follows: (1)The study group (I): received their care by application of clinical pathway (2) The control group (II): received routine hospital care.

Setting: The current study was conducted at Emergency, Intensive Care Unit and Medical ward at Menoufia University Hospital; Menoufia Governorate; Egypt. **Tools for data collection:** four tools were utilized by the researchers to achieve the aim of the study and to collect the necessary data. **Tool (I):** Semi structured questionnaire (demographic and medical data Sheet); **Tool (II):** bio- physiological measurements (indicators of improved patients' outcomes); **Tool (III):** National Institutes of Health Stroke Scale, or NIH Stroke Scale (NIHSS); and **Tool (IV):** Multidisciplinary planned sheet team.

Results: There was improvement in values of vital signs, oxygen saturation, central venous pressure, arterial blood gases interpretation, central venous pressure, blood glucose level during the last measurements after applying clinical pathway in study group compared to control group, also there was a highly statistical significant difference between two groups regarding to post stroke complications. Additionally there was highly statistical significance difference between them stroke severity. Shorten length of stay in hospital in study group compared to control due to improvement in study group outcomes.

Conclusion: clinical pathway has a positive effect on reducing length of patient's hospitalization stay, and early improvement in patients' outcomes with apparent positive effect on quality of patient care.

Recommendation: The researchers recommended that; application of clinical pathway on large samples and variable measurements are in need to generalization of the results. Clinical pathway should be carried out routinely for managing stroke patients in intensive care unit.

Keywords: Clinical Pathway; Stroke; Clinical Outcomes; Hospitalization Length (Hospital stay).

Corresponding Author:

Abeer El Said Hassan El Sol

Assistant Professor of Medical-Surgical Nursing,
Faculty of Nursing, Menoufia University, Egypt
e-mail: abeer.hassan@nursing.menofia.edu.eg

List of Abbreviation: Intensive Care Unit (ICU); Central venous pressure (CVP); Arterial Blood Gases (ABGs).

Introduction

Stroke is a main reason of death and disability worldwide, about 795,000 people suffering from an acute stroke yearly. In Egypt, according to recent estimates, the total incidence of stroke is 963/100 000 populations^[1]. There are two types of stroke ischemic and hemorrhagic. The highest reason of ischemic stroke that lead to impaired blood flow to brain is atherosclerosis, while hemorrhagic stroke due to rupture of blood vessel account 68% of death^[2 & 3].

Manifestations of stroke occurs suddenly which including numbness, weakness or paralysis on one side of body, drooping lower eyelid or mouth, slurred speech, or difficulty finding words or understanding speech, abrupt blurred vision or loss of sight, confusion or unexpected, severe headache. But the symptoms of stroke depend on the region of the brain that has been influenced and the extent of damaged^[4].

Appropriate and quick management is important to determine subsequent outcomes, as the brain tissue is possibly under the hazard of death within the first few hours following the beginning of ischemia. In severe condition, the central of the infarction will die due to severe ischemia. While, surrounding tissue can survive if suitable treatment is done. In this situation, hemodynamic stability, good oxygenation, and metabolic factors are crucial to regulate the outcome^[5].

Complications of stroke are significant problem that will affect later outcomes. Usually, the presence of high body temperature, hyperglycemia, and/or elevation of blood pressure is accompanied with poor outcomes. So, elevate glucose levels should be controlled, and hyperthermia should be treated with Paracetamol^[6].

Estimates of the frequency of medical complications in people post stroke range from 24.2% to 95%.1, In the acute phase post-stroke, medical complications can include dysphagia, cardiac problems and pneumonia, while other complications such pressure ulcer and venous thrombosis may happen later in the stroke^[7 & 8].

Nursing has a crucial role toward patients with stroke, because nursing care include 24 hours a day that lead to spend more time bedside patient, additionally nurses can assess patient 'condition, record, report and evaluate the effect of treatment. If nurses be more acquainted with the complications of stroke, with early detection of it can

play an important role in care that lead to early treatment and prevention of these complications^[9 & 10].

A clinical pathway is a process for managing patient by states the goal and main elements of care based on Evidence Based guidelines, best intervention and patient expectations through good communication, coordinating roles and arrange the activities of the multidisciplinary care team, documenting, monitoring and evaluating variances; and also providing the necessary resources to be used more efficiently to enhance quality of care and outcomes^[11 & 12].

Management of stroke requires specialized trained staff working competently within a well-equipped and well arranged, clinical pathway has many advantages when applying it for patient with stroke which leads to improve quality of care. Hence; Clinical pathways have a positive effect on patient outcomes, shorten length of stay in hospital, hospital costs and professional practice^[13].

Nurses have a main role in all steps of a clinical pathway use. Participating in the development of the pathway is the first step. Because they begin and end the chain of staff involved in delivering care, nurses own a unique perspective in how health care systems work to improve the quality of care^[14].

Significance of the Study:

Stroke is the major healthcare problems in developing and developed nations. Around the world it is the second cause of mortality and permanent disability. Management of patients had stroke necessitates a multidisciplinary management team and tool which is established on evidence-based practices as a clinical pathway; which delivering an organized stroke care to reduce early mortality; disability and improves patients' outcomes.

Aim of the Study: To evaluate the effect of clinical pathway applications on stroke patients' outcomes.

Research Hypothesis:

1. There will be improvement in patients' Outcomes in study group compared to control group after applying clinical pathway.
2. The length of hospitalization will decrease in study group after applying clinical pathway compared to control group.

Subjects and Method

Research Design: Quasi-experimental design was used to test the research hypothesis.

Research Setting: The current study was conducted at Emergency, ICU and medical ward at Menoufia University Hospital; Menoufia Governorate; Egypt.

Sample: A purposive sample of 78 patients who arrived into emergency unit of Menoufia University hospital and they were diagnosed of stroke, then admitted to ICU, their family agreed to participate in the study and fulfill the inclusion criteria. The study subjects were divided randomly and alternatively into two equal groups 38 patients in each as follows: 1-The study group (I): received their care by application of clinical pathway 2- The control group (II): received routine hospital care.

- **Inclusion criteria:** a) Adult Patients from sexes, b) diagnosed at first time with stroke.
- **Exclusion criteria:** patients with previous traumatic brain injury, impaired in cognitive, impaired immobility, pressure ulcer.

Sample Size: Based on a previous literature by (Shahzad and Ahmed, 2013)^[15]; with a power of the study, 90% and a confidence level, 95%, the calculated sample size for this randomized controlled clinical trial study rendered 78 subjects which were divided into two groups after doing randomization so each group consists of 38 patients.

Tools for data collection: Four tools were utilized by the researchers to achieve the aim of the study and to collect the necessary data.

Tool (I): Semi structured questionnaire (demographic and medical data Sheet); as age, gender, smoking, type of stroke, comorbidities and necessary performed interventions.

Tool (II): Bio-physiological measurements (indicators of improved patients' outcomes) which included the following; vital signs; oxygen saturation, central venous pressure, laboratory results arterial blood gases (acid base status) and blood glucose level, length of hospitalization; and incidence of complications during hospitalization.

Tool (III): National Institutes of Health Stroke Scale, or NIH Stroke Scale (NIHSS); it is a tool developed by stroke neurologists from the University of Cincinnati,

the University of Iowa and the National Institutes of Health-National Institute of Neurological Disorders, it used by healthcare providers for assessment of stroke severity. The NIHSS is composed of 11 items, scale with potential scores ranging from 0 to 31. Reliability of the NIHSS is (intraclass correlation coefficient=0.92 and 0.96); validity is ($r = 0.72$)^[16].

Tool (IV): Multidisciplinary planned sheet team for establishing plan of care for following the continuity of care and treatment; and establishing discharge plan.

Content validity and reliability: Before starting, the data collection tools were tested for its content validity by a group of experts in the medical-surgical nursing and critical care nursing to ascertain relevance, completeness, coverage of the content and clarity of the tools. The required modification was carried out accordingly. Furthermore, it was tested for reliability by calculating their internal consistency using Cronbach's alpha coefficient method. This turned to be $\alpha = 0.97$.

Pilot Study: was done by 10 % of stroke's patient and before starting the actual data collection. Subjects who participated in the pilot study were included in the study sample.

Human rights and ethical considerations: An official permission was taken from the authoritative personal in the hospital. The researchers introduced themselves to the patients' family who met the inclusion criteria and informed them about the aim of the current study, an oral consent was obtained from them. Confidentiality and anonymity of them were assured through coding the data.

Processing and application of clinical pathway: Data collection for this study was carried out by permission from administrative personnel of Menoufia university Hospital. The data collection period started from September 2019 to March 2020.

The clinical pathway for stroke's patients consisted of a paper document in patients' sheet, started from emergency department until patients' discharge. It contained general instructions about stroke management and then meticulous daily activities for each phase of clinical pathway (the researchers used both the day and phase type pathway). The multidisciplinary care team (medical staff, nurses, physiotherapist, Vascular Neurology, Occupational therapy, Speech therapy, Pharmacy, dietitian, laboratory investigation, radiology

and social workers). The researcher set up the guidelines of plan of care and distributed the role for each one on the multidisciplinary care team; the care plan included the essential practices.

During the period of data collection the researchers presented daily with the clinical pathway team at intensive care unit except the Friday to perform standardized care which needed for stroke's patients; these care included monitoring hemodynamic status and tissue perfusion by noninvasive technique as measuring vital signs with recording at follow up sheets and measuring fluid intake and output hourly; other method by invasive technique measuring central venous pressure as indicator for hydration and fluid status.

Planned activities and discharge planning; each point should be written, achieved by staff on a daily basis and regular meetings of a stroke pathway team and report to follow patients' progress. The intervention had timeframes and aimed to standardize care for a specific clinical problem as ECG arrhythmias; fever, hyperglycemia, and hypertension, prophylaxis for thromboembolism, use of investigations (computed tomography or magnetic resonance imaging, beside air way management, nutrition in addition to usual care to improve patients' condition.

As regards ventilation by checking and follow up arterial blood gases and its interpretation to promote early weaning from mechanical ventilation; maintained a clear airway by daily chest assessment; performed the ordered needed suction based on evidence guidelines.

Regarding to skin integrity by every two hours position changing, maintain skin dry and clean; daily assessing skin with care and massage; with an early management for patient had pressure ulcer and a proper oral care to maintain oral health.

In relating to patient's hygiene and infection control the following procedures applied daily care for urinary catheter; perineal care by a proper technique, partial bed bath, eye care by correct method followed by applying ointment and covering patient's eyes to prevent corneal ulcer; the clinical pathway team performed all procedures based on infection control measures.

Concerning to stroke severity calculated by National Institutes of Health Stroke Scale to identify patients' response and prognosis; otherwise daily assessing of consciousness level by GCS; and performed coma

arousal technique to assist patients in returning to consciousness level; followed up documentation on follow up sheet for continuous communication between the team.

Regarding to nutritional status the researchers administered a prescribed formula and intravenous fluid with reviewing and followed up blood glucose level for controlling hyperglycemia; a proper nutritional status the researchers performed daily assessment for gastro-intestinal tract for early management for any disturbances.

In relation to complication and length of hospitalization; the researchers established a planned team care which included early identification and management of specific complications. Moreover document discharge plan for secondary prevention and treatment as controlling blood pressure and treatment, smoking cessation programme, controlling blood glucose level, cholesterol lowering medication, anti-platelet treatment, anticoagulation for atrial fibrillation).

The researchers followed patient's condition, and documented five measurements in patient's sheet then comparison between result to identify progress of patient condition and outcome.

Statistical methodology: The data collected were tabulated & analyzed by SPSS (statistical package for the social science software) statistical package version 20 on IBM compatible computer^[17].

Two types of statistics were done:

- 1. Descriptive statistics:** were expressed as mean and standard deviation ($X+SD$) for quantitative data or number and percentage (No & %) for qualitative data.
- 2. Analytic statistics:**
 - 1. Pearson Chi-square test (χ^2) & Fisher's Exact Test:** It is the test of significance used to study association between two qualitative variables.
 - 2. Student t- test (parametric test):** is a test of significance used for comparison between two independent groups of normally distributed quantitative variables.
 - 3. Mann-whitney (non- parametric test):** is a test of significance used for comparison between two independent groups of not normally distributed quantitative variables.

4. Repeated-Measures ANOVA: is a test of significance used when we had a single line of data for each participant, with the repeated measures entered as separate variables on that same line (used for comparison between more than two related groups of normally distributed quantitative variables). Post hoc tests are run to confirm where the differences occurred between groups, they are only run when we had an overall statistically significant difference

in group means (i.e., a statistically significant one-way ANOVA result).

P-value at 0.05 was used to determine significance regarding:

- P-value > 0.05 to be statistically insignificant.
- P-value ≤ 0.05 to be statistically significant.
- P-value ≤ 0.001 to be highly statistically significant.

Results

Table (1): Distribution of demographic characteristics and medical data of the studied groups:

Demographic characteristics and medical data	Studied groups				χ^2	P value
	Study group (n=38)		Control group (n=38)			
	No.	%	No.	%		
Age (years):						
Mean ± SD	52.66±3.31		52.05±3.27		t-test=	0.42
Range	44.0–57.0		47.0–59.0		0.80	NS
Sex:						
Male	20	52.6	15	39.5	1.32	0.25
Female	18	47.4	23	60.5		NS
Smoking:						
Yes	18	47.4	13	34.2	1.36	0.24
No	20	52.6	25	65.8		NS
Type of stroke:						
Ischemic	25	65.8	24	63.2	0.05	0.81
Hemorrhagic	13	34.2	14	36.8		NS
Comorbidities:						
Diabetes	17	44.7	19	50.0	7.92	0.04 S
Hypertension	11	28.9	12	31.6		
Cardiac disease	0	0.0	4	10.5		
Dyslipidemia	10	26.3	3	7.9		
Intervention: the patients are treated by (placed on)						
Oxygen therapy	4	10.5	3	7.9	0.15	1.0*
Mechanical ventilation	34	89.5	35	92.1		NS

χ^2 : chi square test, t-test: students' t test, NS: not significant, *Fisher's exact test, S: significant

Table (1) showed that; more than half of studied sample at the mean age of (52.66 ± 3.31 & 52.05 ± 3.27) in study & control group respectively. More than half of study group (52.6%) was male, while (60%) were female

in control group. More than half of studied sample had Ischemic stroke. Additionally most of studied sample placed on mechanical ventilation (89.5 & 92.1) in study & control respectively.

Table (2): Physiological parameters (vital signs) of the studied groups before and after application of clinical pathway:

Physiological parameters (vital signs)	Studied groups		Students' t test	P value
	Study group (n=38)	Control group (n=38)		
	Mean \pm SD	Mean \pm SD		
Respiratory rate First measure (initial)	10.71 \pm 1.01	10.24 \pm 0.99	2.05	0.04 S
Second measure	12.18 \pm 0.60	12.13 \pm 0.47	0.42	0.67 NS
Third measure	14.16 \pm 0.49	13.92 \pm 0.27	2.58	0.01 S
Fourth measure	17.87 \pm 2.18	14.92 \pm 2.34	5.67	<0.001 HS
Fifth measure	19.61 \pm 1.49	18.26 \pm 2.95	2.49	0.01 S
Repeated-measures analyses of variance	F=369.18	F=138.65		
P value	<0.001 HS	<0.001 HS		
Post hoc test	P1=<0.001 P6=<0.001 P2=<0.001 P7=<0.001 P3=<0.001 P8=<0.001 P4=<0.001 P9=<0.001 P5=<0.001 P10=<0.001		P1=<0.001 P6=<0.001 P2=<0.001 P7=<0.001 P3=<0.001 P8=0.01 P4=<0.001 P9=<0.001 P5=<0.001 P10=<0.001	
Pulse rate First measure (initial)	65.66 \pm 4.67	67.11 \pm 7.03	1.05	0.29 NS
Second measure	65.39 \pm 4.70	63.55 \pm 5.44	1.57	0.11 NS
Third measure	68.16 \pm 4.25	64.74 \pm 5.44	3.05	0.003 S
Fourth measure	71.37 \pm 3.42	65.34 \pm 5.38	5.81	<0.001 HS
Fifth measure	74.82 \pm 3.41	65.87 \pm 5.57	8.44	<0.001 HS
Repeated-measures analyses of variance	F=88.82	F=9.26		
P value	<0.001 HS	<0.001 HS		
Post hoc test	P1=0.32 P6=<0.001 P2=<0.001 P7=<0.001 P3=<0.001 P8=<0.001 P4=<0.001 P9=<0.001 P5=<0.001 P10=<0.001		P1=<0.001 P6=0.001 P2=0.009 P7=<0.001 P3=0.03 P8=0.02 P4=0.13 P9=0.006 P5=0.002 P10=0.02	

U: Mann-whitney, HS: highly significant, *Fisher's exact test, NA: not applicable

P1: comparison between first measure & second measure

P2: comparison between first measure & third measure

P3: comparison between first measure & fourth measure

- P4: comparison between first measure & fifth measure
- P5: comparison between second measure & third measure
- P6: comparison between second measure & fourth measure
- P7: comparison between second measure & fifth measure
- P8: comparison between third measure & fourth measure
- P9: comparison between third measure & fifth measure
- P10: comparison between fourth measure & fifth measure

Table (2) revealed that; there was improvement in values of respiratory and heart rates during the third, fourth and fifth measurement after applying clinical pathway in study group compared to control group. Also there was highly statistical significant difference between two groups at fourth measure related pulse & respiratory rate (P<0.001).

Continuous Table (2): Physiological parameters (vital signs) of the studied samples before and after application of clinical pathway:

Physiological parameters (vital signs)	Studied groups		Students` t test	P value
	Study group (n=38)	Control group (n=38)		
	Mean ±SD	Mean ±SD		
Systolic blood pressure				
First measure (initial)	141.97 ± 14.40	143.55 ± 15.41	0.46	0.64 NS
Second measure	144.61 ± 13.22	143.55 ± 15.41	0.31	0.75 NS
Third measure	136.58 ± 19.93	141.84 ± 13.37	1.35	0.18 NS
Fourth measure	133.68 ± 6.74	138.68 ± 9.70	2.60	0.01 S
Fifth measure	132.63 ± 5.54	137.76 ± 8.51	3.11	0.003 S
Repeated-measures analyses of variance	F=12.95	F=20.90		
P value	<0.001 HS	<0.001 HS		
Post hoc test	P1=0.002 P6=<0.001 P2=0.04 P7=<0.001 P3=<0.001 P8=0.31 P4=<0.001 P9=0.18 P5=0.007 P10=0.03		P1=NA P6=<0.001 P2=0.001 P7=<0.001 P3=<0.001 P8=<0.001 P4=<0.001 P9=<0.001 P5=0.001 P10=0.006	
Diastolic blood pressure				
First measure (initial)	93.95 ± 9.59	95.92 ± 8.99	0.92	0.35 NS
Second measure	97.37 ± 7.42	96.18 ± 8.88	0.63	0.53 NS
Third measure	94.34 ± 6.38	95.39 ± 8.16	0.62	0.53 NS
Fourth measure	91.05 ± 5.59	93.82 ± 7.01	1.89	0.06 NS
Fifth measure	88.95 ± 4.52	93.16 ± 5.97	3.46	0.001 HS

Physiological parameters (vital signs)	Studied groups		Students' t test	P value
	Study group (n=38)	Control group (n=38)		
	Mean ±SD	Mean ±SD		
Repeated-measures analyses of variance	F=39.09	F=14.81		
P value	<0.001 HS	<0.001 HS		
Post hoc test	P1=<0.001 P6=<0.001 P2=0.62 P7=<0.001 P3=0.001 P8=<0.001 P4=<0.001 P9=<0.001 P5=<0.001 P10=<0.001		P1=0.16 P6=<0.001 P2=0.10 P7=<0.001 P3=0.001 P8=0.001 P4=<0.001 P9=<0.001 P5=0.01 P10=0.06	
Body temperature				
First measure (initial)	36.97 ±0.29	37.06 ± 0.29	1.36	0.17 NS
Second measure	38.47 ±0.52	38.52 ± 0.53	0.36	0.71 NS
Third measure	37.91 ± 0.77	37.97 ± 0.59	0.41	0.67 NS
Fourth measure	37.18 ± 0.60	37.47 ± 0.55	2.16	0.03 S
Fifth measure	36.66 ± 0.53	37.04 ± 0.43	3.38	0.001 HS
Repeated-measures analyses of variance	F=70.14	F=81.18		
P value	<0.001 HS	<0.001 HS		
Post hoc test	P1=<0.001 P6=<0.001 P2=<0.001 P7=<0.001 P3=0.04 P8=<0.001 P4=0.007 P9=<0.001 P5=<0.001 P10=0.001		P1=<0.001 P6=<0.001 P2=<0.001 P7=<0.001 P3=<0.001 P8=<0.001 P4=0.72 P9=<0.001 P5=<0.001 P10=<0.001	

Table (2) showed that; there was statistically significant in values of systolic blood pressure in study group compared to control group at fourth and fifth measurement P (0.01 & 0.003). Moreover there was highly statistical significant difference related to Diastolic blood pressure at Fifth measure

(P =0.001). Regarding to body temperature there was highly statistical significant difference in study group compared to control group at Fifth measurement (P =0.001).

Table (3): Oxygen saturation between studied samples before and after application of clinical pathway:

Oxygen saturation	Studied groups		Students' t test	P value
	Study group (n=38)	Control group (n=38)		
	Mean ±SD	Mean ±SD		
Oxygen saturation				
First measure (initial)	76.05 ± 3.70	75.13 ± 4.86	0.92	0.35 NS
Second measure	80.92 ± 1.76	79.16 ± 3.09	2.96	0.004 S

Oxygen saturation	Studied groups		Students' t test	P value
	Study group (n=38)	Control group (n=38)		
	Mean \pm SD	Mean \pm SD		
Third measure	83.97 \pm 2.14	82.02 \pm 3.90	2.69	0.009 S
Fourth measure	86.68 \pm 2.20	85.16 \pm 3.59	2.22	0.02 S
Fifth measure	91.42 \pm 1.75	90.13 \pm 1.09	3.85	<0.001 HS
Repeated-measures analyses of variance	F=211.82	F=135.10		
P value	<0.001 HS	<0.001 HS		
Post hoc test	P1=<0.001 P6=<0.001 P2=<0.001 P7=<0.001 P3=<0.001 P8=<0.001 P4=<0.001 P9=<0.001 P5=<0.001 P10=<0.001		P1=<0.001 P6=<0.001 P2=<0.001 P7=<0.001 P3=<0.001 P8=<0.001 P4=<0.001 P9=<0.001 P5=<0.001 P10=<0.001	

(Note: frequency of measurements for table 2, cont. table 2 & 3) First measure (initial) at emergency unit, Second measure at first day at ICU, Third measure at third day at ICU, Fourth measure before discharge from ICU and Fifth measure at ward).

Table (3) illustrated that; there was improvement in the mean oxygen saturation in study group compared to control at different interval measurement, with highly statistical significant difference between them at fifth measure P (<0.001).

Table (4): Arterial blood gases interpretation between studied groups before and after application of clinical pathway

Arterial blood gases interpretation	Studied groups				χ^2	P value
	Study group (n=38)		Control group (n=38)			
	No.	%	No.	%		
Acid base imbalance						
First measure						
Resp. acidosis	6	15.8	14	36.8		
Resp. alkalosis	13	34.2	11	28.9		
Metabolic acidosis	19	50.0	11	28.9		
None	0	0.0	2	5.3		0.05
On broad line	0	0.0	0	0.0	7.50	S
Second measure						
Resp. acidosis	5	13.2	13	34.2		
Resp. alkalosis	9	23.7	7	18.4		
Metabolic acidosis	6	15.8	7	18.4		
None	13	34.2	6	15.8		0.16
On broad line	5	13.2	5	13.2	6.46	NS
Third measure						
Resp. acidosis	0	0.0	5	13.2		
Resp. alkalosis	3	7.9	5	13.2		
Metabolic acidosis	1	2.6	4	10.5		
None	24	63.2	8	21.1		0.002
On broad line	10	26.3	16	42.1	16.68	S

Arterial blood gases interpretation	Studied groups				χ^2	P value
	Study group (n=38)		Control group (n=38)			
	No.	%	No.	%		
Fourth measure Resp. acidosis	0	0.0	0	0.0	14.80	<0.001 HS
Resp. alkalosis	0	0.0	0	0.0		
Metabolic acidosis	0	0.0	0	0.0		
None	35	92.1	20	52.6		
On broad line	3	7.9	18	47.4		
χ^2	112.07		82.53			
P value	<0.001 HS		<0.001 HS			

(Note: First measure at first day at ICU, Second measure at second day at ICU, Third measure at third day at ICU, Fourth measure before disconnection of endotracheal tube).

U: Mann-whitney, HS: highly significant, *Fisher`s exact test, NA: not applicable

P1: comparison between first measure & second measure

P2: comparison between first measure & third measure

P3: comparison between first measure & fourth measure

P4: comparison between first measure & fifth measure

P5: comparison between second measure & third measure

P6: comparison between second measure & fourth measure

P7: comparison between second measure & fifth measure

P8: comparison between third measure & fourth measure

Table (4) documented that; at first measurement about 50% from study group had metabolic acidosis; and 36.8% from control group had respiratory acidosis. While at fourth measure 92.1% from study and more than half of control group (52.6%) hadn't any acid base disturbance respectively .Also there was highly significant difference between study and control group P(<0.001).

Table (5) Blood glucose level among studied groups before & after application of clinical pathway:

Blood glucose level	Studied groups		Mann-Whitney test	P value
	Study group (n=38)	Control group (n=38)		
	Mean ±SD	Mean ±SD		
Blood glucose First measure	191.18 ± 95.29	202.24 ± 99.50	0.21	0.83 NS
Second measure	171.32 ± 74.74	188.55 ± 85.15	0.93	0.35 NS
Third measure	148.95 ± 50.52	170.13 ± 66.70	1.82	0.06 NS
Fourth measure	131.84 ± 32.90	153.42 ± 50.44	2.01	0.04 S
Repeated-measures analyses of variance	F=28.66	F=32.63		
P value	<0.001 HS	<0.001 HS		
Post hoc test	P1=<0.001 P8=<0.001 P2=<0.001 P3=<0.001 P5=<0.001 P6=<0.001		P1=<0.001 P8=<0.001 P2=<0.001 P3=<0.001 P5=<0.001 P6=<0.001	

(Note: First measure at first day at ICU, Second measure at second day at ICU, Third measure before discharge from ICU, Fourth measure at ward).

Table (5) stated that; there was improvement in blood glucose level at fourth measurement in study group compared to control group after application of clinical pathway. Moreover there was statistical significant difference $P=0.04$.

Table (6): Hemodynamic monitoring (Central venous pressure) among studied groups before & after application of clinical pathway

Hemodynamic monitoring	Studied groups		Students' t test	P value
	Study group (n=38)	Control group (n=38)		
	Mean ±SD	Mean ±SD		
CVP (Mean ± SD)				
First measure	4.97 ± 0.63	4.89 ± .72	0.50	0.61 NS
Second measure	5.82 ± 0.65	5.39 ± 0.49	3.17	0.002 S
Third measure	7.0 ± 0.83	5.82 ± 0.51	7.43	<0.001 HS
Fourth measure	8.87 ± 0.90	7.21 ± 0.77	8.56	<0.001 HS
Repeated-measures analyses of variance	243.37	126.04		
P value	<0.001 HS	<0.001 HS		
Post hoc test	P1=<0.001 P2=<0.001 P3=<0.001 P5=<0.001 P6=<0.001 P8=<0.001	P1=<0.001 P2=<0.001 P3=<0.001 P5=<0.001 P6=<0.001 P8=<0.001		

(Note: First measure at first day after insertion of central line at ICU, Second measure at second day, Third measure at third day at ICU, Fourth measure before removing of central line).

Table (6) revealed that; there was no significant difference between both groups in mean of central venous pressure during first measurement, while presence of improvement in the mean of central venous pressure of study group than control group during the last three measurements with significant difference.

Table (7): Distribution of post stroke complications of studied samples during hospitalization period:

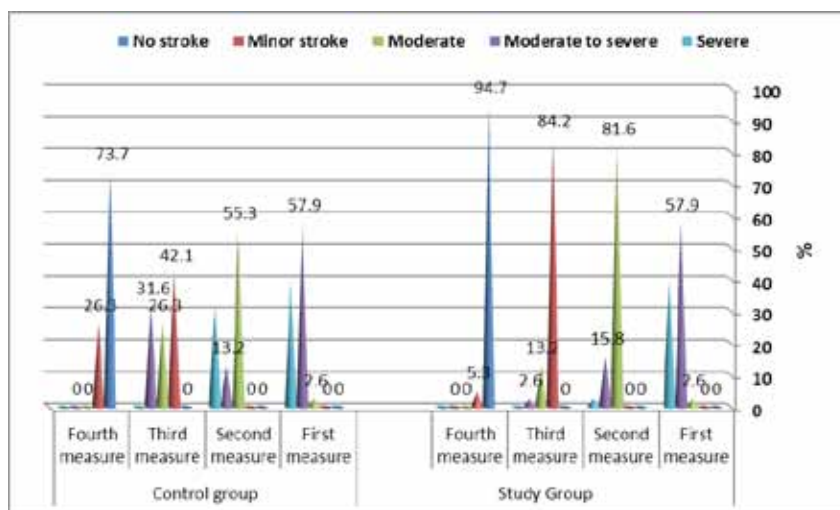
Post stroke complications	Studied groups				χ^2	P Value
	Study group (n=38)		Control group (n=38)			
	No.	%	No.	%		
Skin integrity						
First measure Intact	38	100.0	38	100.0	NA	NA
Not intact	0	0.0	0	0.0		
Second measure						
Intact	38	100.0	38	100.0	NA	NA
Not intact	0	0.0	0	0.0		

Post stroke complications	Studied groups				χ ²	P Value
	Study group (n=38)		Control group (n=38)			
	No.	%	No.	%		
Third measure Intact	10	26.3	5	13.2	2.07 16.87	0.14 NS <0.001 HS
Not intact	28	73.7	33	86.8		
If not intact (stages of pressure ulcer)	28	100.0	18	54.5		
First degree	0	0.0	15	45.5		
Second degree	0	0.0	0	0.0		
Third degree	0	0.0	0	0.0		
Fourth measure Intact	30	78.9	5	13.2	33.10 2.40	<0.001 HS 0.12 NS
Not intact	8	21.1	33	86.8		
If not intact (stages of pressure ulcer)	8	100.0	25	75.8		
First degree	0	0.0	8	24.2		
Second degree	0	0.0	0	0.0		
Third degree	0	0.0	0	0.0		
χ ²	76.29		116.65			
P value	<0.001 HS		<0.001 HS			
Patient complications:					20.08	0.001 HS
Dehydration	5	13.2	3	7.9		
Chest infection	6	15.8	7	18.4		
Dehydration & Chest infection	0	0.0	5	13.2		
Seizures	2	5.3	5	13.2		
UTI	1	2.6	9	23.7		
No	24	63.2	9	23.7		

(Note: First measure at third day after occurrence of pressure ulcer at ICU, Second measure at second day, Third measure at third day, Fourth measure before discharge from ward).

Table (7) presented that; there was highly statistically significant difference between study and control group at third and fourth measure P (<0.001). Additional more than half of patients in study group had not complications, but about 23.7 % of patients had urinary tract infection in control group. There was a highly statistical significant difference between two groups regarding to complications post stroke P (0.001).

Figure (1): National Institutes of Health Stroke Scale of the studied groups before and after application of clinical pathway (Stroke severity):



(Note: First measure at first day at ICU, Second measure at second day at ICU, Third measure at third day at ICU, Fourth measure before discharge from ICU).

Figure (1) revealed that; there was presence of statistical significant differences between study and control groups in second, third and fourth measurements P (0.003, <0.001 and 0.01) respectively. Otherwise highly statistical significant differences during four measurements related to stroke severity.

Table (8): Multidisciplinary team of the studied groups:

Multidisciplinary team	Studied groups				χ^2	P value
	Study group (n=38)		Control group (n=38)			
	No.	%	No.	%		
Establishing discharge plan:						
Just some oral instructions by nurse	0	0.0	28	73.7	76.0	<0.001 HS
Included into care plan but not done	0	0.0	10	26.3		
Included into care plan & properly done	38	100.0	0	0.0		
Establishing multi-disciplinary team work:						
Not Planned	0	0.0	29	76.3	46.89	<0.001 HS
Planned from the beginning of patient admission	38	100.0	9	23.7		
Continuity of care and treatment:						
Not continuity of care	0	0.0	29	76.3	46.89	<0.001 HS
Continuity of care	38	100.0	9	23.7		

Table (8) revealed that; there was highly statistical significant differences between study and control groups in all issues of multidisciplinary team work P (<0.001).

Figure (2): Duration of hospitalization of the studied groups:

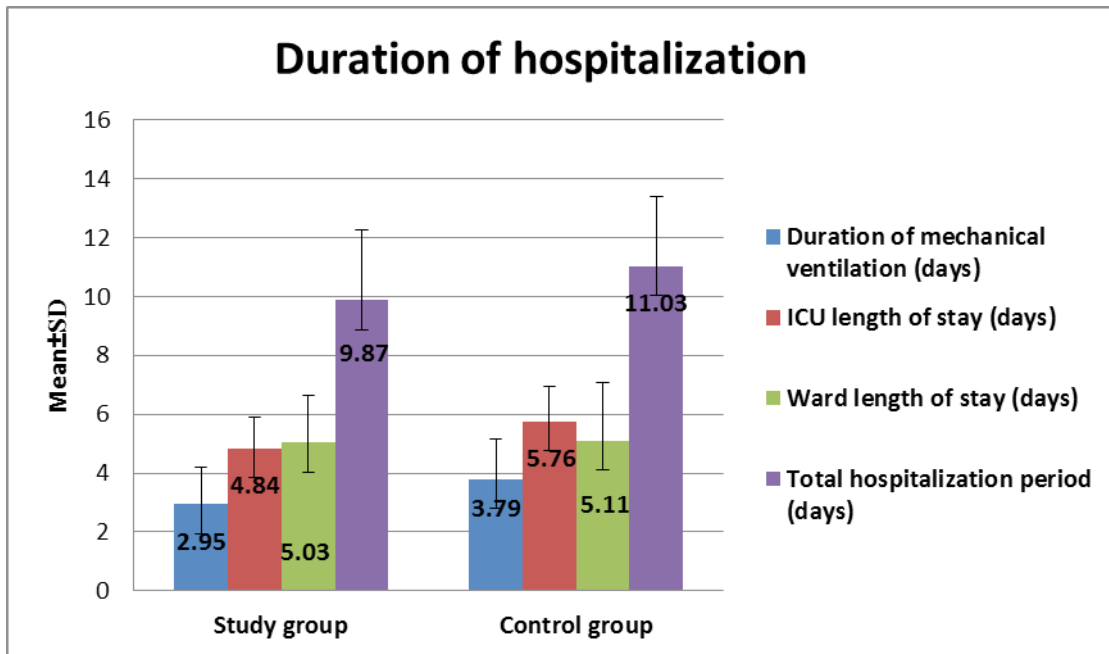


Figure (2) clarified that; lowering the duration of mechanical ventilation, ICU stays length in study group compared to control.

Discussion

A clinical pathway is one of the central tools used

to achieve the quality in healthcare concerning the standardization of care practices. Clinical pathways aim to promote organized and efficient patient care based on evidence-based medicine, and **aim the study:** To evaluate the effect of clinical pathway applications on stroke patients’ outcomes.

4.1 As regards to demographic characteristics and medical data: The current study stated that; the most common type of stroke among both groups was ischemic stroke; the result consistent with the study conducted by [18] they reported that; ischemic stroke is the greatest type among patients. The present study revealed that; diabetes mellitus is the most common comorbidity for incidence of stroke among both groups; this result agreed with [19] who said that; hyperglycemia is the major risk factor of stroke incidence. The researchers explained that; increase glucose level leads to vascular endothelial dysfunction, increased early-age arterial stiffness, and systemic inflammation.

4.2 Concerning to effect of clinical pathway application on patients' outcomes: The current study approved that; presence of improvement in patients' outcomes among the study group as vital signs, oxygen saturation, arterial blood gases interpretation, duration of mechanical ventilation, central venous pressure (indicator for fluid status) and blood glucose level than control group by the positive effect of clinical pathway application; these improvements in patients' outcomes confirmed by radiological imaging; these results in line with [20] who stated that; the application of clinical pathway had an effective improvement among stroke patients than patients received their care by routine method with significant patients' satisfaction and duration of admission period so lessening in hospital cost.

4.2.1 Stroke severity: The current study reported that; existence of improvement in stroke severity among study group than control group at third and fourth measurements by proper application of care pathway; this result supported by [21] they documented that; proper identification of stroke severity is an indicator for appropriate planned care by neurologists and neuroscience nurses, wherever they observing and changes in the patient's neurological status and measuring stroke severity for early recovery and improving from stroke. On the other hand the improvement in stroke severity among study group occurred by the effect application clinical pathway which included performing of coma arousal technique; this result supported by [22] and [23] they reported that; proper nursing care and application of coma arousal technique decreased occurrence of physiological parameters adverse events by. The researcher explained that; the stroke severity among study group decreased by application of planned care and closed follow up via clinical pathway team.

4.2.2 Length of hospitalization: The current study reported that; length of hospitalization of study group (intensive care unit and ward) less than control group; this result in the same line with [24] who found that; there was presence of a clinically significant decreasing in the staying length at intensive care unit and length of hospital stays. The researchers explained that; an integrated care by clinical pathway team enhanced the patients' clinical outcomes and minimizing in complications so early discharge.

4.2.3 Concerning post stroke patients' complications: The present study documented that; most of study group free from post stroke complications as urinary tract infection, chest infection and dehydration, only approximately one quarter of control group had urinary tract infection; these results agreed with [18 & 25] who said that; post stroke complications as chest infections and urinary tract infection decreased by the early planned care.

4.3 Regarding to skin integrity & pressure ulcer as a complication post stroke: The current study mentioned that; improvement of skin integrity and decrease degree of pressure ulcer in study group compared to control after intervention. This result supported by [26] who stated that; application of efficient nursing care by guidelines significant for avoiding pressure ulcer in critically ill patients and advance the patient's outcomes. The researchers explained that proper efficient multidisciplinary planned skin care through the clinical pathway application with continue follow up by the team work enhance patient's condition.

4.4 Establishing discharge plan for a safe transfer care from hospital to home: The present study documented that; the study group had planned care from the beginning of patient admission until discharge, before the discharge all patients and their families assessed to determine the need for discuss the preventing measures for stroke recurrence and other post-discharge needs as physical, emotional, recreational, financial and community support with multidisciplinary team to ensure a safe discharge; otherwise the control hadn't the planned care; that result in the same line with [27] reported that; discharge care plan is developed for helping of patients and families and it should be included patient self-management strategies for a safe discharge.

Finally the researchers clarified the important of applied clinical pathway which allow team of work

interact and work efficiently through selected guidelines according patients 'condition, assess and reassess patients to identify progress of patients health status and improve patients 'outcome.

Conclusion

Clinical pathway has a positive effect on reducing length of patient's hospitalization stay, and early improvement in patients' outcomes with apparent positive effect on quality of patient care.

Recommendation: Application of clinical pathway on large samples and variable measurements are in need to generalization of the results. Clinical pathway should be carried out routinely for managing stroke patients in ICU.

Conflicts of Interest: The authors declare no conflict of interest.

Funding: This research no received external funding.

Ethical Clearance: The study was approved by the Menoufia University; Faculty of Nursing; Ethical Committee for Scientific Research Review No. (713).

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References

1. Abd-Allah F, Moustafa RR. Burden of stroke in Egypt: current status and opportunities. *International Journal of Stroke*. 2014; 9(8):1105-8.
2. American Heart Association/American Stroke Association: Types of stroke. (2015). Available at [http://www.strokeassociation.org/STROKEORG/AboutStroke/TypesofStroke/Types-of-St\[Context Link\]](http://www.strokeassociation.org/STROKEORG/AboutStroke/TypesofStroke/Types-of-St[Context Link]).
3. American Stroke Association. Stroke warning signs. (2015). Available at [http://www.strokeassociation.org/STROKEORG/WarningSigns/Stroke-Warning-Signs-and\[Context Link\]](http://www.strokeassociation.org/STROKEORG/WarningSigns/Stroke-Warning-Signs-and[Context Link]).
4. Ojaghihaghghi S, Vahdati S, Mikaeilpour A, Ramouz A. Comparison of neurological clinical manifestation in patients with hemorrhagic and ischemic stroke. *World J Emerg Med*. 2017; 8(1):34-38.
5. Alrabghi L, Alnemari R, Aloteebi R, Alshammari H, Ayyad M, Al Ibrahim M, et al. Stroke types and Management. *Int J Community Med Public Health*. 2018 Sep; 5(9):3715. Available at <http://www.ijcmph.com>.
6. Frank B, Fulton RL, Weimar C, Lees KR. Use of paracetamol in ischaemic stroke patients: evidence from VISTA. *Acta Neurol Scand*. 2013 Sep; 128(3):172-7.
7. Kumar S, Selim M, Caplan I. Medical complications after stroke. *Lancet Neurol*. 2010 Jan; 9(1):105-18.
8. Luker JA, Wall K, Bernhardt J, Edwards I, Grimmer-Somers K. Measuring the quality of dysphagia management practices following stroke: a systematic review. *International Journal of Stroke*. 2010 Dec; 5(6):466-76.
9. Sexton A, Chan C, Elliott M, Stuart J, Jayasuriya R, Crookes P. Nursing handovers: do we really need them?. *Journal of nursing management*. 2016; Jan; 12:37-42.
10. Ahangar A, Saravi M, Alijanpour S, Boora M, Hoseinalipour S, Zadeh, H and Gholinia H. Comparison of Risk Factors of Stroke and Myocardial Infarction in Patients 15 to 45 Years in Affiliated Hospitals of Babol University of Medical Sciences . *Zahedan J Res Med Sci*. 2016; 18(12):e5332.
11. Huang Z, Dong W, Ji L, Gan C, Lu X, Duan H. Discovery of clinical pathway patterns from event logs using probabilistic topic models. *Journal of biomedical informatics*. 2014 Feb 1; 47: 39-57.
12. Kebapçı A, Kanan N. Effects of nurse led clinical pathway in coronary artery bypass graft surgery: A quasi experimental study. *Journal of Clinical Nursing*. 2018 Mar; 27(5-6):980-8.
13. Bin W, Di C, Hongwei Z, Huaxin S, Qi X. Influence of clinical pathways used the hospitals of Traditional Chinese Medicine on patients hospitalized with stroke: a systematic review and Meta-analysis. *Journal of Traditional Chinese Medicine*. 2017 Apr 1; 37(2):159-64.
14. Tantawi HR, Lotfy I, Abdallah A, Sadek BN. Clinical Pathway versus Traditional Care Plan method for Caring of Postoperative Children Undergoing Cardio thoracic Surgery. *Life Science Journal*. 2015;12(7).
15. Shahzad MN, Ahmed N. Effectiveness of Aloe vera gel compared with 1% silver sulphadiazine cream as burn wound dressing in second degree burns. *J*

- Pak Med Assoc. 2013 Feb 1;63(2):225-30.
16. Hage V (2011). "The NIH stroke scale: a window into neurological status". *Nursing Spectrum*. 24 (15): 44–49.
 17. George D, Mallery P. *SPSS for Windows step by step: A simple guide and reference*. 11.0 update. wps. ablongman. com/wps/media/objects/385. George 4answers.pdf. 2003;549.
 18. Ahangar AA, Saadat P, Alijanpour S, Galeshi M, Hosseinalipour S. Post ischemic stroke complication: How much nursing diagnosis are confirms by neurologist. *J Patient Care*. 2018; 4(2):1-6
 19. Chen R, Ovbiagele B, Feng W. Diabetes and stroke: epidemiology, pathophysiology, pharmaceuticals and outcomes. *The American journal of the medical sciences*. 2016 Apr 1;351(4):380-6.
 20. Huang D, Song X, Tian J, Cui Q, Yang K. Effects of clinical pathways in stroke management: A meta-analysis. *Neurology Asia*. 2015 Dec 1; 20(4): 335–342.
 21. Summers D, Leonard A, Wentworth D, Saver JL, Simpson J, Spilker JA, Hock N, Miller E, Mitchell PH. Comprehensive overview of nursing and interdisciplinary care of the acute ischemic stroke patient: a scientific statement from the American Heart Association. *Stroke*. 2009; 40 (8):2911-44.
 22. Mohammed HM, Hassane AE. Nursing Interventions: Effects of Coma Arousal Technique on the Clinical Outcomes of Unconscious Patients. *IOSR* .2017; 6 (1): 67-80. Available at www.iosrjournals.org.
 23. Duwadi S, Budal BS, Hua ZQ. Reducing physical restraint use in critically ill patients. . *International Journal of Endorsing Health Science Research*. 2018; 6 (1).
 24. Joseph J, Gopichandran L, Seth S, Tirwa M. Effectiveness of a structured heart failure clinical pathway on nurses' knowledge and patient care outcomes. *J Pract Cardiovasc Sci*. 2020;6 (1):53-60.
 25. Al-Hashmi A, Al-Saadi A, Maheshwari H, Almamari R, Salunga C, Marfil R. Role of Stroke Unit in Reducing Post Stroke Complications. 2016; *EC Neurology* 3.4: 412-421.
 26. Tayyib N and Coyer F. Effectiveness of Pressure Ulcer Prevention Strategies for Adult Patients in Intensive Care Units: A Systematic Review. *Worldviews on Evidence-Based Nursing*. 2016; 13(6): 432–444. 2016 Sigma Theta Tau International.
 27. Emes M, Smith S, Ward S, Smith A. Improving the patient discharge process: implementing actions derived from a soft systems methodology study. *Health Systems*. 2019;8(2):117-33.

Online Socialization *Self-Directed Learning Video* of Cardio Pulmonary Resuscitation (CPR) to Knowledge Attitudes and Stress Levels of Learning at PMR SMAN 1 Singosari

Ahmad Rosuli¹, Ahsan², Yati Sri Hayati²

¹Magister Student of Brawijaya University, Medical Faculty, Malang, Indonesia,

²Lecture of Brawijaya University, Medical Faculty, Malang, Indonesia

Abstract

Introduction: Out of Hospital Cardiac Arrest (OHCA) is a cardiac arrest that happened outside the hospital. Incidence comparison OHCA two times more than the IHCA (Intra Hospital Cardiac Arrest), so efforts to increase the number and capacity of by stabder CPR must be increased.

Materials and Method: This study used a quasi-experimental design with a pretest-post test design with a control group. Responsden is divided into two groups, the treatment group and the control group. The treatment group was given CPR training using the Self-Directed Learning Video (SDLV) method with google form media while the control group was given lecture method training.

Results: The study stated that the respondent's knowledge before the intervention 41.96 (\pm SD 2.368 CI = 40.96 - 42.96) increased up to 4.83 points. Attitudes before intervention 42.79 (\pm SD 4.579 CI = 40.96 - 42.96) increased up to 7.42 points. Meanwhile, the score of learning stressor at home before the intervention 19.79(\pm SD4.344CI=17.72-21.67)increase up to 4.68 points.

Conclusion: The results of the study showed that Self-Directed Learning method with video that integrated into the google form media, effectively increased the knowledge and attitudes of respondents. While the stress level of learning at homes ho wed increasing. However, CPR socialization that given is not the main cause of the stress.

Keywords: *Self-Directed Learning Video, google form, CPR, The level of stress learning at home, knowledge, attitude.*

Introduction

Out of Hospital Cardiac Arrest (OHCA) is condition of the cardiac that stop pumping properly based on a patient with or non-cardiac suffer¹. The exact number of OHCA still unknown. The majority of cases are not handled by emergency medical services². Than, the survival after OHCA is still low. This corelate to an initial assesment by an emergency medical services providing early cardiopulmonary resuscitation, automatic external defibrillator and delivering patients to hospital nearby³.

Cardiac arrest is the leading cause of death in Indonesia. The Indoneisia Cardiovascular Specialist Association finds that the average cardiac arrest incidence

is 300,000-350,000 cases annually. In addition OHCA in Indonesia can occur almost 30 times a day, which means nearly 2 people have a heart attact every hour⁴.

Efforts to increase public understanding of OHCA are required. Combination of CPR training with technological sophistication can improve CPR understanding⁵. Wang *et al* explained that the provision of CPR training in the community can add to the RJP by standers in the community. However, RJP training is still constrained by the lack of coach resources, mentors or even major facilities that are unavailable⁶. Efforts to increase the number of bystanders can be performed by maximizing the role of the educated group⁷.

Special group play-roles in the implementation

of first aid cases OHCA, especially students. Students easily mingle with the community, hopefully they can give high chance to be the First Responder in OHCA case. Students who become Palang Merah Remaja (PMR) member can be role- models or initiators to give first aid on OHCA cases⁸.

Self-Directed Learning Video (SDLV) generally provides a positive impact on learning. Majority of teenagers looking for video tutorials to accomplish their tasks. This activity is done due to individual motivation and initiative. They get additional knowledge by watching videos⁹.

Google Forms is an app to create web-based questionnaire. Google Forms can be used to collect data. This application is used according to the needs of its users, one of its functions is for survey questionnaire. Google Forms is useful and can be accessed by students. This application is often used by students for task completion or other professionals in accordance with the purpose of its use. Google form also provides files uploaded in the form of video format. The video can be watched before filling out the questionnaire as the pretest of socialization provided by researchers¹⁰.

Method

Study Design: This study uses an observational research design with cross sectional design.

Setting and Respondents: This research was conducted in March to April 2020 at senior high school SMA Negeri 1 Malang, Malang regency and East Java Province, Indonesia.

Sample: This research was conducted on 48 students about CPR training on cardiac arrest in SMA Negeri 1 Singosari Malang, East Java, Indonesia. Respondents in the study were divided into two groups: SDLV group

and the lecture group. The groups consisted of 24 respondents on each group.

Implementation of CPR socialization with Google form to provide socialization at the same time. The overall number of Respondents in this study is as much as 48 respondents. The sampling techniques in this study used purposive sampling, i.e. sample selection based on the criteria of inclusion and exclusion set by researchers.

Instrument and Measurement: This study uses Self-Directed Learning Video method combined with Google form media for socialization media and answering questions. The control group uses lecture method and answers to pretests and post test using manual media of paper and bolpoint

Data Analysis: Analysis of research data using SPSS version 18.0.

Result

Knowledge: Average knowledge score respondents before SDLV with a Google form media that is 41.96, with interval estimation about 40.96 to 42.96 and increase up to 46.79 after intervention with an estimate interval (95%) between 45.77 to 47.801 with p value of = 0,000 ($P < 0.05$). These results indicate that there was an average score increase after health education through the Google form media. While on control group shows that average knowledge score respondent before socialization using lecture method is 12.46, with interval estimation (95%) of knowledge scores of respondents between 11.46 and 13.58. Then, the knowledge of respondents after after socialization is 21.13 with interval estimation (95%) of respondents knowledge scores between 20.04 and 22.25 with value $P = 0.000$ ($P < 0.05$). These results indicate that there was an increase in knowledge after intervention in the control group of 8.7.

Table 1 Changes In Knowledge level of SDLV group

Konowledge	N	Mean \pm SD	95% CI	P Value
Before	24	41,96 \pm 2,368	40,96-42,96	0,000
After	24	46,79 \pm 2,413	45,77-47,81	

Paired t-test : before and after = 0,000 (P value < 0,05) Source: primary data 2020

Table 2 Changes in Knowledge level of Control Group

Knowledge	N	Mean ± SD	95% CI	P Value
Before	24	12,46 ± 2,813	11,46-13,58	0,000
After	24	21,13 ± 2,787	20,04-22,25	

Paired t-test : Before and After = 0,000 (*P value* < 0,05) Source : primery data 2020

Table 3 Differences in knowledge improvement change

Knowledge	N	Mean ± SD	95% CI	P Value
Before				
SDLV	24	10,79 ± 4,118	9,15-12,39	0,109
Lectur Method	24	12,46 ± 2,929	11,24-1355	
After				
SDLV	24	20,00 ± 2,828	18,96-21,17	
Lecture Method	24	20,38 ± 3,499	19,00-21,71	0,685

Independent t-test : SDLV vs Lecture Method = 0,685 (*P value* > 0,05) Source: primery data 2020

Attitude: Average of the respondent's attitude score before being given health education through the manual keisioner is 42.79, with interval estimation (95%) of knowledge scores of respondents between 40.86 and 44.72 and increase up to 47.46 with interval estimation (95%)46.37 to 48.55 with *p value* = 0.000(*P* < 0.05). This shows that there was an increase in the average attitude score after the intervention. While on control

group shows that the rate of respondents attitude score before CPR socialization using lecture method through the media Questionnaire manual obtained a value of 32 to 48, with an estimated interval, believed 95%. The attitude score of respondents between 34.00 to 41.75. Than attitudes core after obtaining the CPR socialization is 42 up to 52 points, with inrterval estimation of 44.25 to 51.00 with *p value* = 0.000 (*P* < 0.05).

Table 4 Changes In Attitude Improvement on SDLV Group

Attitude	N	Mean ± SD	95% CI	P Value
Before	24	42,79 ± 4,578	40,96-42,96	0,000
After	24	47,46 ± 2,578	46,37-48,55	

Paired t-test : Before and After = 0,000 (*P value* < 0,05) Source: primery data 2020

Table 5 Changes in Attitude Improvement on Control Group

Attitude	N	Min-Max	Median	95% CI	P Value
Before	24	32-48	37,88	34,00-41,75	0,000
After	24	42-52	47,42	44,25-51,00	

Uji Wicoxon: Before and After = 0,000 (*P value* < 0,05) Source : primery data 2020

Table 6 Difference in attitude improvement change

Attitude	N	Mean ± SD	95% CI	P Value
Before				
SDLV	24	39,83 ± 5,247	37,63-41,94	0,180
Lecture Method	24	37,88 ± 4,693	36,14-39,82	
After				
SDLV	24	47,25 ± 3,404	45,85-48,59	
Lecture Method	24	47,42 ± 3,387	46,05-48,68	0,866
<i>Independent t-test : SDLV vs Lecture Method 0,866 (p value > 0,05) Sumber: primery data 2020</i>				

Stress Level for Learning at Home: Averages stress level learning at homes cores before given the socialization of CPR is 19.79 with an estimated interval (95%) 17.72 to 21.67 and increase up to 25.54 with an

estimated interval of 24.32 to 27.02 with p value = 0,000 ($P < 0.05$). This indicates that there is a change in the average stress level learning after socialization. While the stress level of the control group were not recorded.

Table 7 Improved learning stress level changes

Stres Level	N	Mean ± SD	95% CI	P Value
Before	24	19,79 ± 4,344	17,72-21,67	0,000
After	24	25,54 ± 3,599	24,32-27,02	
<i>Paired t-test : Before and After= 0,000 (P value < 0,05) Source: primery data 2020</i>				

Discussion

The results of the study gained that the average knowledge score in the treatment group before given the SDLV health education is 41.96 points. After being given health education through SDLV, the average score knowledge of respondents increased to 46.79. This results showed that there was an increase in the average score after the SDLV Socialization with Google form media with a value of 4.83.

The answer that changes significantly is at the depth of the CPR, duration of ventilation and evaluation of administration of CPR. The pretests results received an improper response of respondents. But after SDLV socialization through Google form media, the posttest results are found to have changed the answer to this type of problem.

Self-Directed Video (SDLV) increase the knowledge and attitude of CPR. However, it does not directly affect the respondents' self-esteem and cognitive abilities. This because the cognitive ability requires direct action, such as mannequin or from clinical experience¹¹. The socialization of CPR can be provided with Google

form media without gathering people on specified place. Google form links created online so be able to shared with respondents directly¹². The use of Google forms can be accessed more easily, especially for high school students where they are familiar with the use of technology. CPR socialization in the form of video can be inserted into the form and it allows socialization can be done directly without having to present a mentor. However, the content in the video has secured an official license from the person who has certification.

Tivener dan Gloe stated that there was a significant change in the respondent's knowledge of CPR on cardiac arrest events outside the hospital after socialization¹⁴. Knowledge enhancement happens typically fast enough after the socialization of the treatment group. Therefore, in order to improve the ability of respondents' skills, training of CPR is required.

The results showed that the average attitude of the respondent before being given the SDLV socialization was 39.83 and increased to 47.25. This shows that there was an increase in the average attitude score after the intervention of 7.42. The answer to experiencing

a significant change is on the willingness to provide CPR on cardiac arrest cases outside the hospital. Results of pretests respondents showed many who answered disagree. However, after the first Peetolongan Socialization was given on a cardiac arrest case outside the hospital using the SDLV resulted in the majority of changes of the statement by the respondent with a statement agreeing in the first pertolonga of the cardiac arrest case outside the hospital.

The statistical analysis results also show the value of P value 0.000 ($p < 0.05$). That is, there is a significant increase in the attitude score of respondents after the dissemination of CPR in the case of cardiac arrest by using SDLV through Google formmedia.

Will *et al.*, stated that almost 80% of respondents agreed that SDLV (self- designed learning tools) provides a more effective learning experience. They feel more motivated and excited to follow the activities given by the researchers compared to the previous conditions. Other studies have also explained that SDLV has a 60% impact on changing attitudes to respondents using the method¹⁵.

The results of the study were said that the stress-learning score of respondents before given the socialization of CPR on cardiac arrest cases outside the hospital with the SDLV method through the Google form media is with the score obtained is 20.42. Having given the socialization of CPR in the cardiac arrest case outside the hospital with the SDLV method and Google form media increased to 24.92. This indicates that there is a change in the average stress level of learning respondents after being given a socialization of 4.68. The answer that is experiencing many changes is on the statement that reveals the ease of activity that respondents had in the previous month.

The statistical analysis results also show the value of P value 0.000($p < 0.05$). This means that there is a difference in the level of learnings tress levels in the home after being given a socialization of CPR in a cardiac arrest case outside the hospital.

Statistical Data from previous research results on the level of learnings tress at home did not specifically discuss it. Stress- Learning at home is a must-have and properly planned speculation for its handling. However, this discussion will be the current topic of pandemic where the school closes access to the school and replaces it by learning from home. A large number of tasks are

diverted to a home task of considerable amount and this could potentially cause an impact on the stress experienced by the student¹⁶.

Conclusion

Self-Directed Learning Video is an effective method used to provide the socialization of CPR. Looking at the object of this research is the teenagers then the use of the Google form application can be a solution. Google form media can be used for socialization media by inserting video files into it. The effectiveness of this media depends on time and environment conditions. In times of pandemic that is not possible to conclude human beings this application can be used very effectively. However, there are constraints that complicate and Bahkwan provide bias on the results of the study. In this study also took into account other factors that have to dot here search process such as the level of learning stress in the home that is experienced by students.

Ethical Clearance: This research has obtained the approval of the Health Research Ethics commission of Medical Faculty of Brawijaya University with number 68/EC/KEPK-S2/03/2020

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References

1. Mancini ME, Diekema DS, Hoadley TA, Kadlec KD, LeveilleMH, McGowan JE, et al. Ethical issues: 2015 American Heart Association guidelines update for cardiopulmonary resuscitation and emergency cardiovascular care. Vol. 132, Circulation. 2015. 383–396p.
2. Myat A, Song KJ, Rea T. Out-of- hospital cardiac arrest: current concepts. Lancet [Internet]. 2018;391(10124):970–9. Available from: [http://dx.doi.org/10.1016/S0140-6736\(18\)30472-0](http://dx.doi.org/10.1016/S0140-6736(18)30472-0)
3. Møller TP, Andréll C, Viereck S, Todorova L, Friberg H, Lippert FK. Recognition of out-of-hospital cardiac arrest by medical dispatchers in emergency medical dispatch centres in two countries. Resuscitation [Internet]. 2016;109:1–8. Available from:<http://dx.doi.org/10.1016/j.resuscitation.2016.09.012>
4. Ngirarung SAA, Mulyadi, MalaraRT. Pengaruh Simulasi Tindakan Resusitasi Jantung Paru (Rjp) Terhadap Tingkat Motivasi Siswa Menolong

- Korban HentiJantung Di Sma Negeri 9 Binsus Manado. e- Journal Keperawatan. 2017;5(1):8.
5. Jeremy Hsu. Smart Watch Beats Smartphone In Lifesaving CPR IEEE Spectrum - IEEE Spectrum[Internet]. 2016 [cited 2019 Oct 3]. Available from: <https://spectrum.ieee.org/the-human-os/biomedical/devices/smart-watch-beats-smartphone-in-lifesaving-cpr>
 6. Wang J, Ma L, Lu Y. Strategy analysis of cardiopulmonary resuscitation training in the community. 2015;7(7):160–5.
 7. Lund-Kordahl I, Mathiassen M, Melau J, Olasveengen TM, Sunde K, Fredriksen K. Relationship between level of CPR training, self-reported skills, and actual manikin test performance - An observational study. *Int J Emerg Med.* 2019;12(1).
 8. Bohn A, Lukas RP, BreckwoldtJ, Bo BW. ‘ Kids save lives ’: why schoolchildren should train in cardiopulmonary resuscitation. 2015;21(3):220–5.
 9. NiluhSwasanti. Panduanpraktispertolonganpertama pada kedaruratan [Internet]. 1st ed. Yogyakarta :Katahati; 2014[cited2019 Nov 19]. Available from: <https://onsearch.id/Record/IOS3318.INLIS00000000017120#description>
 10. Na JC. Digital Libraries: Providing Quality Information. *Lect Notes Comput Sci (including Subser Lect Notes Artif Intell Lect Notes Bioinformatics)* [Internet]. 2015;9469 (December 2015):197–208. Available from: [http://www.scopus.com/inward/record.url?eid=2-s2.0-84951930777](http://www.scopus.com/inward/record.url?eid=2-s2.0-84951930777&partnerID=tZOtx3y1%5Cnhttp://link.springer.com/10.1007/978-3-319-27974-9%5Cnhttp://link.springer.com/10.1007/978-3-319-27974-9)
 11. Google. Google Forms Tutorial Mengenai Google Forms. 2018.
 12. Moon H, Hyun HS. Nursing students’ knowledge, attitude, self-efficacy in blended learning of cardiopulmonary resuscitation: A randomized controlled trial. *BMC Med Educ.* 2019;19(1):1–8.
 13. Batubara HH. Penggunaan Google Form Sebagai Alat Penilaian Kinerja Dosen Di Prodi Pgmi Uniska Muhammad Arsyad Al Banjari. *AL- BIDAYAH J Pendidik Dasar Islam* [Internet]. 2016;8(1):39–50. Available from: <https://jurnal.albidayah.id/index.php/home/article/view/91/88>
 14. Tivener KA, Gloe DS. The Effect of High-Fidelity Cardiopulmonary Resuscitation (CPR) Simulation on Athletic Training Student Knowledge, Confidence, Emotions, and Experiences. *Athl Train Educ J.* 2015;10(2):103–12.
 15. Will W. K. Ma, Wendy Wing Lam Chan CMC. Shaping the Future of Education, Communication and Technology: Selected Papers from the HKAECT 2019 International Conference Yearbook. In: *Educational Communications and Technology Yearbook.* Springer; 2019. p. 101.
 16. American Association of Occupational Health Nurses. *AAOHN Journal: Official Journal of the American Association of Occupational Health Nurses.* University of California: SLACK Incorporated;2009.

Knowledge, Attitude and Practice of Nursing Students towards COVID-19 Pandemic in Oman

Aisha Alshdefat¹, Jansirani Natarajan², Mickaël Antoine Joseph³,
Rasha Abu Baker⁴, Mohammed Ghalib Qutishat⁵

¹Lecturer (RN, MSN), Department of Maternal and Child Health, College of Nursing, Sultan Qaboos University, Muscat, Oman, ²Lecturer (RN, MSN), Fundamental and Administration, College of Nursing, Sultan Qaboos University, Muscat, Oman, ³Assistant Professor (PhD), Fundamental and Administration, College of Nursing, Sultan Qaboos University, Muscat, Oman, ⁴Lecturer (RN, MSN), Department of Community and Mental Health, College of Nursing, Sultan Qaboos University, Muscat, Oman, ⁵Lecturer (RN, MSN), Department of Community and Mental Health, College of Nursing, Sultan Qaboos University, Muscat, Oman

Abstract

Background: COVID-19 pandemic is a global emergency that requires the implementation of drastic measures to halt the disease's fast spread. Students commitment to preventive measures is impacted by their knowledge, attitudes, and practices toward the disease.

Method: We sought to determine the level of knowledge, attitudes, and practices regarding COVID-19 pandemic among Omani nursing students. A cross-sectional study was conducted at college of nursing, Sultan Qaboos University. A valid and reliable online survey was used to gather the data.

Conclusion: We found that 96.9% of nursing students have moderate to high level of knowledge about COVID-19. The majority of nursing students held optimistic attitudes about the successful control of COVID-19 (78.5%) and the ability of Oman to conquer the virus (75.5%). While 87.7% of nursing students stayed away from crowded places, only 47.9% wore a mask when leaving their homes. Predictors of good knowledge included being a clinical student, wearing a mask while leaving home, and having a positive attitude about controlling the pandemic ($p < 0.001$). Predictors of good preventive practices included being a woman and having higher knowledge scores ($p = 0.05$). Omani nursing students have satisfactory knowledge and held positive attitudes regarding COVID-19. However, they do not maintain adequate practice measures.

Keywords: Attitude; Covid-19; knowledge; nursing; Oman; practice.

Introduction

Coronaviruses (CoV) are a group of large, single-stranded RNA viruses, with six of which known to infect humans.¹ These viruses target the human respiratory system and cause symptoms that range from common cold-like cough and fever to severe respiratory problems.² To date, three pathogenic human CoV have been identified in which the infection caused life-threatening complications. The first outbreak took place in China in 2002, when many patients developed the severe acute respiratory syndrome (SARS)-CoV.³ A decade later, the second CoV hit Saudi Arabia and the Gulf region.⁴ The majority of the infected individuals were from the Middle East, and Oman saw 24 cases

Corresponding Author:

Mickael Antoine Joseph, Ph.D.

Assistant Professor of Anatomy, Physiology, and Pathophysiology, Fundamentals and Administration Department Office 2019, College of Nursing, Sultan Qaboos University, Al Khoud, 123, Muscat, Oman P.O. Box 66, Al-Khoud, Muscat 123, OMAN

Tel: +968-24-14-54-31

Mob: +968-71-17-89-86

Fax: +968-24-41-35-36

e-mail: mickaelj@squ.edu.om,

mickaelantoinejoseph@gmail.com

and suffered the loss of seven people.^{5,6} The first case of the third pathogenic type of CoV appeared in Wuhan Province, China, in late December 2019 and referred to as a “novel coronavirus” (COVID-19) by the World Health Organization (WHO).^{7,8} On January 30, 2020, the WHO declared COVID-19 as a public health emergency of international concern⁹ and then, on March 11, 2020, a global pandemic.¹⁰

Since the outbreak, many countries throughout the world have taken extreme measures in response to COVID-19 by banning travel from and to the countries, suspending schools and universities, working from homes, social distancing, mask requirements and much more.¹¹ A worldwide call has been made to suspend all mass gatherings and many countries have positively responded.¹² Studies from China have shown that social distancing, quarantine, and isolation of sick people can control the spread of the disease.¹³ Moreover, hygiene etiquette has been globally recommended.¹⁴

The first positive COVID-19 case in Oman was reported on February 24, 2020. The numbers remained low for the first few weeks, which was likely due to the extreme measures that have been taken by the Supreme COVID-19 Committee to enact a pseudo-complete lockdown of the country with the suspension of schools and universities, the closure of all non-essential shops, and urging citizens and residents to remain confined at home. Following the recommendations of the government and Sultan Qaboos University (SQU), the College of Nursing closed its doors and students were sent to the safety of their homes.

To date, there is no vaccine to prevent COVID-19 infection and no cure currently available to treat it.¹⁵ Therefore, it is of paramount importance that Omani students have extensive knowledge about the preventive measures (social distancing, hand hygiene, coughing etiquette, avoiding crowded places, and wearing a face mask when going outside of the house) as applying the aforementioned techniques constitutes the first line of defense against infection.¹⁶

To assist in the eradication of COVID-19 in Oman, it is crucial to investigate the level of nursing students' awareness of COVID-19 at this critical period. Students commitment to preventive measures is impacted by their knowledge, attitudes, and practices (KAP) towards the disease. In this study, we assessed the KAP of nursing students at SQU toward COVID-19.

Method

This cross-sectional descriptive study was conducted during the month of May 2020 among nursing students at SQU. An online survey was created using Google Forms and sent to undergraduate bachelor students to explore and describe the KAP toward COVID-19.

Slovin's formula gave a total sample size of 222. Overall 163 responses were received, amounting to a 73.4% response rate. Systematic random proportionate sampling was used to recruit nursing students who are enrolled in the undergraduate nursing program for Spring 2020 both male and female and over 18 years old.

The survey had two sections. The first section comprised questions about demographic variables like age, gender, academic level, and cumulative grade point average (cGPA). The second section consisted of the standardized questionnaire developed by Zhong et al., 2020 which had 12 questions for testing the KAP of the participants. The survey questions were about clinical presentations (four items), transmission routes (three items), and prevention and control (five items) of COVID-19. The responses had three options: “True”, “False”, and “I don't know”. A correct answer was assigned one point and “false” or “I don't know” responses were assigned zero points. The total knowledge score ranged from 0 to 12, with a higher score denoting a better knowledge of COVID-19. The Cronbach's alpha coefficient of the knowledge questionnaire was 0.71, indicating acceptable internal consistency and reliability.¹⁷ Four questions measured students' attitudes towards COVID-19 and practices to control the spread of the disease. Permission to use the KAP survey was obtained from the author.

Participants were informed that their participation is voluntary and were guaranteed about the privacy and confidentiality of all information provided, which was used for research purposes only.

The collected data was then checked for missing values and accuracy by two investigators before conducting an analysis using Statistical Package for Social Science (SPSS-Version.23) software. Descriptive statistics, including frequencies, percentages, means, and standard deviations were used to describe nursing students' KAP towards COVID-19. A T-test and Chi-square analysis were used to identify the association between the KAP of nursing students and their demographic characteristics. A multiple logistic

regression analysis was used to predict the factors affecting the KAP toward COVID-19. Statistical significance was kept at $p < .05$ for all the tests.

Results

A total of 163 nursing students participated in the survey. Most of the participants were female (67.5%) and were in the age group between 18 to 27 years (93.9%). Out of the total, 36.2% never had a clinical course (first and second years) while 63.8% were clinical students (third, fourth, and fifth years). A little less than half of the participants (46.6 %) had a cGPA of “B” ranging between 2.7 to 3.69. The baseline characteristics of nursing students are presented in Table 1.

The majority of the participants (60.7%) had a high level of knowledge (9-12 score). The overall knowledge related to COVID-19 is reported in Table 2.

There were 12 questions implemented to assess the knowledge of nursing students regarding COVID-19. The mean scores of the participants are presented in Table 2. Most of the nursing students reported accurate information about the clinical presentation ($M=3.24, SD\pm.902$) and transmission routes ($M=2.16, SD\pm.711$), whereas the lowest mean scores were reported for prevention and control aspects ($M=3.25, SD\pm.876$). Total knowledge scores of the nursing students on COVID-19 was ($M=8.64, SD\pm 1.731$), suggesting an overall 72% of correct responses by the participants.

In the self-reported “attitudes toward the pandemic” portion of the survey, the majority of nursing students (75.5%) agreed that they have confidence in Oman winning the battle against COVID-19 as a country. Most of them (78.5%) also agreed that the pandemic will be successfully controlled. Regarding the practice related to the prevention of the spread of infection, 52.1% have not been wearing a mask when leaving their homes. The majority of the participants (87.7%) did not go to crowded places in recent days. Attitudes and practices of Omani nursing students towards COVID-19 are presented in Figure 1.

Knowledge on COVID-19 of nursing students significantly differed across the age groups and year of study as presented in Table 3. Students belonging to higher age and higher academic level (year of study) had better knowledge scores about COVID-19.

The results of binary logistic regression analysis of

the factors affecting the knowledge of nursing students are presented in Table 4. The model was statistically significant, $\chi^2 = 34.523, df=8, N=163, p < .001$. Being a clinical student, wearing a mask while leaving home, and having a positive attitude about controlling the pandemic are two predictors of having good knowledge about COVID-19.

Results of the binary logistic regression analysis of the factors affecting the practice of wearing a mask when leaving home by the nursing students are presented in Table 4. The model was statistically significant, $\chi^2=23.930, df=8, N=163, p=.002$. The practice of wearing a mask when going out differed across gender and levels of knowledge about COVID-19. Being a female and having higher knowledge scores predicted better practice of wearing a mask when leaving home

Discussion

In this study we sought to determine the level of KAP toward COVID-19 pandemic among Omani nursing students at SQU. In this studied population consisting mainly of women and clinical nursing students, we found that almost 9 out of 10 have a moderate to high level of knowledge about COVID-19 and an overall 72% of correct responses, showing that most students are well informed about the virus.

Nursing students also had a positive attitude towards the pandemic where almost 8 out of 10 had confidence that Oman will win the battle against COVID-19 and believed that the virus will be successfully controlled. Opposite to this optimistic attitude, Omani nursing students had lower preventive practices toward the virus. While the majority stayed away from crowded places, only less than half of the nursing students wore a mask when leaving their homes. We have also found associations between higher age groups and academic levels with better knowledge. Furthermore, gender and high knowledge scores influenced nursing students’ practices regarding COVID-19.

During the MERS epidemic, Omani respondents showed a better level of knowledge about the infection and reported higher compliance with preventive measures than participants from Saudi Arabia, Qatar, Bahrain, United Arab Emirates, and Kuwait.¹⁸ However, with COVID-19, when compared with other studies, Omani nursing students showed a lower level of knowledge about the virus. Studies from Jordan, Malaysia, China, Pakistan, and Saudi Arabia reported better knowledge

toward COVID-19.^{17,19-23} However, not all these studies used the same questionnaire, which does not allow for the precise comparison of the knowledge level among the different populations. Nonetheless, we were expecting to find a higher level of knowledge in our study, especially since our students are majoring in nursing and should have better information about the pandemic. However, this moderate to high level of knowledge could be due to the fact that around 35% of the participants are in their first and second year of study and haven't had any formal clinical training yet. The significant positive association between level of knowledge and nursing students who have been previously enrolled in clinical courses (and are older) supports this speculation. Another possible explanation of this result is the low number of positive COVID-19 cases in the Sultanate at the time of conducting the study. By May 1, 2020, the numbers of COVID-19 positive cases were 2,447.²⁴ This number has increased by 17 times during the past two months, reaching 41,194 positive cases by July 1, 2020.²⁵ This study was conducted in May 2020 when the virus had not spread much within Oman, which could explain the lower level of familiarity.

Although nursing students avoided crowded places, few upheld the good preventive practices of wearing a mask when leaving the house. This result is alarming, as one can expect nursing students to have satisfactory preventive practices regarding the virus. These results are similar to those observed in a Pakistani study where university students and employees showed inadequate preventive measures to COVID-19.²³ We believe that this is mainly due to the population demographics where 93.9% of the students are younger than 27 years old. Older adults have better knowledge and practice than younger people and this is possibly due to the fact that older adults are more afraid of transmission and complications of COVID-19.^{20,26} However, if this is the case, nursing students should know better than by having low compliance with safety measures, they become a danger to older people who might develop more complications from the coronavirus.²⁷ A more likely reason for not wearing masks in public is the conflicting and contradictory advice given by the international authorities regarding both the coronavirus

and face masks during the early stages of the pandemic. The WHO's recommendations on wearing face masks in public seemed inconsistent at first.^{28,29} The interim guidance that the WHO published at the end of March 2020 generated some confusion among the public and this could explain why half of our nursing students opted not to use this type of preventive measure.

In this study, we also found a high level of positive attitudes toward COVID-19. This optimistic view of the pandemic was also observed in studies conducted in Saudi Arabia, Malaysia, and China.^{17,20,30} All these authors gave credit to their governments by acting in a swift manner and taking stringent measures to mitigate the impact of COVID-19. We also believe that the prompt response of the Omani government and the supreme COVID-19 committee in undertaking necessary measures to tackle and limit the spread of the virus might have contributed to these optimistic views.

Moreover, some demographics like being a woman and having higher knowledge scores predicted a better practice of wearing a mask when leaving home. Gender played a significant role in predicting a better practice among nursing students where men were less inclined to wear mask when leaving the house than women. This is congruent with previous studies from China and India showing that females have a better practice scores.^{17,31} These results are very important for the Omani government and SQU in particular, allowing them to identify target groups for health-promotion activities. We should have more emphasis on the importance of wearing face masks when going out in public. At the time of writing this article, the Omani Supreme Committee for dealing with COVID-19 had already made it mandatory to wear a face mask in public. Moreover, health-related advertisements and online activities should be carried out to enhance knowledge, practice, and attitudes toward this pandemic.

The major limitation of this study is the small sample size, which is limited to nursing students enrolled at one major university in Oman. This small number of nursing students does not represent the whole Omani population, thus preventing us from generalizing the results.

Table 1: Demographic characteristics of the nursing students involved in this study (n=163)

Demographics	n (%)
Gender	
Male	53 (32.5)
Female	110 (67.5)
Age	
18 – 22	75 (46.0)
23 – 27	78 (47.9)
28 – 32	10 (6.1)
Academic Level	
First year	56 (34.4)
Second year	3 (1.8)
Thirdyear	23 (14.1)
Fourthyear	41 (25.2)
Fifthyear	40 (24.5)
cGPA	
A (3.7 – 4)	26 (16.0)
B (2.7 – 3.69)	76 (46.6)
C (1.7 – 2.69)	44 (27.0)
D (1 – 1.69)	17 (10.4)

cGPA: cumulative grade point average

Table 2. Level of knowledge of Omani nursing students about COVID-19 (n = 163)

Level of knowledge	n	%	
High knowledge	99	60.7	
Moderate knowledge	59	36.2	
Low knowledge	5	3.1	
Various aspects of COVID-19 knowledge	Number of items	Mean	SD
Clinical presentations	4	3.24	.902
Transmission routes	3	2.16	.711
Prevention and control	5	3.25	.876
Total knowledge scores	12	8.64	1.731

SD: standard deviation

Table 3. Association between knowledge about COVID-19 and demographic characteristics among Omani nursing students (n=163)

Demographics	n	Mean	SD	t/F	df	Sig. (2-tailed)
Gender						
Male	53	8.47	1.928	-.882	161	.379
Female	110	8.73	1.631			

Demographics	n	Mean	SD	t/F	df	Sig. (2-tailed)
Age groups						
18-22	75	8.35	1.728	5.551	1,160	0.020*
23-27	78	8.79	1.738			
28-32	10	9.70	1.160			
Academic Level						
First year	56	8.11	1.626	5.257	1,159	0.023*
Second year	3	8.33	3.055			
Thirdyear	23	8.74	1.573			
Fourthyear	41	8.66	1.892			
Fifthyear	40	9.35	1.494			
cGPA						
A (3.7 – 4)	26	8.35	2.077	0.104	3,159	0.748
B (2.7 – 3.69)	76	8.62	1.781			
C (1.7 – 2.69)	44	8.95	1.462			
D (1 – 1.69)	17	8.41	1.583			

cGPA: cumulative grade point average; df: degree of freedom; SD: standard deviation

*: Significant at level of $P < 0.05$

Table 4: Results of multiple logistic regression analysis on factors associated with COVID-19 knowledge and practice of wearing a mask when leaving home

Variables	B	S.E.	Wald	df	Sig.	Exp (B)	95% C.I. for EXP (B)	
							Lower	Upper
Knowledge								
Gender (male vs female)	.627	.663	.896	1	.344	1.873	.511	6.862
Age (18-22 years vs 23 years and above)	.471	.590	.635	1	.425	1.601	.503	5.092
Academic level (non-clinical vs clinical)	1.767*	.611	8.376	1	.004	5.855	1.769	19.377
cGPA (moderate vs good)	.683	.60	1.253	1	.263	1.980	.599	6.549
P1(no vs yes)	1.705	.719	5.628	1	.018	5.504	1.345	22.520
P2(no vs yes)	.952	.592	2.588	1	.108	2.592	.812	8.272
A1(no vs yes)	-.587	.580	1.027	1	.311	.556	.178	1.731
A2 (no vs yes)	-1.839***	.577	10.146	1	.001	.159	.051	.493
Practice of wearing a mask when leaving home								
Gender (male vs female)	-1.627**	.568	8.205	1	.004	.197	.065	.598
Age (18-22 years vs 23 years and above)	.180	.582	.095	1	.758	1.197	.382	3.746
Academic level (non-clinical vs clinical)	-1.263	.674	3.511	1	.061	.283	.075	1.060
cGPA (moderate vs good)	-.035	.590	.004	1	.953	.966	.304	3.070
P2(no vs yes)	1.046	.592	3.123	1	.077	2.845	.892	9.072
A1(no vs yes)	-.654	.473	1.915	1	.166	.520	.206	1.313
A2(no vs yes)	.358	.572	.392	1	.531	1.430	.466	4.388
Knowledge (poor vs good)	1.565*	.750	4.358	1	.037	4.782	1.100	20.778

A: attitude; B: coefficient of the constant; cGPA: cumulative grade point average; C.I.: confidence interval; df: degree of freedom; EXP (B): exponentiation of the B coefficient; P: practice; S.E.: standard error; Wald: Wald chi-square test, * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

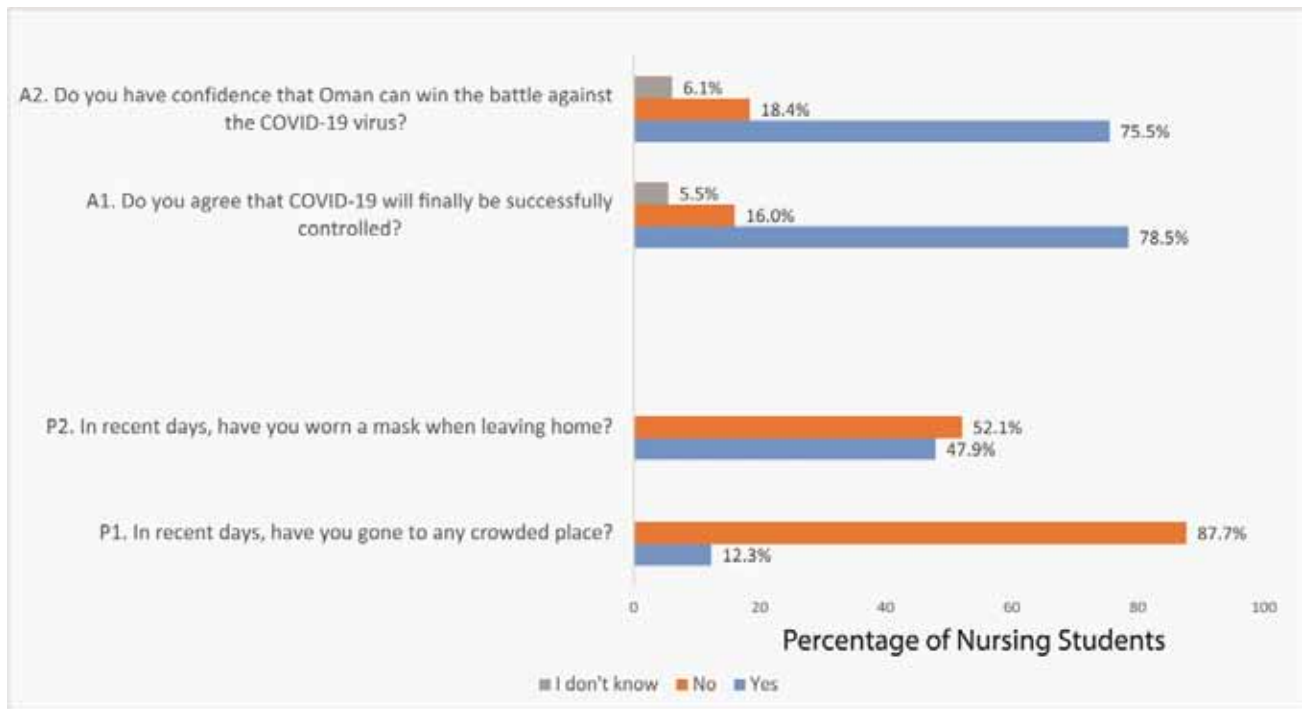


Figure 1. Attitudes (A1 & 2) and practices (P1 & 2) of Omani nursing students towards COVID-19 (N=163)

Conclusion

Our study revealed that Omani nursing students at SQU had a good level of knowledge and a very positive attitude toward the COVID-19 pandemic. This result highlights the efforts of the Omani government in enhancing public knowledge about the virus and promoting a safe environment for Omani citizens and residents. On the other hand, nursing students have shown a moderate performance in preventive behaviors, most notably, not wearing masks when going outside. We should keep in mind that our survey was distributed during the early stages of the pandemic in Oman and the knowledge, practices, and attitudes of our nursing students are expected to have ameliorated over time.

Ethical Clearance: Ethical approval was obtained from the College of Nursing Research and Ethics Committee.

Source of Funding: No funding was obtained for this study.

Conflict of Interest: Nil

References

1. Shereen MA, Khan S, Kazmi A, Bashir N, Siddique R. COVID-19 infection: origin, transmission, and characteristics of human coronaviruses. *J Adv Res.* 2020;24:91-98.
2. Van der Hoek L, Pyrc K, Jebbink MF, Vermeulen-Oost W, Berkhout RJM, Wolthers KC, et al. Identification of a new human coronavirus. *Nat Med.*2004;10(4):368-73.
3. Stadler K, Massignani V, Eickmann M, Becker S, Abrignani S, Klenk H-D, et al. SARS — beginning to understand a new virus. *Nat Rev Microbiol.*2003;1(3):209-18.
4. Aleanizy FS, Mohamed N, Alqahtani FY, El Hadi Mohamed RA.Outbreak of Middle East respiratory syndrome coronavirus in Saudi Arabia: a retrospective study. *BMC Infect Dis.* 2017;17(1):23.
5. Al Awaidy ST, Khamis F. Middle East Respiratory Syndrome Coronavirus in Oman: Current Situation and Going Forward. *Oman Med J.*2019;34(3):181-3.
6. WHO.Middle East respiratory syndrome coronavirus– Oman 2019
7. Zhou P, Yang X-L, Wang X-G, Hu B, Zhang L, Zhang W, et al. A pneumonia outbreak associated with a new coronavirus of probable bat origin. *Nature.* 2020;579(7798):270-3.
8. WHO.Naming the coronavirus disease (COVID-19) and the virus that causes it 2020

9. WHO. Statement on the second meeting of the International Health Regulations (2005) Emergency Committee regarding the outbreak of novel coronavirus (2019-nCoV). 2020.
10. Cucinotta D, Vanelli M. WHO Declares COVID-19 a Pandemic. *Acta Biomed.* 2020;91(1):157.
11. Fong MW, Gao H, Wong JY, Xiao J, Shiu EY, Ryu S, et al. Nonpharmaceutical measures for pandemic influenza in nonhealthcare settings—social distancing measures. *Emerg Infect Dis.* 2020;26(5):976.
12. Memish ZA, Ahmed QA, Schlagenhauf P, Doumbia S, Khan A. No time for dilemma: mass gatherings must be suspended. *Lancet.* 2020;395(10231):1191-2.
13. Anderson RM, Heesterbeek H, Klinkenberg D, Hollingsworth TD. How will country-based mitigation measures influence the course of the COVID-19 epidemic? *Lancet.* 2020;395(10228):931-4.
14. World Health O. Rational use of personal protective equipment for coronavirus disease: interim guidance, Geneva: World Health Organization; 2020
15. Zhu F-C, Li Y-H, Guan X-H, Hou L-H, Wang W-J, Li J-X, et al. Safety, tolerability, and immunogenicity of a recombinant adenovirus type-5 vectored COVID-19 vaccine: a dose-escalation, open-label, non-randomised, first-in-human trial. *Lancet.* 2020; 395(10240):1845-1854.
16. Belingheri M, Paladino ME, Riva MA. COVID-19: Health prevention and control in non-healthcare settings. *Occup Med.* 2020;70(2):82-83.
17. Zhong B-L, Luo W, Li H-M, Zhang Q-Q, Liu X-G, Li W-T, et al. Knowledge, attitudes, and practices towards COVID-19 among Chinese residents during the rapid rise period of the COVID-19 outbreak: a quick online cross-sectional survey. *Int J Biol Sci.* 2020;16(10):1745-52.
18. Alqahtani AS, Rashid H, Basyouni MH, Alhawassi TM, Bin Dhaim NF. Public response to MERS-CoV in the Middle East: iPhone survey in six countries. *J Infect Public Health.* 2017;10(5):534-40.
19. Peng Y, Pei C, Zheng Y, Wang J, Zhang K, Zheng Z, et al. Knowledge, attitude and practice associated with COVID-19 among university students: a cross-sectional survey in China. 2020.
20. Azlan AA, Hamzah MR, Sern TJ, Ayub SH, Mohamad E. Public knowledge, attitudes and practices towards COVID-19: A cross-sectional study in Malaysia. *PLoS One.* 2020;15(5):e0233668.
21. White MS, Omer M, Mohammad GN. Knowledge, attitude and practice on prevention of airborne and droplet infections during the outbreak of corona virus among the College Students in University of Bisha, Saudi Arabia. *International Journal of Contemporary Research and Review.* 2020;11(04):20773-6-6.
22. Alzoubi H, Alnawaiseh N, Al-Mnayyis A, Lubad M, Aqel A, Al-Shagahin H. COVID-19-knowledge, attitude and practice among medical and non-medical University Students in Jordan. *J Pure Appl Microbiol.* 2020;14:17-24.
23. Salman M, Mustafa ZU, Asif N, Zaidi HA, Hussain K, Shehzadi N, et al. Knowledge, attitude and preventive practices related to COVID-19: a cross-sectional study in two Pakistani university populations. *Drugs Ther Perspect.* 2020;1-7.
24. MOH.MOH Statement No.(64) May 01,2020
25. MOH.MOH Statement No.(125)2020
26. Cao J, Hu X, Cheng W, Yu L, Tu W-J, Liu Q. Clinical features and short-term outcomes of 18 patients with corona virus disease 2019 in intensive care unit. *Intensive Care Med.*
27. Ruan Q, Yang K, Wang W, Jiang L, Song J. Clinical predictors of mortality due to COVID-19 based on an analysis of data of 150 patients from Wuhan, China. *Intensive Care Med.* 2020;46(5):846-8.
28. Chan A-y, Leung C, Lam T, Cheng K. To wear or not to wear: WHO's confusing guidance on masks in the covid-19 pandemic. *BMJ Blog.* 2020.
29. Feng S, Shen C, Xia N, Song W, Fan M, Cowling BJ. Rational use of face masks in the COVID-19 pandemic. *Lancet Respir Med.* 2020;8(5):434-6.
30. Al-Hanawi MK, Angawi K, Alshareef N, Qattan AMN, Helmy HZ, Abudawood Y, et al. Knowledge, Attitude and Practice Toward COVID-19 Among the Public in the Kingdom of Saudi Arabia: A Cross-Sectional Study. *Front Public Health.* 2020;8(217).
31. Maheshwari S, Gupta P, Sinha R, Rawat P. Knowledge, attitude, and practice towards coronavirus disease 2019 (COVID-19) among medical students: A cross-sectional study. *J Acute Dis.* 2020;9(3):100-4.

Exploring Students Nurses' Preparedness and Readiness for to Care for Critically ILL Patients and Implication for Patient's Safety

Amina Hemida Salem

*Lecturer of Critical Care & Emergency Nursing, Critical Care & Emergency Nursing Department,
Faculty of Nursing, University of Alexandria, Egypt*

Abstract

Background: Unsafe nursing care provided to critically ill patients by unqualified nurses can cost a patient's life. When nursing care falls short of standards because nurses are lacking knowledge and or practical skills, nursing education programs shoulder much of the responsibility.

Aims: aims of the current study were to explore the students' nurses (senior students) preparedness and readiness to care for critically ill patients, determine the students' nurses' perceptions toward their preparedness and readiness to practice as critical care nurse and, compare between the students' nurses clinical knowledge and their self – perceptions.

Method: To fulfill the aims of the study, senior students in the Faculty of Nursing at the University of Alexandria were recruited during the last month of the internship year. Three tools were used to collect the data. **Tool one** "Generation of Core Competencies" that was aimed at identifying crucial competencies that are required for new students' nurses to provide competent and safe patient care. **Tool two** "Exploring the students' nurses' preparedness and readiness to care for critically ill patients" that was aimed to exploring the clinical knowledge of the students' nurses (objective tool) and **Tool three** "Casey-Fink Readiness for Practice Survey (CFRPS)" that was aimed to determining the students' nurses' perceptions toward their preparedness and readiness to practice as critical care nurse (subjective tool).

Results: Results of the current study revealed that the median knowledge score was generally low (MD: 14) denoting insufficient students nurses' knowledge. The average number of correctly answered questions by participants was only 14 out of 50 (mean, SD 14.12, 4.03). However, the nurses' perceptions or attitudes toward their preparedness and readiness to practice as a critical care nurse were generally positive and high. About 50% of nurses answered at least 11 questions as "strongly agree" out of 15 questions of perception.

Conclusions: Although the study was conducted at the end of the internship year as the clinical internship experience improved the nurses' knowledge and perceptions of readiness for practice, there was a contradiction between the student nurses' knowledge (low) and perceptions of their readiness (high).

Keywords: *Students' Nurses, Preparedness & Readiness, Critically Ill Patient's safety.*

Corresponding Author:

Amina Hemida Salem

Lecturer of Critical Care & Emergency Nursing,
Critical Care & Emergency Nursing Department,
Faculty of Nursing, University of Alexandria, Egypt
Telephone: 00201558344642
e-mail: omniasalem308@gmail.com

Introduction

Critical care units, which can also be referred to as intensive care, provide lifesaving care for critically ill patients and are associated with life-threatening risks. Moreover, the complexity of care within these units requires that the nurses exhibit a trans-disciplinary level of competency to improve patient safety. The

increasing mortality rate among critically ill patients elevates the worries about new graduates' critical care nurses' competencies.^(1,2) According to the American Association of Critical-Care Nurses (AACN), to promote the critically ill patient's safety, new graduate nurses must be equipped with specialized knowledge & skills and can think and work quickly in stressful conditions and stay alert after many hours of intensive work (AACN. 2019).⁽³⁾ It is the responsibility of the nursing education programs to produce graduates of nurses capable of providing safe, efficient patient care.^(4,5)

New graduate nurses' preparedness and readiness to practice independently have been an area of debate. The breadth and depth of nursing knowledge and technical skill necessary for critical care practice continue to rapidly increase yet the time available and clinical areas for the training of trainees have not. Limitations in the duty hours and areas for the training of trainees have reduced clinical exposure and make the students spending more time on their training in the clinical labs and away from the real environment. This challenging area makes the nursing education sector struggled to find solutions to the so-called 'theory-practice gap', leading to a deficiency in graduates' readiness to practice.⁽⁶⁻⁸⁾

Concerns regarding the adequacy of one's knowledge, making mistakes, not being able to keep up, and claiming one's role on the health care team as a professional nurse can spark difficult emotions and endangering the patient's life as a result.^(9 - 11) Becoming a critical care nurse means making the transition from being a nurse student to being a professional nurse and a member of a multidisciplinary health team. Nowadays, several questions are raised regarding the preparedness and readiness of the new graduate nurses, accompanied by claims from healthcare workplaces that graduates do not receive adequate educational preparation before they enter the workplace.^(12 - 14)

Research Questions:

1. Do the students' nurses have adequate clinical knowledge to provide a competent and safe nursing care for critically ill patients?
2. What are students nurses' perceptions regarding their preparedness and readiness to practice as a critical care nurse?
3. Is there any difference between the result of students' nurses' clinical knowledge and their self-perceptions?

Materials and Method

Study Design: a descriptive, cross-sectional study was recruited to conduct the current study.

Sample: Senior baccalaureate nursing students (BSNs), Faculty of Nursing, University of Alexandria, who agreed to participate in the study, were recruited during the final month of their internship year.

Tools: Tool 1 : "Generation of Core Competencies" this tool was developed by the researcher to elicit the opinions of the expert panel regarding the core competencies. The expert panel consists of clinical educators involved in the provision of clinical education to students enrolled in critical care nursing courses during the preceding two years (2017/18) and the preceptors involved in the provision of clinical training and supervision of the students during the internships year 2018/19. This tool consists of two sections. Section one includes short demographic information of the expert panel such as gender, age, and years of experience. The second section was focused on the generation of core competencies by asking one open-ended question. Here, a panel was asked to describe what they believed were the core competencies that indicate that students are adequately prepared to care for critically ill patients safely and independently. The responses received from the panel were subjected to a thematic framework analysis by the researcher. Five themes or domains were identified by the panel considered to be important. These domains include:

- Domain One: Airway & Breathing Management
- Domain Two: Perfusion & Hemodynamic Monitoring & Management
- Domain Three: Nutrition & GIT Management
- Domain Four: Calculation of Fluids and Medications
- Domain Five: Communication, Decision Making, and Leadership Skills

Tool 2: "Exploring the Students Nurses' Preparedness and Readiness to Care for Critically Ill Patients" A self-reported questionnaire using a paper-pencil was developed by the researcher. It was used to assessing the clinical knowledge of the students' nurses (objective). This tool consists of two parts.

Part One "Sociodemographic and Clinical Data of the Participants" such as age, sex, marital status, level of entry into the bachelor's program, have you

worked during the education period, and the students were asked about their commitment in the attendance of lectures and clinical training. **Part Two:** this part was considered as an outcome of the tool one, core competencies. Each competency or domain was assessed by a group of Multiple Choice Questions with a total of 50 questions [Airway & breathing management (15Qs), Perfusion & hemodynamic monitoring & management (15Qs.), Nutrition & GIT management (12Qs.), communication, decision making and leadership skills (6Qs.) & Calculation of fluids and medications (2Qs.)]. Each multiple-choice question has 4 response alternatives or options (the correct answer/response and 3 distractors or alternatives that are not the answer). This part of the Questionnaire was pre-tested for its face and content validity by distributing it to five experts in the field of nursing education. Internal reliability was done by a group of interns (n = 10) by using Cronbach's alpha ($\alpha=0.84$).

Tool 3: "Casey-Fink Readiness for Practice Survey (CFRPS)". It was developed by Casey et al (2011)⁽¹⁵⁾ with a total of 20 items and it was modified by the researcher to make it shorter and summarized. This questionnaire was used to identifying the students' nurses' perceptions towards their preparedness and readiness to care for critically ill patients. This questionnaire comprises five themes with a total of fifteen items:

- Patient care (7 items),
- Communication (2 items),
- Decision making (3 items),
- Leadership (1 item),and
- Other items – satisfaction & readiness (2 items)

A five -Likert scale (1=strongly disagree, 2=disagree, 3=unsure, 4 agree, 5=strongly agree) was used to elicit the student's nurses' perceptions. The new version of the questionnaire was evaluated for face and content validity using expert nurse educators and nurse preceptors. The overall reliability for all themes was tested by Cronbach's Alpha ($\alpha= 0.88$)

Ethical Considerations: Approval to conduct the study was obtained from an ethical committee in the Faculty of Nursing at the University of Alexandria. Permission for data collection was obtained from the hospitals authorities. Written informed consent was obtained from the students' nurses and their preceptors.

Participants were shared in the study voluntarily and based on anonymity.

Results

All statistical tests were performed using IBM SPSS statistics program version 21. Quantitative data were described by mean and median as measures of central tendency & Standard deviation, minimum, maximum, and inter-quartile range as measures of dispersion, while categorical variables were summarized by frequency and percent. Questions that were correctly answered by participants were summed to calculate the total knowledge score as well as the knowledge score per each domain. To analyze the perception scale (5– Likert scale ranged from strongly disagree=1 to strongly agree=5). All responses have summed all items or statements per each participant and calculated the total perception score. A significant association between the categorical variables was done by using of Chi-square test. Mann-Whitney test was used to compare median quantitative knowledge and perception scores between different dichotomous variables.

Sociodemographic Data of the Expert Panel: A total of 15 experts participated in the generation of core competencies. One-third of the sample was preceptors (33.3%) and two-third were nursing educators (66.7%). The gender of the participants was 3 males (20%) and 12 females (80%). Most of the panel has more than 10 years of experience (80%).

Exploring the Students' Nurses' Preparedness and Readiness to Care for Critically Ill Patients: Tools 2 & 3 were distributed to a total of 210 students' nurses during the orientation day of the last month in the internship year. Only 183 (87.1%) of students' nurses agreed to participate in the study.

Table (1): Sociodemographic & Clinical Characteristics of the Participants

Sociodemographic & Clinical Characteristics (n = 183)	Frequency	Percent (%)
Sex:		
Male	48	(26.2)
Female	135	(73.8)
Marital Status:		
Single	119	(65.1)
Married	64	(34.9)

Sociodemographic & Clinical Characteristics (n = 183)	Frequency	Percent (%)
Level of entry into the bachelor’s program:		
Secondary school	149	(81.4)
Bridge diploma degree	34	(18.6)
Have you worked during the education?		
No	69	(37.7)
Yes	114	(62.3)
Were you regularly attended the lectures?		
No	36	(19.7)
Yes	147	(80.3)
Were you regularly attended the clinical (Lab/Hospital)?		
No	32	(17.5)
Yes	151	(82.5)
Age		
Mean (SD)	24.6(1.1)	
Median (IQR)	(23-25)	
Min-Max	(22-27)	

Table (1) shows the sociodemographic and clinical characteristics of the participants. The mean age of the students was 24.6 years. Most of the sample was female (73.8%), single (65.1 %), and admitted to the bachelor’s program after completion of secondary school (81.4%). Most of the students (62.3%) had worked during enrolling in the nursing program. Also, most of them were committed to the attendance of lectures and clinical training (80.3 % & 82.5%).

Table (2) illustrates the mean and median knowledge scores per each domain as well as the total knowledge score. it shows that the median knowledge score was generally low (MD: 14) denoting insufficient knowledge with the range of total questions that were correctly answered ranged between 2 to 27 out of a total 50 questions. The average number correctly answered by participants was only 14 out of 50 (mean, SD 14.12, 4.03). About half of nurses have a total knowledge score above average (56.8%).

Table (2): Students’ Nurses Clinical Knowledge Mean Readiness-to-Practice Scores

Domains of Clinical Knowledge	Maximum Range of Scores	Mean Score (SD)	Median (Min-max) IQR	Above average	Below average
				Frequency (%)	
Airway & Breathing Management	15	4.68(2.22)	5(0-10) (3-6)	87(47.5)	96(52.5)
Perfusion & Hemodynamic Monitoring & Management	15	4.24(1.89)	4(0-10) (3-5)	100(54.6)	83(45.4)
Nutrition & GIT Management	12	3.07(1.68)	3(0-8) (2-4)	107(58.5)	76(41.5)
Medications & Fluids Calculation	2	.60(.63)	1(0-2) (0-1)	88(48.1)	95(51.9)
Communication, Decision Making, and Leadership Skills	6	1.5(1.05)	1(0-4) (1-2)	98(53.6)	85(46.4)
Total Knowledge Score	50	14.12(4.03)	14 (2-27) (11-16)	79(43.2)	104(56.8)

Table (3): Students Nurses’ Perception Regarding Their Preparedness & Readiness to Practice as Critical Care Nurse

Domains of Casey–Fink Readiness Perception Scale (CFRPS)	Max. range of scores	Mean score (SD)	Median (Min-max) IQR	Median score % (min-max) (IQR)	Below the Average	Above the Average
					Frequency (%)	
Patient Care Skills	35	25.01(4.9)	26(7-35) (22.75-28)	74.28(20-100) (65-80)	90(49.2)	93(50.8)
Communication Skills	10	7.32(1.76)	8(2-10) (6-9)	80(20-100) (60-90)	78(42.6)	105(57.4)

Domains of Casey–Fink Readiness Perception Scale (CFRPS)	Max. range of scores	Mean score (SD)	Median (Min-max) IQR	Median score % (min-max) (IQR)	Below the Average	Above the Average
					Frequency (%)	
Problem – Solving Skills	15	10.98(2.17)	11(3-15) (10-12)	73.33(20-100) (66.6-80)	66(36.1)	117(63.9)
Leadership Skills	5	3.61(.99)	4(1-5) (3-4)	80(20-100) (60-80)	74(40.4)	109(59.6)
Other Items	10	7.25(1.68)	8(2-10)	80(20-100) (70-80)	82(44.8)	101(55.2)
Total Perception Score	75	54.28(9.27)	56(15-75) (49-60)	74.66(20-100) (65.33-80)	79(43.2)	104(56.8)

Table (3) shows that the median total perception score percentage is 74.66% and it ranged between 20 to 100. Nurses’ perception or attitude was generally positive toward their readiness to care for critically ill patients. The median score was 56 denoting that 50% of answers were above this value. This denotes about 50% of nurses answered at least 11 questions as “strongly agree” out of 15 questions of perception. Also, more than half of nurses (56.8) had a total perception score greater than the average 54.28 (9.27).

Correlations between the Variables: Table (4) reveals that there was insignificant linear relationship existed between the total knowledge score and total perception score (p.183). There was no association between the clinical knowledge and the self-perceptions

of the students. The students had positive insights regarding their readiness for clinical practice; however, the results of their clinical knowledge did not show this confidence. This denotes that, there was a contradiction between the students’ perceptions and clinical knowledge.

Table (4): Correlation between Students’ Nurses’ Clinical Knowledge and their Perceived Readiness for Caring for Critically Ill Patients

	Total Perception Score
Total Knowledge Score	$r_s = .019$ P. 183

R_s Spearman’s rho Correlation Coefficient

Table (5): Correlations between Students Nurses’ Knowledge and Perceptions with Clinical Variables (Level of Entry into the Bachelor’s Program, Working during the Education Period and Regular Attendance of Lectures)

Level of Entry into The Bachelor’s Program	Total Knowledge Score	Total Perception Score in %
	Median (Min-Max) IQR	
Secondary School	14(2-27) (11-17)	73.33(20-100) (64-80)
Bridge Diploma Degree	13(8-21) (11-15)	76(60-92) (76-79)
Sig	U=2126 P.143	U=2811 P.286

Working During the Education Period	Total Knowledge Score	Total Perception Score In %
	Median (Min-Max) IQR	
No	15(2-25) (13-17)	74.6(40-100) (63.33-80)
Yes	13(3-27) (11-16)	74.6(20-96) (68-80)
Sig	U=2891 p.003*	U=4138 p.486
Attendance of the Lectures and Clinical Training	Total Knowledge Score	Total perception score in %
	Median (min-max) IQR	
No	13(7-21) (10.25-14.75)	74.6(24-84) (63.33-80)
Yes	15(2-27) (11-17)	74.6(20-100) (64-80)
Sig	U=3427 p.006*	U=2495 p.782

Results ≤ 0.05 are significant, U: Mann-Whitney test

Table (5) shows there was no significant correlation between total knowledge score, total perception score, and level of entry to the bachelor program (P.143 & P.286). Moreover, there was a significant correlation between the result of the clinical knowledge and the students who did not work during the education period, students who did not work during the education period got higher grades in the clinical knowledge than those who did not. (p.003). However, there was no significant correlation between perceptions of the students who did not work or who did during the education period or not (p.286). Concerning the correlation between the knowledge and perceptions scores and the students' attendance the lectures, the Median total knowledge score was significantly higher among nurses who regularly attended the lectures (p.006) but an insignificant difference existed in the median total perception score between those who regularly attended the lectures or not (p.782).

Discussion

The main emphases of this study were to explore the students' nurses (senior students) preparedness and readiness to care for critically ill patients, determine the students' nurses' perceptions toward their preparedness and readiness to practice as critical care nurse and, compare between the students' nurses' clinical knowledge and their self – perceptions. The result of the current study illuminated and raised the alarm for the

academia to consider and address the clinical preparation of the students because the result of the current study revealed that, the median score of clinical knowledge was generally low and or insufficient and because of this, patient's safety could be negatively impacted. A low level of students' nurses' knowledge could be related to one or more of the following three assumptions. The first assumption was the quality of the students' preparation during the undergraduate period because nurses' competencies are based on the educational content that was taught during the studying period.

The second assumption was the time and or place of the critical care course in the study plan. The critical care nursing course is located and taught during the third year in the four – year undergraduate curriculum. According to adult learning theory, as learners tend to absorb new subjects more deeply, such subjects are expected to be forgotten slower than the old subjects. ⁽¹⁶⁾ Based on this theory, the students are expecting to memorize and retain the courses that were taught during the fourth year more than the courses taught during the third year (critical care course). This also depends on the student's ability for remembering and retention of the knowledge and skills.

Finally, the third assumption was concerned with the misunderstanding of nursing as a profession. Students assumed that nursing as a profession depends on the

demonstration of manual skills and it is not important for a student to demonstrate knowledge. The low level of students' nurses' knowledge revealed by the current study was incongruent with the studies that had been addressed in the same area of the current research. These studies were focused on nurses' knowledge, clinical practice, communication skills, leadership, and decision making.^(8 and 17-23) The problem of the low level of nurses' knowledge was raised in the 1970s and remains a concern for today.⁽²⁴⁾

A surprising result noted in the current study was the student' nurses' self – perceptions. The students had a good insight and high self –perception (confidence or trust) regarding their preparedness and readiness to care for critically ill patients. This result could be owed to two assumptions. One of them that was described by the theory of Paternalism (is a Latin word means father; an action that limits a person's or group's liberty or autonomy and is intended to promote their good).⁽²⁵⁾ During the period of undergraduate education, the students' actions and behaviors were controlled and directed by the academic staff. The academic staff thought that they know more than students so they have the power and authority to decide for them, even if these choices were against the students' will. The same scenario was repeated during the internship year by the preceptors who guided and supervised the students' performance.

By the end of the internship year, the students' nurses felt that they became more mature, free, could control, and assess their level of performance. The second way that could explain the high insight or confidence of the students' nurses; regarding their readiness was revealed by the result of the current study. The majority of the students' nurses were worked in the private hospitals during the education period and they were assigned to and worked independently with the patients, this gave them a feeling of trust, maturity, self – control, and confidence.

Positive or good perceptions of the participants in the current study were in controversy.^(26, 27) They explored new nursing graduates' readiness to practice in real-life situations. Participants described their perceptions as frightening and highlighted their feelings of low self-confidence in dealing with critical situations that required problem-solving, decision-making. Insufficient or inadequate graduates' preparation and clinical exposure during academic preparation were revealed by these studies. Other studies^(15 and 28-30) also explored

undergraduate nursing students' readiness to practice at the point before employment. Students' nurses who participated in these studies mentioned that they were unconfident regarding their readiness for practice.

Conclusion

Based on the findings of the current study, it can be concluded that the students' nurses seem to trust their basic competencies and readiness to practice as a critical care nurse. However, the median knowledge score is generally low denoting insufficient knowledge. There was a significant correlation existed between the clinical knowledge and the students who did not work during the education period.

Recommendations: To assure the quality of care provided by the new graduate nurses to critically ill patients, and patient's safety as well, two pillars (academia or nursing education programs and workplaces or healthcare institutions) should collaborate and work together. No quality improvement in the patient will be suspected without this collaboration. The following are recommendations for both pillars.

Recommendations for Academia:

- Revise the criteria for selecting and recruiting of new clinical instructors. Getting a high GPA is an important criterion for the qualification, but not indicates the readiness of the clinical instructor to work with the students. Ensure adequate orientation and training of the new clinical instructors before their engagement in the teaching of the students.
- Modify the nursing curriculum and move the critical care course from the third year to the fourth year to ensure adequate retention of critical care knowledge and skills.
- Collaborate, consult, share with, and highlight the needs of the workplace leaders when developing or modifying the content (competencies) of the curriculum. This could bridge the gap between theory and practice and improve the quality of care and patients' safety.
- Revise and use the student-centered teaching method that focus on the development of critical thinking, clinical reasoning, and knowledge retention such as problem-based and reflective learning. These method of leaching enhance students' learning independence and develop their critical thinking and problem-solving skills.

- Engage objective and reliable method of assessment that are compatible with the student-centered method of teaching.
- Collect the students' feedback regarding their satisfaction with the instructors, courses' content, teaching method, assessment method, and facilities.
- Collect the instructors and faculty feedback regarding their working conditions.

Recommendations for workplace leaders:

- Develop a preceptorship or mentorship program. A preceptor or a mentor is an experienced nurse who partners new graduates during their early transition phase (first month) guides, the practice and instructs them regarding their role as care providers.
- The ongoing nursing shortage and the high turnover rates of nurses have led workplace leaders to assign the critically ill patients, with their high complexity conditions, to the new graduate nurses who still need more training and more supervision and support from the experienced nurses. So, stop the calming of academia and find a solution to the problem of the nursing shortage.
- Develop partnerships and continuous collaboration with nursing programs.
- Develop and apply continuous in-service education for new graduates, especially during the first year. Topics should be focused on clinical care, communication techniques, conflict management, prioritization skills, and leadership development.

Recommendation for Further Research:

Further researches should focus on the following topics:

- Factors that influence the readiness of student nurses to practice as a registered nurse.
- Determining the students nurses' feedbacks toward the teachers, critical care course content, teaching method, and assessment method.
- Evaluation of educational strategies that are implemented to enhance critical thinking and decision making in the nursing population

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References

1. Enas M Basuni, Magda M Bayoumi. Improvement of critical care patient safety: using nursing staff development strategies, in Saudi Arabia. Multicenter Study *Glob J Health Sci.*2015; 7(2):335-43.
2. Cain C, Miller J, eds. Aliso Viejo, CA. American Association of Critical-Care Nurses; 43 pages; paperback. *Crit Care Nurse*, 2019; 39(4): 69.
3. American Association of Critical-Care Nurses. *Critical Care Patient safety* (2019).
4. World Health Organization (WHO). *Nurse Educator Core Competencies*. (2016).
5. Nur Islami Mohd Fahmi Teng and Anis Farhana Ahmad Najlan. Determining Dietetics Students' Readiness to Practice: an Exploration of Student Perceptions. *Pak. J. Nutr.*, 2019; 18 (2): 178-185.
6. Tainter CR, Wong NL, Bittner EA. Innovative strategies in critical care education. *J Crit Care*; 2015; 30: 550-556.
7. Isabel Jamieson, Deborah Sims, Arindam Basu, and Kate Pugh. Readiness for practice: The views of New Zealand senior nursing students. *Nurse Education in Practice*, 2019; 38: 27-33.
8. Mohamad AlMekkawi*, Rouwida El Khalil. New Graduate Nurses' Readiness to Practice: A Narrative Literature Review. *Health Professions Education*, 2020; 6(3): 304-316.
9. Mampunge, F. Experiences of final year nursing students at a public college of nursing in the eastern cape province regarding their preparedness to become registered nurses. M.CUR. Thesis, University of Fort Hare, South Africa 2013.
10. Gibson, S., J. Dart, C. Bone, and C. Palermo. Dietetic student preparedness and performance on clinical placements: Perspectives of clinical educators. *J. Allied Health*, 2015; 44: 101-107.
11. Sabri N, Sun NZ, Cummings BA, Jayaraman D. The Perceived Effect of Duty Hour Restrictions on Learning Opportunities in the Intensive Care Unit. *J Grad Med Educ*, 2015; 7: 48-52.
12. Dlamini CP, Mtshali NG, Dlamini CH, Mahanya S, Shabangu T, Tsabedze Z. New graduates' readiness for practice in Swaziland: an exploration

- of stakeholders' perspectives. *J Nurs Educ Pract*, 2014; 4(5):148.
13. Usher K, Mills J, West C, and Park T, Woods C. Preregistration student nurses' self-reported preparedness for practice before and after the introduction of a capstone subject. *J Clin Nurs.*, 2015; 24(21e22):3245e3254.
 14. Kaihlanen A-M, Salminen L, Flinkman M, Haavisto E. Newly graduated nurses' perceptions of a final clinical practicum facilitating transition: a qualitative descriptive study. *Collegian*, 2019; 26(1):55e61.
 15. Casey, K., R. Fink, C. Jaynes, L. Campbell, P. Cook, and V. Wilson. Readiness for practice: The senior practicum experience. *J. Nurs. Educ.*, 2011; 50: 646-652.
 16. Khobi M. Comparing the learning and satisfaction of the third-year undergraduate students of Tehran University of Medical Sciences in two methods of training via CD and traditional training 1391-1390 (dissertation) School of Nursing and Midwifery, Tehran University of Medical Sciences, 2012.
 17. Bendall, E. Learning for reality. *Journal of Advanced Nursing*, 1976; 1, 3-9.
 18. Benner, P. From novice to expert. *American Journal of Nursing*, 1982; 3, 402-407.
 19. Benner, P. From novice to expert: Excellence and power in clinical nursing practice. Menlo Park, California: Addison-Wesley; 1984.
 20. Benner, P. & Wrubel, J. Skilled clinical knowledge: the value of perceptual awareness. *Nurse Educator*, 1982; May-June, 11-17.
 21. Janelle L Theisen and Kristin E Sandau. Competency of New Graduate Nurses: A Review of Their Weaknesses and Strategies for Success. *The Journal of Continuing Education in Nursing*, 2013; June.
 22. Riitta-Liisa Lakanmaa, Tarja Suominen, Juha Perttilä, Marita Ritmala-Castrèn, Tero Vahlberg, Helena Leino-Kilpi. Graduating nursing students' basic competence in intensive and critical care nursing. *J Clin Nurs*. 2014; Mar; 23(5-6):645-53.
 23. Melanie Murray, Deborah Sundin, and Vicki Cope. New graduate nurses' understanding and attitudes about patient safety upon transition to practice. *J Clin Nurs.*, 2019; 28:2543-2552.
 24. Melanie Murray, Deborah Sundin, and Vicki Cope. New graduate registered nurses' knowledge of patient safety and practice: A literature review. *Journal of Clinical Nursing*, 2017; 27(1-2), 31-47.
 25. Dworkin, Gerald, "Paternalism", *The Stanford Encyclopedia of Philosophy* (Summer 2010 Edition), Edward N. Zalta (ed.)
 26. Elizabeth Watt and Elizabeth Pascoe. An exploration of graduate nurses' perceptions of their preparedness for practice after undertaking the final year of their Bachelor of Nursing degree in a university-based clinical school of nursing. *International Journal of Nursing Practice*, (2013; 19: 23-30.
 27. Wolff AC, Pesut B, Regan S. New graduate nurse practice readiness: perspectives on the context shaping our understanding and expectations. *Nurse Educ Today*, 2010; 30(2):187e191.
 28. Chappy S, Jambunathan J, Marnocha S. Evidence-based curricular strategies to enhance BSN graduates' transition into practice. *Nurse Educat*. 2010; 35(1):20e24.
 29. Woods C, West C, Mills J, Park T, Southern J, Usher K. Undergraduate student nurses' self-reported preparedness for practice. *Collegian*. 2015; 22(4):359e368.
 30. Numminen O, Laine T, Isoaho H, Hupli M, Leino-Kilpi H, Meretoja R. Do educational outcomes correspond with the requirements of nursing practice: educators' and managers'? Assessments of novice nurses' professional competence. *Scand J Caring Sci*. 2014; 28(4):812e821.

Factors Influencing Self-Care Behavior in Older Persons with Hypertension

Amornrat Sangsaikaew¹, Benjayamas Pilayon², Khunphitha Junsevg¹,
Chaiwat Inchaiya³, Chinnakorn Dankasai², Apinya Koontalay⁴

¹Lecturer, Department of Adult and Aging Nursing, Boromarajonani College of Nursing Nakhon Phanom, Nakhon Phanom University, Nakhon Phanom, Thailand, ²Lecturer, Department of Community Health Nursing, Boromarajonani College of Nursing Nakhon Phanom, Nakhon Phanom University, Nakhon Phanom, Thailand, ³Lecturer, Department of Mental Health and Psychiatry Nursing, Boromarajonani College of Nursing Nakhon Phanom, Nakhon Phanom University, Nakhon Phanom, Thailand, ⁴Independent Researcher, Bangkok, Thailand

Abstract

Background of the Study: Hypertension and self-care behavior in older persons with hypertension are chronic health problems and this continues to increase in the Thai population.

Objectives of the Study: To identify factors influencing self-care behavior among older persons with hypertension in relation to personal factors and risk factors pertaining to illness and treatment.

Method: This was a prospective observational study design. The samples were to be 60 years of age, diagnosed with hypertension more than six months, and receiving the treatment at a Tambol Health Promotion Hospital. The 127 patients were enrolled in the study. Data were collected during March – September 2020. Finally, data were analyzed using binary logistic regression analysis method.

Result: There were 127 patient included in the present study, it was found that the samples who are farmers had dietary behavior score 6.74 times higher than other occupations (AOR = 6.74, 95% CI:1.47-30.97, p=0.01). The female subjects with waist circumference over 80 cm had a adherence score of stress management 5.69 times higher than those with waist circumference less than 80 cm (AOR = 5.69, 95%CI: 1.19-27.17, p=0.020) and the older persons with a good level of knowledge of hypertension had proper self-care behavior better than those with a lower level of the knowledge with statistical significance at 0.05. In addition, factors not associated with self-care behavior included age, gender, body mass and duration of hypertension.

Conclusion: Personal factors and factors related to illness that influence of self-care behavior included farmers, waist circumference and knowledge of hypertension.

Keywords: *Self-Care behavior, Older, Hypertension.*

Introduction

Hypertension, which is caused by vascular abnormalities of large and small vessels in critical

organs, has been persistently reported over the world. This disease accounts for the increasing mortality rate every year and is considered a major risk for CVD and stroke¹. According to worldwide data, there are 1.13 patients with hypertension². It is found to be a major cause of premature mortality worldwide; in that, one fourth of men and one fifth of women are diagnosed with hypertension, and less than one fifth population are in the condition of uncontrolled hypertension³.

Corresponding Author:

Miss. Amornrat Sangsaikaew

Lecturer, Boromarajonani College of Nursing Nakhon Phanom, Nakhon Phanom University, Thailand-48000

e-mail: a_sangsaikaew@npu.ac.th

In Thailand, the number of hypertension-associated patients increased from four million in 2013 to six million in 2018. The patients who died from hypertension increased from 5,186 in 2013 to 8,525 in 2017. Expenditure on treatment of hypertension patients rose by as high as TB 8 billion per 10 million populations⁴. Hypertension develops when systolic pressure is elevated over 140 mmHg and that of diastolic pressure over 90 mmHg. Hypertension is attributed to elevated diastolic pressure, resulting in the damage of the walls of blood vessels. Consequently, the endothelial layer is ruined and leads to fibrin formation, localized swelling and thrombosis. Thus, this reduces artery to cardio, brain, kidney and retina, resulting in abnormality of organs¹. There are both controlled and uncontrolled causative association of high blood pressure. Underlying risk factors in hypertension and complications in cardiovascular systems, brain and kidney include excess salt and fat, lack of exercise, smoking, alcohol consumption, overweight and stress². It seems that these factors could, indeed, be mitigated or addressed through self-care behavior change. Meanwhile, uncontrolled risk factors include family history of hypertension, age and co-occurring disease (e.g., diabetics, kidney disease).

Hypertension is reported to affect physical, mental and socio-economic conditions. In relation to physical impacts, hypertension is considered a silent killer in that no symptoms of death are expressed. In addition, prolonged hypertension may result in consequent complications such as cardiovascular complications, load of cardiac functions, which leads to arterial wall thickness. Unless left untreated for prolonged period of time, the patients are likely to develop heart attack or even cost their life. In addition, complications of cardiovascular diseases could also lead to stroke, and cerebral artery stenosis, likely to paralysis. Furthermore, nephrotic complications and chronic kidney disease also cause the patients dead. The impact of the disease may extend to physical, mental, and socio-economic aspects. Its effect accounts for increasing treatment expenses and expenditures⁴. In particular, among older persons with hypertension, not only age itself is one of the disease risk factors, but is self-care behavior a cofactor in prognosis as they have a likelihood of less self-care due to such conditions as deteriorating body functions, living alone, less socialization, insufficient income, depression, and lack of caregivers⁵. The objective of the current research aimed to investigate factors influencing self-care behavior among older persons with hypertension in

relation to personal factors and risk factors pertaining to illness and treatment (i.e., sex, age, waist circumference, BMI, and older persons' knowledge on hypertension).

Material and Method

Study Design: The current study employed the descriptive approach through observation and prospective study. The subjects eligible to the study included having systolic blood pressure (SBP) above 140 mmHg and diastolic blood pressure (DBP) above 90 mmHg, being diagnosed with hypertension more than six months and receiving the treatment at a Tambol Health Promotion Hospital. As for inclusion criteria, the subjects were to be 60 years of age, diagnosed with hypertension more than six months, conscious, able to communicate and understand Thai, consent to research participation. However, those unable or unwilling to participate in the research through the course of research were excluded from the study.

As for size sample calculation, as the number of population was unknown, the sample size was calculated using G*power. This analysis program is reported of reliability. The test power was tested at .80, the level of statistical significance at .05 ($\alpha = .05$) and the level of effect sizes at .25⁵. According to the calculation, 127 samples, the total of the subjects was 127 cases. Data were collected during March – September 2020.

Outcome Measures

Research Tools: Three research tools employed to collect data are as follows.

1. General data record of aged patients with hypertension. The record designed to obtain information on personal data (i.e., age, sex, marital status, education, occupation, family income), illness (i.e., underlying disease), medical history, body mass, waist circumference, disease diagnosis, the course of experiencing high blood pressure, medication and dose, blood sugar level before breakfast and the level of hypertension.
2. Questionnaires about hypertension. The questionnaire comprises 10 questions in which the three choices shown to the respondents who were to give a tick either *correct*, *incorrect* or *not know*. In the event that they gave a correct answer, that question is scored 1 point; conversely, any questions given an incorrect answer and not know are given no score. A total score is 10 points.

3. Assessment tool of self-care behavior. The author underwent the relevant literature review provided by Bureau of Non-communicable Disease, the department of disease control, Ministry of Public Health⁶. Its contents cover health behavior, dietary behavior (14 items), exercise behavior (5 items), stress management (8 items), adherence to medication and treatment (8 items). There is a total of 35 items. The questionnaire is rated ranging from 1 to 5 level, namely *Unable to practice at all*, *Able to practice but ignore it*, *Able to practice sometimes*, *Able to practice almost every time*, and *Able to practice every time*, respectively.

Validation of Measurement Tools: Research tools employed in this study included a questionnaire testing on hypertension knowledge and self-care behavior assessment test. Its content validity was verified by three experts in the field and CVI was 0.65. Afterward, the tools was subjected to modification and test for reliability. The tool underwent a trial in 20 hypertension older persons whose conditions were similar to those of the subjects of study⁷. The Cronbach's score was 0.72.

Data Collection: After the ethic committee had granted the research approval, the population underwent sampling among older persons with blood pressure, qualification meeting the specified criteria and residing in Tambol, comprising 11 villages, each of which had 12-13 cases. The recruited samples were offered the account of research objectives. As for protection of patients' rights, once agreeing to participate in the project, the eligible samples signed the consent form pertaining to rights protection and cooperation for responding questionnaire. Personal data were collected from the record forms; the knowledge on hypertension was collected by interview. Following questionnaire responding, the samples were measured for blood pressure in a sitting position three times at a five-minute break² and underwent waist circumference.

Results

Characteristics of the participants: The characteristics of the subject is summarized in Table 1. There were a total of 127 samples, the majority of whom were females (70.9%), aged 60-69 ($\bar{x}=69.13$). Eighty percent of the subjects practiced agriculture as the main occupation. On the basis of mass index,

the subjects (37.1%) were associated with obesity. The subjects were reported of duration of diabetic ($\bar{x}=6.7$) and hypertension ($\bar{x}=4.6$). According to waist circumference, the waist size of the male subjects was less than 90 cm and bigger waist circumference above 80 cm in the females (Table 1).

Table No. 1: Characteristics of the participants (n=127)

Variables	Number	Percent
Age-years (Mean= 69.13, SD = 7.6)		
60-69	76	61.1
70-79	38	29.5
>_80	13	10.4
Gender		
Male	37	29.1
Female	90	70.9
Occupation		
Farmers	106	83.5
Employment	4	3.1
civil servants	4	3.1
Other	13	10.3
Body Mass Index (Mean= 23.47, SD = 3.9)		
Underweight(<18.5 km/m. ²)	13	10.2
normal(18.5-22.9km/m. ²)	45	35.4
Overweight(23.0-24.9km/m. ²)	22	17.3
obesity (≥25.0 km/m ²)	47	37.1
Duration of Diabetic (Years) (Mean= 6.7, SD = 8.2)		
<5 year	69	54.3
≥ 5 year	58	45.7
Duration of Hypertension (Years) (Mean= 4.6, SD = 5.1)		
<5 year	75	59.1
≥ 5 year	52	40.9
Waist (cm)		
Men		
<90 cm	115	90.6
≥90 cm	12	9.4
Women		
<80 cm	51	40.2
≥80 cm	76	59.8

Table No. 2: Knowledge of hypertensive and self-care behavior (n=127)

Variables	Number	Percent
Knowledge of hypertensive (Mean = 8.62 SD = 1.57)		
1-8 (poor)	44	34.6
9-10 (good)	83	65.4
Self-care behavior		
Dietary behavior (14 items)		
Adherent	8	6.3
Nonadherent	119	93.7
Exercise behavior (5 items)		
Adherent	21	16.54
Nonadherent	106	83.46
Adherence to medication and treatment (8 items)		
Adherent	111	87.4
Nonadherent	16	12.6
Stress management (8 items)		
Adherent	74	58.27
Nonadherent	53	41.73

Knowledge of Hypertensive and self-care behavior: Table 2 shows the total scores of hypertension

knowledge and self-care behavior. The knowledge regarding hypertension of 83 older persons (65.4%) with hypertension was ranged good, which is higher than the median score, while the other 44 older persons (34.6%) had a poor score, which is lower than the median score⁸. Regarding self-care behavior, out of 127, 111 subjects (84.4%) were adherent to medications and 74 (58.27%) to stress management. In addition, there were 119 (93.7%) subjects nonadherent to dietary behavior and 106 (83.46%) nonadherent to exercise behavior.

Factors predicting self-care behavior: Farmers had dietary behavior score 6.74 times higher than other occupations with statistical significance at 0.05 (AOR = 6.74, 95%CI:1.47-30.97, p=0.01), while civil servants had the lowest score in relation to other occupations with statistical significance at 0.05 (AOR = 0.02, 95%CI:0.001-0.25, p=0.003). The female subjects with waist circumference over 80 cm had a adherence score of stress management 5.69 times higher than those with waist circumference less than 80 cm with statistical significance at 0.05 (AOR = 5.69, 95%CI: 1.19-27.17, p=0.020). Factors not associated with self-care behavior included age, gender, body mass and duration of hypertension (Table 3).

Table No. 3: Factors predicting self-care behavior using binary logistic regression (n=127)

Variables	Dietary behavior Adjust OR (95%cl)/p-value	Exercise behavior Adjust OR (95%cl)/p-value	Adherence to medication and treatment Adjust OR (95%cl)/p-value	Stress management Adjust OR (95%cl)/p-value
Age				
60-69	1.48 (0.35-6.23)/0.59	0.53 (0.19-1.48)/0.22	0.49 (0.17-1.40)/0.18	0.98 (0.48-2.02)/0.96
70-79	0.70 (0.16-3.08)/0.64	1.98 (0.62-6.36)/0.25	1.49 (0.50-4.45)/0.47	1.02 (0.48-2.19)/0.95
>_80	Undefined	2.26 (0.27-18.63)/0.45	2.66 (0.63-11.16)/0.63	0.97 (0.29-3.23) 0/.95
Gender				
Male	2.92 (0.35-24.69)/0.32	0.75 (0.27-2.07)/0.58	1.14 (0.37-3.52)/0.82	0.79 (0.36-1.73)/0.54
Female	0.34 (0.04-2.90)/0.32	1.33 (0.48-3.65)/0.58	0.88 (0.28-2.73)/0.82	1.27 (0.58-2.80)/0.54
Occupation				
Farmers	6.74 (1.47-30.97)/0.01*	0.49 (0.10-2.35)/0.3	0.53 (0.15-1.85)/0.31	2.04 (0.75-5.57)/0.16
Employment	0.21 (0.02-2.48)/0.21	0.19 (0.03-1.39)/0.10	2.27 (0.21-24.12)/0.49	1.41 (0.19-10.52)/0.73
Civil servants	0.02(0.001-0.25)/0.003*	Undefined	2.86 (0.26-31.33)/0.39	4.26 (0.47-38.89)/0.19
Body Mass Index				
Underweight/normal	2.14 (0.49-9.37)/0.31	1.51 (0.59-3.85)/0.39	0.76 (0.27-2.17)/0.60	1.58 (0.77-3.25)/0.21
Overweight/obesity	1	1	1	1

Variables	Dietary behavior Adjust OR (95%ci)/p-value	Exercise behavior Adjust OR (95%ci)/p-value	Adherence to medication and treatment Adjust OR (95%ci)/p-value	Stress management Adjust OR (95%ci)/p-value
Duration of hypertension (Years)				
<5 year	1.11 (0.25-4.94)/0.89	0.58 (0.23-1.49)/0.25	0.43 (0.13-1.43)/0.16	0.70 (0.34-1.45)/0.34
≥ 5 year	1	1	1	1
Waist (cm)				
Men				
<90 cm	Undefined	1.25 (0.21-7.62)/0.80	0.48 (0.05-4.81)/0.53	2.13 (0.52-8.70)/0.29
≥90 cm		1	1	1
Women				
<80 cm	0.16 (0.02-1.48)/0.10	0.89 (0.18-4.49)/0.88	0.81 (0.16-4.20)/0.79	5.69 (1.19-27.17)/0.02*
≥80 cm	1	1	1	1

Adjust OR: Adjusted odds ratio, CI: Confidence Interval, * $P=0.05$

Knowledge of hypertensive predicting self-care behavior: The older persons with a good level of knowledge of hypertension had proper self-care behavior

better than those with a lower level of the knowledge 19.75 times with statistical significance at 0.05. (AOR = 19.75, 95%CI:1.61-242.58, $p=0.020$) (Table 3).

Table No. 4: Knowledge of hypertensive predicting self-care behavior all level using binary logistic regression (n=127)

Knowledge of hypertensive	Adjusted odds ratio (95% confidence interval)	P-value
< 9 scores (poor)	1	
≥ 9 scores (good)	19.75 (1.61 – 242.58)	0.020*

* $P=0.05$

Discussion

The current study was designed to investigate factors associated with self-care behavior among older persons with hypertension. It emphasizes both personal factors and factors related to illness and treatment that influence four domains of health behavior: dietary behavior, exercise behavior, adherence to medication and treatment, and stress management.

Given occupation, the farmers had a higher score of self-care behavior on dietary behavior in relation to other occupations (i.e., employee and civil servants). This may be explained that they have poor self-care behavior concerning eating habits; in that, they may have high intake of excess salt diet, excess fat diet and dessert, while they have low intake of fruits and vegetables. This

finding supports a study, which found that among 205 subjects, a great number of farmers usually add salt, seasoning powder and sauce and consume high fat diet in relation to employment⁹. Another explanation is that older persons residing in the country rarely prepare meals for themselves but food is provided or cooked by their caregivers whose food taste (e.g., spicy or sweet dishes) may depend on their personal preferences regardless of age. Furthermore, older persons tend to participate less in physical activity and exercise. These factors could contribute to increasing hypertension.

The female subjects with waist circumference over 80 cm had more practice of undergoing stress management compared to those with waist circumference below 80 cm. Several previous studies have confirmed that body mass index (BMI) and waist circumference (WC) could

be one of the clinical indicators of obesity. In addition, the prevalence of hypertension increase with waist circumference¹⁰. Self-care behavior of older persons in stress management has correlation with females with waist circumference over 80 cm; in that, obese females have a high risk of hypertension. This finding matches with a study which suggests that a middle level of stress and waist circumference over 90 cm is associated with hypertension¹¹.

The older persons with a good level of hypertension knowledge had self-care behavior better than those with inferior knowledge of hypertension. Thus, it may be argued from the current study that patients with a good level of hypertension knowledge had better self-care practices⁸. This finding confirms a study which assessed hypertension among 152 cases and found that a level of knowledge and self-care behavior could predict weight management and medication regimes¹².

Limitations of the study: Our study was showed the small sample size might not be generalized of the total population.

Conclusions

The results of this research showed that farmers, female with waist circumference and knowledge of hypertension were identified to be contributing factors of self-care behavior four domains: dietary behavior, exercise behavior, adherence to medication and treatment, and stress management. In addition, the role of nurses in preventing and promoting for older persons' health were significant effects to promote a good quality of life.

Ethical Approval: The ethic committee had granted the research approval and it was numbered NKP REC NO HE 630001.

Conflict of Interest: No potential conflict of interest relevant to this article was reported.

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Reference

1. Benjamin EJ, Muntner P, Alonso A, et al. Heart disease and stroke statistics—2019 update: a report from the American heart association. *Circulation* 2019;139(10):e56–e528.
2. World Health Organization. Hypertension [Internet].2020[cited 2020 October 12]. Available from: https://www.who.int/health-topics/hypertension/#tab=tab_1
3. World Health Organization. World Hypertension Day. 2019[cited 2020 October 12]. Available from: <https://www.who.int/news-room/events/world-hypertension-day-2019>
4. Phannung N, Yuulertlub A, Saranrat. World hypertension day campaign message. Bureau of Non-Communicable Disease, Department of Disease Control [Internet]. 2019[cited 2020 October 12]. Available from: <https://pr.moph.go.th/?url=pr/detail/2/07/127178/>
5. Yang SO, Jeong GH, Kim SJ, et al. Correlates of self-care behaviors among Low-Income elderly women with hypertension in South Korea. *JOGNN*2014; 43: 97-106.
6. Bureau of Non-Communicable Disease, Department of Disease Control, Ministry of Public Health. 2010[cited 2020 October 10]. <http://e-lib.ddc.moph.go.th/pdf/eb430/eb430.pdf>
7. Burns N, Grove SK. The practice of nursing research: Appraisal, synthesis, and generation of evidence (6th ed.). New York: Saunders Elsevier. 2009.
8. Kassahun WC, Asasahegn A, Hagos D, et al. Knowledge on hypertension and self-care practice among adult hypertensive patients at University of Gondar Comprehensive Specialized Hospital, Ethiopia, 2019. *Int J Hypertens*2020. [cited 2020 October 12]. Available from: <https://doi.org/10.1155/2020/5649165>
9. Parvin R, Fariba A, Mehrangiz EM, et al. The predictors of high dietary salt intake among hypertensive patients in Iran. *Int J Hypertens*2020. [cited 2020 October 12]. Available from: <https://doi.org/10.1155/2020/6748696>
10. Momin M, Fan F, Li J, et al. Joint effects of body mass index and waist circumference on the

- incidence of hypertension in a Community-Based Chinese Population. *Obes Facts* 2020; 13: 245–255.
11. Ganesh KS, Naresh AGV, Bammigatti C. Prevalence and risk factors of hypertension among male police personnel in Urban Puducherry, India. *Kathmandu Univ Med J* 2014; 48(4):242-6.
 12. Larki A, Tahmasebi R, Reisi M. Factors predicting self-care behaviors among low health literacy hypertensive patients based on health belief model in Bushehr District, South of Iran. *Int J Hypertens* 2018. [cited 2020 October 12]. Available from: <https://doi.org/10.1155/2018/9752736>

A Comprehensive Review Article on May-Thurner or Cockett Syndrome

Balaji M.S.¹, Darshan Sohi²

¹Ph.D. Scholar, Himalayan University, Itanagar, Arunachal Pradesh, India,

²Principal, CKD, International Nursing College, Amritsar, Punjab, India

Abstract

May-Thurner syndrome—it is also called ilio caval compression syndrome, Cockett syndrome or iliac vein compression syndrome, which occurs secondary to compression of the left iliac vein by the overriding right iliac artery. In the mid-19th century, it was observed that deep vein thrombosis was five times more prone to occur in the left leg. Risk factors for MTS are Female gender, especially those who are postpartum, multiparous, or using oral contraceptives. Clinical presentations of symptomatic MTS include, acute extremity pain and swelling, venous claudication, or chronic development of symptoms/signs of venous insufficiency. The diagnosis of May-Thurner Syndrome is based on the clinical presentation of left lower extremity swelling and pain in association with radiologic evidence of compression. Doppler ultrasound will identify if there is a DVT is present in the iliac vessels, but is unable to visualize iliac vein compression and spurs. In the absence of DVT and for patients with only mild symptoms of left leg swelling or pain, conservative measures of prevention are used, specifically, compression stockings. These are also used if the severity of MTS requires more aggressive invasive interventions.

Keywords: Deep Vein Thrombosis, MTS, & Thrombus Removal with Adjunctive Catheter-Directed Thrombolysis.

Introduction

May-Thurner syndrome—also called ilio caval compression syndrome, Cockett syndrome or iliac vein compression syndrome—occurs secondary to compression of the left iliac vein by the overriding right iliac artery. Virchow was the first author to be credited with describing iliac vein compression. It was not until 1957 that May and Thurner brought much attention to the anatomic variant thought responsible for Virchow's observation. They found that the right iliac artery compressed the left iliac vein against the fifth lumbar vertebra in 22–32% of 430 cadavers. In the mid-19th century, it was identified that deep vein thrombosis was five times more likely to occur in the left leg.¹

Etiology and Incidence: The incidence of May-Thurner syndrome is still unknown and ranges from 18–49% among patients with left-sided lower extremity DVT.² DVT is more common in the left lower extremity compare to the right, and May-Thurner syndrome is known risk factor for patients with left-sided iliofemoral DVT.³ Risk factors for MTS are Female gender, especially those who are postpartum, multiparous, or using oral contraceptives. Scoliosis may predispose to MTS due to compression from the lower lumbar vertebra, dehydration, hypercoagulable disorders, and cumulative radiation exposure.^{4,5}

Signs & symptoms: The majority of individuals with MTS anatomy are asymptomatic, but progression of the venous lesion can cause symptoms related to hypertension. Clinical presentations of symptomatic MTS include, acute extremity pain and swelling, venous claudication, or chronic development of symptoms/signs of venous insufficiency. Female patients can also present with pelvic congestion syndrome related to underlying MTS.⁶ This phenomenon is due to venous

Corresponding Author:

Balaji M.S.

Ph.D. Scholar, Himalayan University, Itanagar,
Arunachal Pradesh, India

e-mail: bforusurroorr@gmail.com

outflow obstruction. Venous claudication is defined as the presence pain at thigh or leg and tightness with exercise, which subsides with rest or elevation.⁷ The classic clinical presentation is that of a younger female in the second or third decade of life with chronic oedema over left lower extremity.⁸

Diagnosis: The diagnosis of May-Thurner syndrome is based on the clinical presentation of left lower extremity swelling and pain in association with radiologic evidence of compression. Doppler ultrasound will identify if there is a DVT is present in the iliac vessels, but is unable to visualize iliac vein compression and spurs. Other diagnostic modalities like computed tomography (CT), CT venography, magnetic resonance venography (MRV), intravenous ultrasound (IVUS) and conventional venography.⁹ Above mentioned imaging techniques may help in planning catheter-directed thrombolysis without the initial need for conventional venography. These non-invasive imaging modalities are simple, efficient and cost-effective in diagnosing DVT associated with iliac compression.³

Treatment: Management of the underlying defect is depending on the severity of the clinical presentation. Leg oedema and pain is best evaluated by vascular specialists who both diagnose and treat arterial and venous diseases to ensure that the cause of the extremity pain is evaluated. The diagnosis needs to be confirmed with some sort of imaging.¹⁰

Nonthrombotic MTS with no or mild symptoms—In the absence of DVT, for patients with no or only mild treatment is conservative; compression stockings are usually sufficient for relieving symptoms.

Nonthrombotic MTS with moderate to severe symptoms—For advanced nonthrombotic MTS with symptoms/signs of advanced chronic venous insufficiency and skin discoloration, treatment is targeted toward reducing the severity of the stenotic venous lesion using angioplasty and stenting of the affected segment. Angioplasty of the venous stenotic lesion alone is not sufficient and is associated with high recurrence rates.¹¹ Angioplasty and stenting of MTS lesions also decreases the recurrence rate of superficial reflux following ablation therapies.¹² Following stenting, concurrent antiplatelet therapy is reasonable, provided bleeding risk is low.¹³ For an occluded iliac vein, surgical bypass options include cross-femoral venous bypass performed.¹⁴ Thrombotic MTS with contraindications to

lytic therapy — For patients suspected to have MTS but who have contraindications to lytic therapy, catheter-directed thrombolysis including suction thrombectomy or open surgical thrombectomy are warranted. If thrombolysis is contraindicated, an open cut-down via a common femoral venotomy may be needed to evacuate gross thrombus and to uncover the lesion.^{15,16,17}

The open surgical approach includes dissection of the iliac vein from the overlying iliac vein, open thrombectomy, and possible patch angioplasty of the left iliac vein, possibly adding adjunctive procedures, such as an arteriovenous fistula to enhance flow in the diseased vein.¹¹ Efficacy of endovenous therapy — Prior to refinement of endovenous techniques, thrombotic lesions were treated with anticoagulation or open surgical thrombectomy with dismal results. There was no standard therapy for non-thrombotic MTS.^{18,19}

Advancements in minimally invasive techniques and devices have been instrumental in providing the means to treat iliofemoral stenotic lesions and for decreasing the long-term consequences of venous outflow obstruction.²⁰ Thrombus Removal with Adjunctive Catheter-Directed Thrombolysis (ATTRACT) trial, pharmacochemical catheter-directed thrombolysis plus standard therapy was compared with standard therapy alone for treatment of DVT.^{21,22}

Prevention: Since May-Thurner Syndrome (MTS) increases risk of deep vein thrombosis (DVT) and complications associated with DVT, such as pulmonary embolism, prevention of these risks progressing to clinical events is prudent. In the absence of DVT and for patients with only mild symptoms of left leg swelling or pain, conservative measures of prevention are used, specifically, compression stockings. These are also used if the severity of MTS requires more aggressive invasive interventions. Venous ultrasound imaging is helpful in ruling out more severe manifestations of MTS, such as DVT.

In advanced MTS that demonstrates signs and symptoms of advanced chronic venous insufficiency, such as limb swelling, pain, and skin discoloration, prevention of disease progression aims to reduce stenosis of the vein(s) using angioplasty and stents in the affected segment(s). Angioplasty alone results in a high recurrence rate. Thereafter, compression stockings are used. In advanced MTS that results in venous thromboembolism (VTE), full anticoagulation

therapy is begun (unless contraindicated by pre-existing coagulopathy). Catheter-directed or pharmaceutical thrombolysis is useful in eliminating the clots that may migrate.²³

Discussion

May–Thurner syndrome in the broader disease profile known as non-thrombotic iliac vein lesions (NIVLs) exists in the symptomatic ambulatory patient and these lesions are usually not seen by venography. Morphologically, intravascular ultrasound (IVUS) has emerged as the best current tool in the broader sense. If the patient has extensive thrombosis, it may be appropriate to consider pharmacologic and/or mechanical thrombectomy.

Conclusion

Thrombosis is ideally managed using a multidimensional approach consisting of routine catheter-directed thrombolysis, and physiotherapy and occupational therapy. Increasing awareness among primary care and emergency health care workers will ensure early recognition, timely thrombolysis, and prompt referral to a treatment options like thoracic or vascular surgeon. Future scientific research needs to high lighten on explaining the benefit of thrombolytic therapy in patients presenting delayed, identifying factors that predict ineffectiveness of thrombolysis and need for surgical intervention.

Ethical Clearance: This article is a purely a narrative review article hence it's not required an ethical clearance.

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References

1. May R, Thurner J. The cause of the predominately sinistral occurrence of thrombosis of the pelvic veins. *Angiology* 1957; 8:419–427.
2. McMurrich JP. The occurrence of congenital adhesions in the common iliac veins and their relation to thrombosis of the femoral and iliac veins. *Am J Med Sci* 1908; 135:342.
3. Kasirajan K, Gray B, Ouriel K. Percutaneous angiojet thrombectomy in the management of extensive deep vein thrombosis. *J Vasc Interv Radiol* 2001; 12:179–185.
4. Oguzkurt L, Ozkan U, Tercan F, Koc Z. Ultrasonographic diagnosis of iliac vein compression (May-Thurner) syndrome. *Diag Interv Radiol* 2007; 13:152–155.
5. Steinberg JB, Jacocks MA. May-Thurner syndrome: a previously unreported variant. *Ann Vasc Surg* 1993; 7:577.
6. Kibbe MR, Ujiki M, Goodwin AL, et al. Iliac vein compression in an asymptomatic patient population. *J Vasc Surg* 2004; 39:937.
7. Khan TA, Rudolph KP, Huber TS, Fatima J. May-Thurner syndrome presenting as pelvic congestion syndrome and vulvar varicosities in a nonpregnant adolescent. *J Vasc Surg Cases Innov Tech* 2019; 5:252.
8. MAY R, THURNER J. The cause of the predominantly sinistral occurrence of thrombosis of the pelvic veins. *Angiology* 1957; 8:419.
9. Birn J, Vedantham S. May-Thurner syndrome and other obstructive iliac vein lesions: meaning, myth, and mystery. *Vasc Med* 2015; 20:74.
10. Kibbe MR, Ujiki M, Goodwin A, et al. Iliac vein compression in an asymptomatic patient population. *J Vasc Surg* 2004; 937–943.
11. Butros SR, Liu R, Oliveira GR, Ganguli S, Kalva S (2013). “Venous compression syndromes: clinical features, imaging findings and management”. *Br J Radiol.* 86 (1030): 20130284. doi:10.1259/bjr.20130284
12. Mickley V, Schwagierek R, Rilinger N, et al. Left iliac venous thrombosis caused by venous spur: treatment with thrombectomy and stent implantation. *J Vasc Surg* 1998; 28:492.
13. Yin M, Huang X, Cui C, et al. The effect of stent placement for May-Thurner syndrome combined with symptomatic superficial venous reflux disease. *J Vasc Surg Venous Lymphat Disord* 2015; 3:168.
14. Kearon C, Akl EA, Comerota AJ, et al. Antithrombotic therapy for VTE disease: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest* 2012; 141:e419S.

15. PALMA EC, ESPERON R. Vein transplants and grafts in the surgical treatment of the postphlebitic syndrome. *J Cardiovasc Surg (Torino)* 1960; 1:94.
16. Meissner MH, Glociczki P, Comerota AJ, et al. Early thrombus removal strategies for acute deep venous thrombosis: clinical practice guidelines of the Society for Vascular Surgery and the American Venous Forum. *J VascSurg* 2012; 55:1449.
17. Neglén P, Hollis KC, Olivier J, Raju S. Stenting of the venous outflow in chronic venous disease: long-term stent-related outcome, clinical, and hemodynamic result. *J VascSurg* 2007; 46:979.
18. Igari K, Kudo T, Toyofuku T, et al. Surgical thrombectomy and simultaneous stenting for deep venous thrombosis caused by iliac vein compression syndrome (May-Thurner syndrome). *Ann Thorac Cardiovasc Surg* 2014; 20:995.
19. Karp RB, Wylie EJ. Recurrent thrombosis after iliofemoral venous thrombectomy. *Surg Forum* 1966; 17:147.
20. Lansing AM, Davis WM. Five-year follow-up study of iliofemoral venous thrombectomy. *Ann Surg* 1968; 168:620.
21. Comerota AJ. The ATTRACT trial: rationale for early intervention for iliofemoral DVT. *Perspect Vasc Surg Endovasc Ther* 2009; 21:221.
22. Vedantham S, Goldhaber SZ, Kahn SR, et al. Rationale and design of the ATTRACT Study: a multicenter randomized trial to evaluate pharmacomechanical catheter-directed thrombolysis for the prevention of postthrombotic syndrome in patients with proximal deep vein thrombosis. *Am Heart J* 2013; 165:523.
23. <https://www.vascularhealthclinics.org/institutes-divisions/vascular-surgery-and-medicine/may-thurner-syndrome>

A Study to Assess the Effectiveness of Nurse Intervention Programme on Knowledge Regarding Prevention of Puerperal Infection among Post Natal Mothers in KLE Prabhakar Kore Hospital at Belagavi Karnatak

Belgundkar B.¹, Heikham G.¹

¹Lecturer, OBG Department KLE Academy of Higher Education and Research, Institute of Nursing Sciences, Belgaum

“Healthy Mothers, Healthy babies, Healthy Nations”

Abstract

Introduction: Pregnancy and childbirth are normal physiological process and outcomes of the pregnancies are mostly good. However, a few pregnancies and childbirth expose mothers at risk. Puerperal sepsis or pyrexia is one of the risks, which will develop after delivery, which is often, and unpredictable.

Material and Method: The study was conducted on post natal mothers Pre-validated structured questionnaire was used for the selection of sample. Pre-test was conducted by using questionnaire. The questionnaire had two sections. First consists of eight responses of social demographic variables, second consisted of structured questionnaire about prevention of puerperal infection, intervention was given after five days followed by post test. The collected data was tabulated and analyzed according to the objectives of the study using descriptive and inferential statistics.

Results: Findings revealed that the total mean knowledge score is increased by 70.29 with mean \pm SD of 19.47 \pm 9.93, after the administration of nurse intervention programme (NIP). Paired ‘t’ test was used to find the effectiveness of nurse intervention programme (NIP). The calculated ‘t’ value in knowledge (38.38 p <0.05), was greater than the table value. This showed that the gain in the knowledge was significant after administering nurse intervention programme (NIP).

Keywords: Knowledge, puerperal infection, post natal mothers.

Introduction

Becoming a mother is one of the most exciting times in a woman’s life. The transition from a woman to a mother is an eventful experience.. Motherhood is a beautiful experience which can turn into a tragedy when the family loses the most precious member of the family, the mother. Each year, more than half a million women die in the world from complications of pregnancy and millions suffer from permanent disabilities following these complications¹. The period of pregnancy, delivery and puerperium is considered as a physiologic process that affects the woman physically and emotionally¹ Most Puerperal period is often seen as a smooth, uneventful time that follows, the anticipation of pregnancy and the excitement and work of labor and birth, They require

special care during these periods for a safe motherhood and healthy living.

Postpartum period or puerperium is the period following childbirth and is a time of physiologic stress and major psychological transmission [1]. Puerperium is of great importance for both mother and baby as it is an aspect of maternity care, where which has received relatively less attention compared with pregnancy and delivery. Majority of alarming complications arise immediately following delivery². Energy depletion, fatigue of late pregnancy and labour soft tissue trauma and blood loss during delivery increase the woman’s vulnerability to complications. Puerperal infection is one among the complications and occurs at any time between deliveries of the fetus till 42 days after deliver³. Puerperal

pyrexia and sepsis are among the leading causes of preventable maternal mortality and morbidity not only in developing countries but in developed countries as well. Most postpartum infections take place after hospital discharge, which is usually 24 hours after delivery. In the absence of postnatal follow up, as is the case in many developing countries, many cases of puerperal infections can go undiagnosed and unreported⁴. Puerperal sepsis, which is a serious form of septicemia contracted by women during or shortly after the childbirth, if untreated, is life threatening². Historically; a puerperal infection has been a common pregnancy-related condition, which could eventually lead to obstetric shock or even death. During the 19th century, it took on epidemic proportions, particularly when home –practice changed to delivery in lying-in hospitals, as there still was a total ignorance of a infection often it is important to be aware of problems, that may develop post partly due to soft tissue trauma. Which provide an ideal environment for pathogenic organisms, which may lead to puerperal infection and increase the maternal morbidity and mortality ⁴.

The genital tract infection continues to present a life-threatening problem to women, most virulent organism is beta hemolytic streptococcus but more commonly Chlamydia, Eschechria coli and other gram negative bacteria will be the infective agents. The breast should be examined for sign of breast infection, breast abscess formation is very unusual until after the 14th postnatal day. Urinary tract infection is a common infection in puerperium following the frequent use of catheterization during labor. Some women will also develop urinary retention and require indwelling catheters, so Escherichia coli is commonest pathogens.⁶.

By updating the recent knowledge on prevention of puerperal infection, we can save the life of the women. Postpartum infection is a clinical infection of the genital canal that occurs within 28 days after abortion or child birth. Infection may result from bacteria commonly found within the vagina or from the introduction of pathogens from outside the vagina. The infectious process may remain localized in the reproductive or genital area, urinary tract or breast or it may progress resulting in mastitis, endometritis, peritonitis such infections are a major cause of maternal death ¹⁰

Physicians and nurses are involved in the prevention, diagnosis, and treatment of puerperal infection. Good prenatal care is essential for avoiding the risk of infection after childbirth. Post-partum nurses

assess patients for signs and symptoms of infection and educate patients about these signs and symptoms prior to discharge. A mother who is unfamiliar with prevention of puerperal complications during puerperal period may be disappointed about her health status. Only a healthy mother can bear a healthy baby. Taking advantage of such a phenomena the nurse can play a vital role to encourage the mothers to be more active and take active participation in her own care. Home health nurses making follow-up visits assess patients for signs and symptoms of infection. Emergency physicians are seeing an increasing number of post-partum patients presenting with a fever or evidence of infection due to earlier discharge from the hospital after childbirth.

Objectives of the Study:

1. To assess the knowledge regarding prevention of puerperal infection
2. To design and conduct a nurse intervention programme on knowledge regarding prevention of puerperal infection among post natal mothers.
3. To assess the post –test knowledge score regarding prevention of puerperal infection among post natal mothers
4. To identify the association between knowledge level with selected demographic variables.

Methodology

In view of the nature of the problem under study and to accomplish the objectives of the study evaluative approach was found to be appropriate to describe the nurse intervention programme on knowledge regarding prevention of puerperal infection. Pre-experimental, i.e., one group pre-test post-test design was adopted for the study. Here only one group was observed twice, before and after introducing the independent variable. The effect of treatment would be equal to the level of the phenomenon after the treatment minus the level of phenomenon before treatment, the sample for the present study consists of 40 post natal mothers Non probability convenient sampling technique was found appropriate to select 40 post natalmothers. In this study, the tools used by the researcher to collect data were structured questionnaire on knowledge regarding prevention of puerperal infection.

Data Collection: Prior permission was obtained from the concerned authority. Keeping in mind, the ethical aspect of research data was collected after obtaining

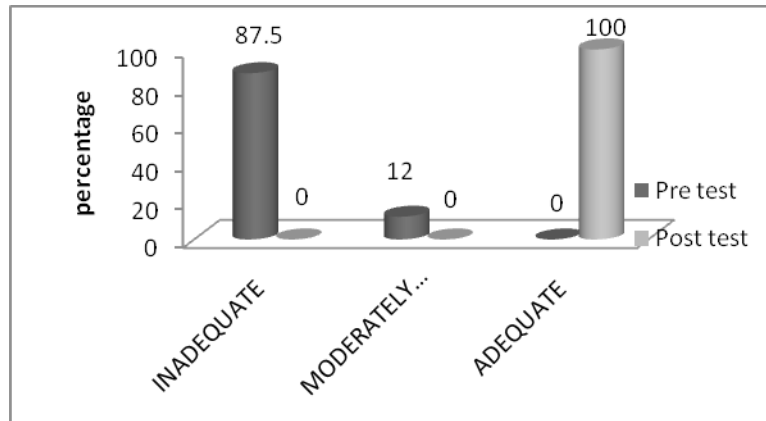
informed consent from the subjects. The respondents were assured the anonymity and confidentiality of the information provided by them. The researcher himself has collected data from the sample. Pre-test was conducted by using structured questionnaire followed by structured teaching programme. Lecture cum discussion

was the method of instruction. LCD projector was used as an AV aid. The duration of the session was 45 minutes. After 7 days a post-test was conducted using the same structured questionnaires to evaluate the effectiveness of the structured teaching program

Results and Discussion

Variables		Inadequate (0- 10 %)		Moderately Adequate (10- 20%)		Adequate (21 – 30 %)	
		F	%	F	%	F	%
Knowledge	Pre	35	87.5%	5	12.5%	0	0
	Post	0	0	0	0	40	100

Table 1: Frequency and percentage distribution of knowledge score. (N=40)



In pre-test, 87.5% of post natal mothers had inadequate knowledge, 12% had moderate knowledge and 0% had adequate knowledge. In post- test 0% of mothers had inadequate knowledge, 26.66% had moderate knowledge and 73.33% had adequate knowledge.

Effectiveness of nurse intervention programme (NIP) on Knowledge regarding prevention of puerperal infection:

Table 2: Comparison of pre-test with posttest Knowledge scores. (N=40)

Knowledge	Mean	Mean %	SD ±	Minimum score	Maximum score
Pre-test	9.725	27.005	13.16	2	17
Post-test	29.2	97.30	3.23	26	30

The pre-test mean percentage of knowledge was 27.005% with a mean ± SD of 9.725± 13.16 with minimum and maximum scores 2 and 17 respectively. The posttest mean percentage of knowledge was 97.30% with a mean ± SD of 29.2± 3.23 with minimum and maximum scores 26 and 30 respectively.

Table 3: Effectiveness of nurse intervention programme (NIP) on prevention of puerperal infection. (N=40)

	Pre-Test			Post- Test			Effectiveness			Paired 't' value
	Mean	Mean%	SD±	Mean	Mean%	SD±	Mean	Mean%	SD±	
Part A Knowledge	9.725	27.005	13.16	29.2	97.30	3.23	19.74	70.29	9.93	38.38

The data presented in the above table shows that the total mean knowledge score is increased by 97.30% with mean \pm SD of 29.2 \pm 3.23, Hence the NIP was found to be effective in terms of knowledge.

Conclusion

The following implications in the various fields of nursing have been stated based on the findings of the study.

The finding of this study was the need of nurse to conduct training programme for the post natal mothers to enhance the knowledge of post natal mothers regarding prevention of puerperal infection

The study proves that post natal mothers gained knowledge level remarkably when compared to their previous knowledge prior to the administration of nurse intervention programme, through these knowledge post natal mother will prevent upcoming complication and problems regarding I puerperal infection

Implications for Nursing Practice: The findings of the present study would help nurses and other healthcare personnel to know the need for educating post natal mothers about the significance regarding prevention of puerperal infection. The education programme conducted by nursing personnel in the hospital and community will help in identifying the needs of post natal mother and prevent the future complication in puerperium. The education programme will help the post natal mother to gain knowledge regarding prevention of puerperal infection

Implications for Nursing Education: The findings suggest that there is increased need for education regarding prevention of puerperal infection in order to be prepared the children in positive way for any instances in future. Nursing education should prepare nurses with potential for imparting health information effectively. The nursing curriculum is a means through which future nurses are prepared. It should include content areas regarding various method by which health information on prevention of puerperal infection can be disseminated effectively, i.e., by adopting different strategies like lecture, discussion etc. The present study intended to be a formal and informal teaching programme for nursing professionals in the hospital so that they can help the post natal mothers to increase the knowledge regarding prevention of puerperal infection.

Implications for Nursing Research: Research is a systematic attempt to obtain answers to meaningful questions about phenomena or events through the application of scientific procedures. It is an objective, impartial, empirical, logical analysis and recording of controlled observations that may lead to the development of generalizations, principles or theories resulting to some extent in prediction and control of events that may be consequences of or causes of specific phenomena. Based on the findings of this study, nurse researchers can undertake extensive studies among post natal mother on prevention of puerperal infection to assess the knowledge, attitudes and practices. Present study would help the nurse to understand the level of knowledge and to plan health education at hospital communities and other settings regarding prevention of puerperal infection.

Implications for Nursing Administration: The nurse administrator has a role in planning the policies for imparting health information to a target population. Nurse administrators need to organize nursing education programmes for the nursing personnel and to motivate them to educate the post natal mother in hospital and community set up regarding the importance puerperium and puerperal infection how it can be prevented which would benefit post natal mothers and the community. Planning and organising such work requires efficient team spirit, planning for manpower, money, material, method, time and goodwill to conduct successful education programmes. The nurse administrators will be able to take the initiative in imparting health information through different effective teaching method. They may utilise the findings of the study for awareness programmes and periodic educational sessions to improve the health knowledge.

Implications in General:

- The present study would help to understand the level of knowledge of the post natal mother regarding prevention of puerperal infection.
- The structured teaching programme can be utilized by other health professionals in improving the knowledge of post natal mother regarding prevention of puerperal infection.

Discussion

India boasts of its cultural heritage and perhaps is the only country in the world to worship women goddesses, yet has perhaps the highest maternal mortality rate. India

has 17.01% of total births globally and 25% of maternal deaths. Several community based studies in different parts of the country have found maternal mortality to be as high as 500-600/1, 00,000 (ICMR 2003). Thus a woman in India has 1 in 70 lifetime risk of dying in pregnancy or childbirth.⁶

The present study finding portrays that there is a significant difference between the pre-test and post-test median scores. In pre-test, 87.5% of post natal mothers had inadequate knowledge, 12% had moderate knowledge and 0% had adequate knowledge. In post-test 0% of mothers had inadequate knowledge, 26.66% had moderate knowledge and 73.33% had adequate knowledge. The pre-test mean percentage of knowledge was 27.005% with a mean \pm SD of 9.725 \pm 13.16 with minimum and maximum scores 2 and 17 respectively. The posttest mean percentage of knowledge was 97.30% with a mean \pm SD of 29.2 \pm 3.23 with minimum and maximum scores 26 and 30 respectively. Indicated that there is an increase in knowledge and practice among post natal mothers regarding prevention of puerperal sepsis after administration of NIP

it is important to reduce the maternal mortality and morbidity through mothers own effort and mothers can put effort when she has enough knowledge and hence can be improve by educating them. Similar finding was revealed by a descriptive study on puerperal infection was conducted at Obstetrical Department of the General Hospital 2A the Mexican Institute of social security to know the real puerperal infection incidence in hospital and to take specific measures in puerperal infection control. The cumulated rate of general puerperal infection was 1.2%. By stratification, the calculated rate of infection after caesarean section, vaginal delivery and miscarriage were 5.4% 0.8% and 0.3% respectively. The puerperal infection was present principally in primiparous and in patients with one previous caesarean section. There was predominance of infection after caesarean section, infection after vaginal delivery and after miscarriage. The five most frequent clinical situations were endometritis alone, endometritis combined with wound abscess, endometritis with urinary infection, complicated endometritis & wound abscess alone. No death was registered among the patients with puerperal infection.

Conflict of Interest: I Mrs Babita. Bconfirms that this manuscript is original and has not been published elsewhere and is not under consideration by any other

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Ethical Clearance: Informed consent was obtained from the Clinical Administrators, Principal and participants of the respected hospital before conducting data collection and maintained the confidentiality and anonymity of the subjects and information gathered.

References

1. Dutta DC. Textbook of obstetrics. 6th ed. Calcutta: New Central Book Agency (P) Ltd; 2004. P. 433-44.
2. Fraser DM, Cooper MA, Myles textbook for midwives. 14th ed. Philadelphia: Churchill Livingstone; 2003. P. 643-49.
3. Evert J. Introduction to pregnancy. British Medical Journal 2005 Aug 12.
4. Sonar AS. Puerperal infection among postnatal mothers. 2007 Oct 7.
5. Crofton VM. Prevention of puerperal infection. Br Med J 1922 Dec 2; 2(3231):1095-6.
6. Maharaj D. Puerperal pyrexia; a review part second. Obstetric Gynecology Surv 2007 Jun; 62(6):400-6.
7. Jovanovic N, Terzic M, Dotlic J, Aleksic S. Prevention of postpartum endometritis; Antibiotic choice. Srp Arh Celok Lek 2009 Sep-Oct; 137(9-10):506-10.
8. Mehta R, Mavalankar DV, Ramani KV, Sheetal S, Hussein J, Infection control in delivery care units, Gujarat state, India: a needs assessment. [Online]. Available from: URL:<http://www.biomedcentral.com/1471-2393>.
9. Shamshad, Shamsher S, Raul B. Puerperal sepsis-still a major threat for parturient. J Ayub Med coll Abbotabad 2010; 22(3).
10. Dare FO, Bako AU, and Ezechi OC. Puerperal sepsis: a preventable postpartum Complication. Tropical Doctor 1998; 28(2):92-5.
11. Peters F, Flick-Fillies D, Ebel S. Hand disinfection as the central factors in prevention of puerperal mastitis. Clinical study and results of a survey. Geburtshilfe Frauenbellkd 1992 Feb; 52(2):117-20.

- 12 Hussein J, Fortney J A. puerperal sepsis and maternal mortality. *International Journal of Gynaecology and Obstetrics* 2004; Suppl 1:S52-62.
- 13 Treece EW, Treece JW. *Elements of research in nursing*. 2nd ed. London: Mosby Publication; 1999.
- 14 George BJ. *Nursing theory-the base for professional nursing practice*. 5th ed. New Jersey: Prentice Hall; 2002.
- 15 Nancy B, Susan KG. *Understanding nursing research*. 2nd ed. Philadelphia: WB, Saunders Company; 2004.
- 16 Von Bertalaffy L. *General System theory: foundation, development applications*. 1976.
- 17 Gillies DA. *Nursing management: a systems approach*. Philadelphia: W. B. Saunders Company; 1982. P. 56-74.
- 18 Polit DF, Beck CT. *Nursing research: principles and method*. 8th ed Philadelphia: Lippincott Williams Wilkins; 2008.
- 19 El-Mahally AA, Karboush IF, Amer NH, Hussein M, Salam TA, Youssef AA. Risk factors of puerperal sepsis in Alexandria. *J Egypt Public Health Assoc* 2004; 79(3-4):311-31.
- 20 Ali TS, Fikree FF, Rohbar MH, Mahmud S. Frequency and determinants of vaginal infection in postpartum period: a cross-sectional survey from lowsocio economic settlements karachi, Pakistan. *J Pak Med Assoc* 2006 Mar; 56(3):99-103

Relationship Between English-Speaking Ability and Anxiety of Undergraduate Students: A Cross-Sectional Survey

Bovornpot Choompunuch¹, Thidarat Surarat², Siwakorn Sakeaw², Wanich Suksatan³

¹M.Ed. Lecturer, Faculty of Education, Mahasarakham University, Thailand, ²B.Sc. Student, Faculty of Education, Mahasarakham University, Thailand, ³Lecturer, Faculty of Nursing, HRH Princess Chulabhorn College of Medical Science, Thailand

Abstracts

This cross-sectional study aimed to examine the relationship between English-speaking ability and anxiety of undergraduate students. A total of 395 undergraduate students' in Thai University were selected using a multi-stage sampling method and the data were analyzed using mean, standard deviation, and Pearson's Product Moment Correlation Coefficient. Results showed that the English-speaking ability of undergraduate students was at the moderate level (\bar{x} = 2.946, S.D. = .419), anxiety of undergraduate students was at the moderate level (\bar{x} = 2.955, S.D. = .415) and these measures were negatively correlated between English-speaking ability and the levels of undergraduate students' at a level of significance of .001 (r = -.225).

Keywords: *Anxiety, English speaking ability, Undergraduate Students.*

Introduction

Generally, anxiety refers to unpleasant sensations that attack human emotions and psychology leading to negative assumptions, anxiety, nervousness, and low self-confidence¹. Anxiety is often identified in the field of educational research² as a common and recognized phenomenon occurring in English language learning classrooms.

English is the most prevalent language in the world either as a second language (ESL) or foreign language (EFL) making it the global international language³. English proficiency is normally measured in terms of four language skills such as speaking, listening, reading, and writing⁴. Among these skills, speaking English could be the most challenging for regular EFL learners⁵.

University students are considered essential human resources for national development in the future⁶⁻⁹. In

addition, English learners tend to be less cooperative in answering questions or participating in activities. Santikarn¹⁰ stated that being nervous and embarrassed to attend class activities leads to anxiety about making mistakes. It is a major barrier to learning languages and contributing to stress, shyness, and anxiety in language learning¹¹⁻¹². In other words, anxiety could detrimentally affect the English language learning ability of students¹³⁻¹⁴.

English is recognized as being instrumental for communication across the borders of students¹⁵. Undergraduate students are expected to learn and improve English skills required for their current study and future career as professionals or scientific researchers¹⁶. However, the main obstacle to studying English in Thailand is mostly due to shame and fear of committing grammar or pronunciation mistakes which may lead to anxiety¹⁷⁻¹⁸. For these reasons, the purpose of this cross-sectional study was to examine the relationship between English-speaking ability and anxiety of undergraduate students. The results of this study could be used to develop interventions aiming to decrease the anxiety levels due to low English-speaking ability and consequently improve the self-confidence and psychological health of undergraduate students.

Corresponding Author:

Wanich Suksatan, M.Sc., RN

Lecturer, Faculty of Nursing, HRH Princess Chulabhorn College of Medical Science, Thailand
e-mail address: wanich.suk@pccms.ac.th

Tel: +66827550027

Method

In this study, a cross-sectional method was used to examine the English-speaking ability and anxiety of undergraduate students' levels and to examine the relationship between English-speaking ability and anxiety of undergraduate students.

Setting and Sample: This study was conducted at Thai university in the second semester of the academic year, March- May 2020. Based on Krejcie, Morgan¹⁹ table for determining the sample size which resulted in a sample size of 395 participants.

Research Instruments: There were three instruments used in this study including: 1) anxiety measurement; using the method developed by Jampawal²⁰ which consisted of 19 items and the internal consistency by Cronbach's alpha coefficient was 0.95, 2) English-speaking ability; consisted of 28 items with internal consistency by Cronbach's alpha coefficient of 0.72, and 3) demographic data consisted of sex, age, academic year, and faculty or college.

Data Collection: After explaining the purpose and processes of our study, we asked permission from the participants who met the inclusion and exclusion criteria and we also informed them that participation or non-participation would not affect their grades. We used a convenience sampling of eligible undergraduate students who are willing to participate in the study. Upon signing the consent form, each student completed the questionnaires in around 10-15 minutes.

Data Analysis: The researchers used descriptive statistics to describe the demographic characteristics of the participants. Pearson correlation analysis was conducted to examine correlations of English-speaking ability and anxiety variables at a level of significance of 0.05. All data were analyzed using the Statistical Package for the Social Sciences (SPSS) 23.

Result

As shown in Table 1, majority of the participants were female, 60.0%, most of participants age was 21 years, 35.2%, and the majority of academic year was fourth year (52.4%) and the largest percentage of participants were the students in the College of Politics and Governance (32.0%).

Table 1 Characteristics of participants (n = 395)

Demographics data	N	%
Sex		
Male	158	40.0
Female	237	60.0
Age (Year)		
18	26	6.6
19	42	10.6
20	62	15.7
21	139	35.2
>21	126	31.9
Academic Year		
1	47	11.9
2	61	15.4
3	80	20.3
4	207	52.4
Faculty/College		
College of Politics and Governance	127	32.0
Faculty of Laws	88	22.0
Faculty of Fine and Applied Arts	32	8.4
Faculty of Cultural Sciences	11	3.0
Faculty of Engineering	49	12.4
Faculty of Science	40	10.1
Faculty of Environment and Resource Studies	14	3.5
Faculty of Public Health	19	4.8
Faculty of Nursing	7	1.8
Faculty of Pharmacy	8	2.0

Based on table 2, the overall English-speaking ability of undergraduate students based on four criteria was of moderate level $2.946 \pm .419$ (Mean \pm SD). Meanwhile, table 3 shows that most students experienced moderate level anxiety ($\bar{x} = 2.955$, S.D. = .415).

Table 2: English-Speaking Ability levels of undergraduate students (n=395)

English-Speaking Ability	\bar{X}	S.D.	Levels
Language or grammatical proficiency ability	3.013	.556	Moderate
Social linguistic ability	2.712	.552	Moderate
Pronunciation ability	2.835	.602	Moderate
Vocabulary ability	3.225	.767	Moderate
Overall	2.946	.419	Moderate

Table 3 Overall of anxiety level (n=395)

Anxiety level	\bar{X}	S.D.	Category
Overall of anxiety level	2.955	.415	Moderate

Table 4: The relationship between English-Speaking Ability and anxiety level of undergraduate students (n=395)

English-Speaking Ability	Anxiety (r)	p-value
Language or grammatical proficiency ability	.212***	<.001
Social linguistic ability	-.214***	<.001
Pronunciation ability	-.091***	<.001
Vocabulary ability	-.132***	<.001
Overall	-.225***	<.001

Based on table 4, we found that language or grammatical proficiency ability ($r = .212$), social linguistic ability ($r = -.214$), pronunciation ability ($r = -.091$), and vocabulary ability ($r = -.132$) had a statistically significant relationship via Pearson's Product Moment Correlation Coefficient analysis (p -value < .001).

Discussion

This study aimed to examine the relationship between English-speaking ability and anxiety of undergraduate students. Results indicated that English-speaking ability of undergraduate students was moderate level ($\bar{x} = 2.946$, S.D. = .419) which could be due to their inadequate knowledge of English language, insufficient amount of vocabulary, and a lack of English communicative skills in real world communication. The findings are consistent with that of Pongpanich²¹ who found that the problems in English-speaking ability of students consisted of: 1) lack of self-confidence and; 2) lack of ability to express critical thinking and giving a logical reason. In addition, these results also closely corroborate with that of Arunsuksawang²² who found that the ability to use English in grade 12 students was moderate level.

The results also showed that the anxiety level of students was moderate ($\bar{x} = 2.955$, S.D. = .415). In fact, Ritthirat²³ studied 50 third-year students from five faculties at a Thai university and the researcher found that the oral proficiency of the nursing, engineering, and accounting students needed to be improved. The researcher also found that there was a significant relationship between oral proficiency and certain

problems such as anxiety when speaking English, lack of vocabulary knowledge, lack of time to speaking practice, dislike to speaking English in class, and having to think in Thai before speaking English²⁴. In addition, these results also closely corroborate with that of Chaiparn et al.,¹⁷ and Kammungkun et al.,¹⁸ who found that the students had moderate anxiety in speaking English.

In terms of the relationship between English speaking ability and anxiety level of undergraduate students, the researchers found a negative correlation ($r = -.225$) suggesting that students with poor English ability experience more anxiety. The findings are consistent with that of Ritthirat and Chiramanee²⁴ who found that the main problems and obstacles of Thai university students were anxiety and fairness when speaking English. In the study of Kitano²⁵ on 212 students enrolled in Japanese language course in the United States, they found that anxiety was higher for students who perceived that their English-speaking ability is lower than that of classmates and native speakers.

Conclusion

On the basis of our research, anxiety is an issue that is affecting lots of students and is certainly affecting English-speaking ability of students. Therefore, we provide evidence that English-speaking ability is linked to anxiety in the majority of the undergraduate students. Moreover, we found that the levels of anxiety in the English-speaking of undergraduate students was at a moderate level. This suggests that universities, teachers, and other health care providers should promote and encourage activities that inspire students to be more productive through their eager to research, practice, and improve their speaking ability.

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References

1. Habiburrahim H, Risdaneva R, Putri G, Dahliana S, Muluk S. The Effects of anxiety toward acehnese students' English speaking ability. The Qualitative Report. 2020;25(1):254-270.

2. Gopang IB, Bughio FA, Umrani T, Lohar SA. English speaking anxiety: A study of undergraduate at Lasbela University, Baluchistan. *International Research Journal*. 2015;4(1):51-64.
3. Chen MRA, Hwang GJ. Effects of a concept mapping-based flipped learning approach on EFL students' English speaking performance, critical thinking awareness and speaking anxiety. *British Journal of Educational Technology*. 2020;51(3):817-834.
4. Richards JC. *Teaching listening and speaking*. Cambridge university press Cambridge, England; 2008.
5. Zhang S. The Role of input, interaction and output in the development of oral fluency. *English Language Teaching*. 2009;2(4):91-100.
6. Jukkala A, Deupree JP, Graham S. Knowledge of limited health literacy at an academic health center. *The Journal of Continuing Education in Nursing*. 2009;40(7):298-302.
7. Suksatan W, Ruamsook T, Prabsangob K. Factors Influencing Health Literacy of Students in Health Science Curriculum: A Cross-sectional Study. *Indian Journal of Public Health Research & Development*. 2020;11(7):1469-1474.
8. Tumka K, Kongdang K, Suksatan W. Mental health and family relationship of nursing students after the practice in nursing. *Journal of Nursing and Health SuanSunandha Rajabhat University*. 2019;1(2):111-124.
9. Pacnoy S, Dithprayoon A, Suksatan W, Chortsiri L. Factors associated with stress among first-year nursing students, SuanSunundha Rajabhat University. *Journal of Health Science Boromarajonani College of Nursing Sunpasitthiprasong*. 2017;1(3):46-60.
10. Santikarn B. Factors related to foreign language learning anxiety of the first year students *Journal of Humanities and Social Sciences, Rajapruk University*. 2020;6(1):13-25.
11. Arnold J. *Affect in language learning*. Ernst KlettSprachen; 1999.
12. Oxford RL. Anxiety and the language learner: New insights. *Affect in language learning*. 1999;58:67.
13. Chang G. *Affective and Ability Factors in Second Language Learning*. *Language Learning*. 1996;25:153-161.
14. Horwitz EK, Horwitz MB, Cope J. Foreign language classroom anxiety. *The Modern language journal*. 1986;70(2):125-132.
15. Andrade MS. The Effects of English Language Proficiency on Adjustment to University Life. *International Multilingual Research Journal*. 2009;3(1):16-34.
16. Mukai S. Doctoral dental students' perception on English presentation and peer feedback: multifacetedness of learning and educational benefits. *Kanagawa Dental University Basic Science Review*. 2019;37:13-26.
17. Chaiparn J, Promkaew S, Seenak S. Factors affecting the fourth year English for international communication students' anxieties in speaking English. (Thesis). *Rajamangara University of Technology Srivijaya*. 2013.
18. Kammungkun P, SantiratJhanasanti P, varasayan P, Kittivachiro PS, Wowong S. Anxiety for speaking English among first year students in Mahamakut Buddhist University Lanna campus. *Journal of MCU Nakhondhat*. 2020;6(10):5860-5875.
19. Krejcie RV, Morgan DW. Determining sample size for research activities. *Educational and psychological measurement*. 1970;30(3):607-610.
20. Jampawal T. State anxiety. *Buddhist Psychology Journal*. 2018;3(31):13-20.
21. Pongpanich N. A study of problems in English speaking in speech communication of management sciences students, Kasetsart University, Sriracha campus: October 2007 to September 2008. *Journal of Humanities*. 2011;18(1):85-97.
22. Arunsuksawang T. The factors that affect to ability use English follow the 21st centurey learning skills of the students who studying in grade 12 of school in the Bangkok secondary education area 2 to support the entrance to ASAN economic community. *Silpakorn University*; 2014.
23. Ritthirat N. Thai University students' English oral proficiency and problems to developing English speaking skills. *Prince of Songkla University*; 2014.
24. Ritthirat N, Chiramane T. Problems and obstacles to developing English speaking skill of Thai university students. Paper presented at: Graduate Research Conference 20142014.
25. Kitano K. Anxiety in the college Japanese language classroom. *The Modern Language Journal*. 2001;85(4):549-566.

Emotional Intelligence and its Associated Factors among Nursing Students in a Middle Eastern University

Deepa Shaji Thomas¹, Jansi Natarajan², Blessy Prabha Valsaraj³

¹Lecturer (RN, MSN) Maternal & Child Health Dept, College of Nursing, Sultan Qaboos University, Muscat, Oman, ²Lecturer (Ph.D, MSN, RN) Fundamentals & Administration Dept, College of Nursing, Sultan Qaboos University, Muscat, Oman, ³Assistant Professor (Ph.D, MSN, MSCP, RN) & HOD, Community & Mental Health Department, College of Nursing, Sultan Qaboos University, Muscat, Oman

Abstract

Introduction: Emotional intelligence (EI) needs to discover the quality location as a core element inside the continuum of nursing education and the professional nurse.

Objective: The aim of this study is to identify the level of emotional intelligence (EI) of baccalaureate nursing students and to develop a dashboard of information for further interventions.

Method: This is a cross sectional descriptive study conducted in a public university in Oman using simple proportionate randomized sampling technique. Data was collected from 232 participants using TEIQue- SF Questionnaire (Trait Emotional Intelligence Questionnaire-Short Form) during the fall and spring semesters of 2018.

Results: The majority of the nursing students (85.5%) had normal scores in total (43.1 to 71) and all the subscales of emotional intelligence. Statistically significant higher scores were reported in male nursing students in total and emotionality component scores. There were significant associations reported between the EI scores and the CGPA and level of study. Higher age category and being male predicted higher EI scores.

Conclusion: The findings of the study has paved an understanding on the level of emotional intelligence of the nursing students on which the researchers can build suitable interventions for furtherance of their EI.

Keywords: Emotional intelligence, nursing students, undergraduate, assessment.

Introduction

Emotional Intelligence (EI) is the ability of a person to interpret and discern feelings and ideas of their own and others. EI consists of skills which are learned and

developed in course of lifetime to deal with the stressors. The goal of clinical education in nursing is to develop the professional skills and knowledge necessary for lifelong learning and critical thinking.¹ It is the EI that plays an important role in the overall development of an individual especially in dealing with the emotional aspects of life. EI is defined as the “ability to recognize the meaning of emotions and their relationships and to use them as a basis for reasoning and problem solving” and also has mentioned about its five components; self-awareness, emotional management, motivation, empathy and resolving conflict/management relations.² Nursing students are considered to be emotionally intelligent and successful when they can adapt to all these five dimensions of EI. Bar-On, 2004 reported that emotional

Corresponding Author:

Deepa Shaji Thomas, MSN

Lecturer, Maternal & Child Health Dept., Office 1067, College of Nursing, Sultan Qaboos University, AlKhoud, P.O.BOX 66, Postal Code 123, Muscat, Sultanate of Oman

Tele: +968 -2414-5465

Mob: +968- 98267817

intelligence has a strong impact on optimum physical and psychological wellbeing, good performance and achievement, wise decision making, imagination and self-actualization. EI has been found to be improving the interpersonal relationship between the nurses and the patients ultimately the quality of patient care.³

Nurses and nursing students work as frontline workers in the hospital setting in developing a bridge between the patients and health care systems. It is essential for them to be acquiring EI skills to be a competent, proficient, and caring nurse. Literature revealed that the EI had a beneficial impact on the coping processes, conflict resolution strategies and academic success of nursing students.⁴ Daniel Goleman and other scholars conclude that while a nurse could be born with general EI and associated personality characteristics, the potential to acquire, understand and enhance EI is a great possibility.⁵ Our patients and colleagues are social beings, and emotional maturity is an important skill in dealing with the human beings.⁶ In brief, it appears that emotional intelligence could find its rightful position as a core factor within the nursing curriculum by academic administrators.

Professional care is the central aspect of clinical practice which provides patients with essential scientific clinical awareness and a range of academic problem solving and psychomotor abilities. Nursing students start their clinical learning training from the first year of their BSN program. As EI is an important factor in nursing in this world of complex patient care, it becomes imperative to identify the levels of EI among the Nursing students. This will pave a way for us to identify strategies to improve their EI for preparing them as better nurses. The aim of this study was therefore to identify the EI scores of the Bachelor of nursing students in a public university in Oman.

Methodology

In this cross sectional descriptive quantitative study, emotional intelligence of 232 undergraduate nursing students from a public university in Oman was assessed. After receiving ethical approval no (REC/2017-2018/09), nursing students were approached to participate in the study using a flyer and through their emails. Students were proportionately selected from each level using stratified random sampling method based on the sample frame and sample size calculated by Slovin's formula. Every second student from the student

list of each level was randomized and approached after their class or clinical hours. They were included in the study if they had registered in Fall or Spring semester 2018 in any of the nursing courses after completing their foundation program and should have completed 18 years of age. After explaining about the procedure and rights to withdraw at any time, informed consent was signed by the participants, they were asked to complete the questionnaire which took 10 to 15 minutes of their time. The researchers thanked the participants and stored the data in the locked cabinet.

Measurements: A self-administered questionnaire (SAQ) was used to collect data from the participants which had 2 sections: section A had demographic characteristics like age, gender, level of study, cumulative grade point average (cGPA), place of living and secondary school grades. Section B was the valid and reliable "Trait emotional intelligence questionnaire-short forms (TEIQue- SF)" developed by Petrides et al⁷ which composed of 30 items designed to assess global emotional intelligence traits. It is a Likert scale ranging from 1 (completely disagree) to 7 (completely agree). Reversing was done for negative scoring items. Higher total scores indicated higher EI levels. TEIQue- SF is a valid and reliable tool with the Cronbach's alpha of 0.86.⁸ The Cronbach's alpha in our study participants was 0.802 indicating high reliability and validity.

Results

Data Analysis: Data was analyzed using IBM SPSS version 23. Descriptive statistics like mean, SD were used to describe the demographic variables and the EI scores. Association between the demographic variables and EI scores were analyzed using Independent 't' test and ANOVA. Predictors of high EI scores were assessed using the multiple regression analysis. Results are presented in figures and tables. All the tests are considered significant at $P < 0.05$ level.

Demographic Characteristics: Demographic characteristics of the participants are depicted in the Table 1. The mean age of the nursing students was 21 ± 2.94 . Half (51.3%) of the students had a score of above 90 percent in their higher secondary education. The majority (60.7%) of the nursing students had a cumulative grade point average (cGPA) 3 and less than 3 and 39% had (cGPA) between 3 and 4. The participants were from level 1,2,3,4 of their study program learning various subjects in theory and attending clinical duties

based on their levels. Levels 3 and 4 students were going to the clinical setting for their experience.

Table 1: Distribution of sample according to the demographic data n= 232

Variables	Frequency	Percentage
Age	Mean: 21.25 Std. Deviation±2.93	
Gender		
Male	52	22.2
Female	182	77.8
Secondary School Grade		
< 80%	23	9.8
80 - 90%	91	38.9
> 90%	120	51.3
Year of Cohort		
Level 1	59	25.2
Level 2	58	24.8
Level 3	56	23.9
Level 4	61	26.1
Grade Point Average		
Up to 3	142	60.7
3.1-4	92	39.3

Global score of Emotional Intelligence among the student nurses: TEIQue-SF is a 30-item scale which has four dimensions: well-being, self-control, emotionality, and sociability. For classifying the global score of emotional intelligence for this study, the global EI scores of the nursing students are classified as low, normal and good EI scores. The low EI scores ranged from 1 to 43, the normal scores extended from 43.1 to 71 and the good EI score ranged from 71.1 to 100. The majority of the student nurses had normal (85.5%) global emotional intelligence scores, and only 9.8% had good emotional intelligence scores from our study findings which is presented in figure 1.

The EI mean scores of nursing students are classified as low, normal, and good EI. The low EI scores varied between 1 and 3, normal scores varied between 4 and 5, and good EI score between 6 and 7 is depicted in table 2. The nursing students had the mean total EI score of 4.33±0.62. The highest among the component scores was the wellbeing component with mean score of 4.57±.884 and lowest mean score of 4.10±.812 for emotionality component. The Self-Control component was with the second highest mean score of 4.49±.815, followed by Sociability component with the mean and SD of 4.27±.797.

n=232

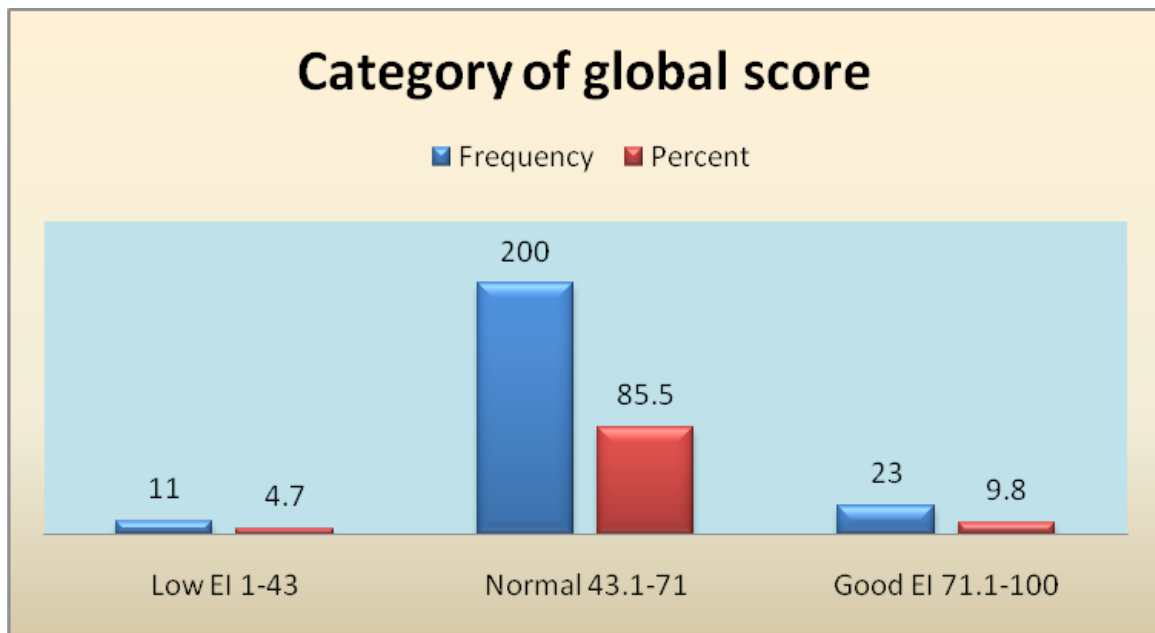


Fig 1: Level of emotional intelligence among nursing students

Table II: Distribution of components of mean score of TEI Que Scores n=232

Components	Mean	Std. Deviation
MeanTotalEI	4.33	.62
Well-being	4.573	.88
Self-Control	4.494	.81
Emotionality	4.102	.81
Sociability	4.274	.79

An independent-samples t-test was conducted to compare the total and 4 dimensions of the EI scores with the gender. The data depicted in the table 3 showed that, there were statistically significant differences in the total EI scores of male (M= 4.49±.770) Versus female (M=4.29±.560), $t(232)= 2.069, p=.04$. Among the subscales of EI, male had higher scores in emotionality dimension (M=4.34±.966), comparing with female students (M=4.034±.751), $t(232)=2.415, p=.016$.

Table III : Mean, Standard deviation, t- value of Emotional Intelligence by gender n=232

Gender		N	Mean	Std. Deviation	t	Sig. (2-tailed)
MeanTotal EI	Male	52	4.49	.770	2.069	.040
	Female	182	4.29	.568		
Well-Being	Male	52	4.62	.940	.388	.698
	Female	182	4.56	.870		
Self-Control	Male	52	4.64	.878	1.441	.151
	Female	182	4.45	.794		
Emotionality	Male	52	4.34	.966	2.415	.016
	Female	182	4.03	.751		
Sociability	Male	52	4.40	.891	1.339	.182
	Female	182	4.24	.767		
	Female	182	2.02	.324		

A Chi- square test of independence was calculated comparing the EI score with the cumulative GPA, secondary school grades and the level of study of the nursing students and the results are presented in table

4. Higher EI scores were found among the nursing students with higher cGPA ($\chi^2(4) = 12.004, p<.05$). Also, significant higher EI scores were found among level 2 students ($\chi^2(6) = 16.232, p<.05$).

Table IV: Chi- square values showing the association between levels of emotional intelligence among the student nurses and selected demographic variables n=232

Selected demographic variables	Category of global emotional Intelligence score			χ^2 Value	P value
	Low EI 1-43	Normal 43.1-71	Good EI 71.1-100		
Cumulative (GPA)					
<2	0	7	3	12.004*	0.017
2-3	9	116	7		
>3	2	77	13		
Secondary School Grade					
< 80%	2	16	5	9.266	0.055
80 – 90%	4	75	12		
> 90%	5	109	6		

Selected demographic variables	Category of global emotional Intelligence score			χ^2 Value	P value
	Low EI 1-43	Normal 43.1-71	Good EI 71.1-100		
Level of study					
Level-1	7	49	3	16.232*	0.013
Level-2	1	46	11		
Level-3	1	51	4		
Level-4	2	54	5		

The results of multiple linear regression model predicting the factors of higher EI scores of the nursing students are presented in Table 5. A significant regression equation was found ($F(5,143) = 2.698, P < .05$), with

R^2 of .086. Higher age category ($\beta = 4.781, p = .018$) and being male ($\beta = -4.334, p = .020$) were significant predictors of high EI scores.

Table V: Multiple regression analysis of EI score with demographic variables of the participants n=232

Variables	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
Age	4.781	1.99	.250	2.399	.018
CGPA (less than 2/more than 2)	.097	1.56	.005	.062	.951
Place of living (Northern Oman/Southern Oman)	1.727	1.55	.089	1.111	.269
Academic level (Non-clinical/clinical)	-3.189	1.98	-.168	-1.603	.111
Gender (Male/female)	-4.334	1.84	-.191	-2.350	.020
Dependent variable - Percentage of global EI score					

Discussion

The nature of nursing profession is an art combined with science and to develop these core values, emotional intelligence is particularly important. It is vital for the nursing professionals to have a well-balanced personality that could be reflected in their emotional intelligence. The present study attempted to explore the emotional intelligence among the undergraduate nursing students of Oman. In this study, majority of the nursing students had normal emotional intelligence level. It is similar to a study conducted among nursing students of Saudi Arabia and Egypt⁹ and also, male nursing students had higher total EI scores and emotionality dimension scores and when compared with that of females. It is similar to the findings of the study among students of KSA & Egypt that, men had higher EI scores in wellbeing, self-control and sociability dimensions.⁹ In contrast, female students' EI scores were higher than male students in many other studies.¹⁰ Emotions are perceived as vital to authentic, genuine and compassionate relationships and it is a professional requirement of competent

nursing practice.¹¹ As there is a strong link between the emotional wellbeing of nurses and the quality of patient care provided by them, the results are encouraging regarding the high emotionality component scores of male nursing students.

EI scores were higher with advancement in year of study and students with higher EI scores were seen more in year two of our study. It is likely that the first-year students take time to adjust to academic learning, struggle with certain problems of access to various courses leading to emotional overloads and elevated rates of tension. As they were progressing in the nursing profession, a greater capacity to use their EI was manifested. Students in each level had higher EI scores than the previous years and it increases with age in our study. This is consistent with many other studies suggesting that EI may develop over time.^{1,10} This could also be related to the clinical experience, in which there is therapeutic interactive communication with patients, faculty and health care providers.¹¹ A nursing curriculum which can inculcate EI as its heart can bring

a positive change in their problem-solving, critical thinking and decision-making skills. Another research on EI recommended inclusion of reflective experiences, mentorship, developing self-awareness, empathy, relationships, forum-theatre, journaling, exercise and talking in the classroom and clinical learning of the nursing students to improve their EI.¹²

Cumulative GPA of student nurses showed a significant association with that of high EI scores among the student nurses in this study. Our findings are in alignment with many other studies globally.⁹ This could possibly suggest that students could benefit from the addition of EI skill building in the basic curriculum. Further research is needed to identify the relationships between EI, academic performance as well as the clinical performance of the nursing students. There is consistent demand for strong, emotionally intelligent, and effective nurses to meet the complex needs of today's health care system.¹² In the recent years, nursing curriculum is incorporating the importance of EI at the level of screening applicants^{15,16} and designing the attributes of nursing profession.¹⁷ EI could be blended in the nursing curriculum especially in topics like personal and professional development, stress and stress management and leadership. It was evident that undergraduate business curriculum benefit from EI for the teaching aspects like effective collaboration, adaptability, and critical thinking¹⁸ which is the need of the hour for this current generation of nursing students.

Limitation: As our study was conducted in a single institution, the results cannot be generalized. It should be understood with caution as our survey was done with self-reported questionnaire.

Conclusion

Nursing has got a holistic curriculum that enables the student to master emotional balance and other essential soft skills through the explicit and implicit teaching learning situations. The findings of the study have provided a recent a platform for envisaging suitable interventions for improving the emotional intelligence of the nursing students. EI is a prime factor in developing a positive patient experience for a nursing student while working collaboratively with other health care providers in the clinical setting. EI can be an important predictor in showcasing the managerial and leadership skills of the nursing students as they step into the profession as future nurses. The elements of EI like self-awareness

and motivation helps him or her to be an effective leader. EI is a strong predictor of job success and it is also an unquestionable factor in job recruitment. By enhancing and practicing the skills of EI, nursing students will be aware of their own strength which empowers him or her to provide a quality patient care and ultimately advance in his or her profession successfully.

Conflict of Interest: None.

Ethical Clearance is obtained from the Research and Ethics committee of College of Nursing, SQU.

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References

1. Bar-On R. The Bar-On model of emotional-social intelligence (ESI). *Psicothema*. 2006;18:13-25.
2. Mayer JD, Salovey P, Caruso DR, Sitarenios G. Emotional intelligence as a standard intelligence.
3. Lopes PN, Brackett MA, Nezlek JB, Schütz A, Sellin I, Salovey P. Emotional intelligence and social interaction. *Personality and social psychology bulletin*. 2004 Aug;30(8):1018-34.
4. Thomas D, Natarajan J. Emotional intelligence among nursing students—An integrated review. *J Nurs Health Sci*, 6, 81-89.
5. Goleman D. *Emotional intelligence*. Bantam; 2006.
6. Durkin M, Beaumont E, Martin CJ, Carson J. A pilot study exploring the relationship between self-compassion, self-judgement, self-kindness, compassion, professional quality of life and wellbeing among UK community nurses. *Nurse education today*. 2016 Nov 1;46:109-14.
7. Petrides KV. Psychometric properties of the trait emotional intelligence questionnaire (TEIQue). In *Assessing emotional intelligence 2009* (pp. 85-101). Springer, Boston, MA.
8. Deniz ME, Özer E, Isik E. Trait emotional intelligence questionnaire-short form: Validity and reliability studies. *Egitim ve Bilim*. 2013 Jul 1;38(169).
9. Moawed S, Gemeay EM, Elsayes HA. Emotional intelligence among nursing students: a comparative

- study. *International Journal of Novel Research in Healthcare and Nursing*. 2017;4(1):359-69.
10. Štiglic G, Cilar L, Novak Ž, Vrbnjak D, Stenhouse R, Snowden A, Pajnkihar M. Emotional intelligence among nursing students: Findings from a cross-sectional study. *Nurse education today*. 2018 Jul 1;66:33-8.
 11. Cuadra DS, Famadico LF. MALE NURSING STUDENTS' EMOTIONAL INTELLIGENCE, CARING BEHAVIOR AND RESILIENCE. *International Journal of Arts & Sciences*. 2013 Jan 25;6(3):243.
 12. Benson G, Ploeg J, Brown B. A cross-sectional study of emotional intelligence in baccalaureate nursing students. *Nurse Education Today*. 2010 Jan 1;30(1):49-53.
 13. McQueen AC. Emotional intelligence in nursing work. *Journal of advanced nursing*. 2004 Jul;47(1):101-8.
 14. Freshwater D, Stickley T. The heart of the art: emotional intelligence in nurse education. *Nursing inquiry*. 2004 Jun; 11(2):91-8.
 15. Beauvais AM, Stewart JG, DeNisco S, Beauvais JE. Factors related to academic success among nursing students: A descriptive correlational research study. *Nurse education today*. 2014 Jun 1;34(6):918-23.
 16. Harper MG, Jones-Schenk J. The emotional intelligence profile of successful staff nurses. *The Journal of Continuing Education in Nursing*. 2012 Aug 1;43(8):354-62.
 17. Chan GK, Barnason S, Dakin CL, Gillespie G, Kamienski MC, Stapleton S, Williams J, Juarez A, Li S. Barriers and perceived needs for understanding and using research among emergency nurses. *Journal of emergency nursing*. 2011 Jan 1;37(1):24-31.
 18. Michelangelo L. The overall impact of emotional intelligence on nursing students and nursing. *Asia-Pacific journal of oncology nursing*. 2015 Apr; 2(2):118.

Structured Teaching Programme Regarding Selected Aspects of Safe Motherhood on Knowledge among Primipara Mothers

Harimati Huidrom¹, Dinesh Kumar²

¹*Nursing Officer, ESIC Hospital, Basaidarapur, New Delhi,*

²*Prof. Cum Principal, Syadwad Institute of Higher Education & Research, Baghpat, U.P.*

Abstract

Saving mother's life is a global aim as the health of mothers has long been considered as cornerstone of public health and attention. Safe motherhood means ensuring women receive care they need to be save and healthy throughout pregnancy, during and after child birth.¹

Mothers health status during pregnant and after delivery determines health status of the child. Therefore health care of the mother and children occupies an important place in our health care system and is an integrated part of primary health care.²

From the above reviews an investigator felt that the nurses are still needed to practice the routine maternal and new born care and are reluctant to practice anything new. It was educative and evaluative approach with one group pre test, post test design. The study was conducted at selected Hospital at Hassan District, Karnataka. The target population was 60 selected by Non Probability purposive sampling technique. The method of data collection include 30 structured knowledge Questionnaire. The findings are Pre-test knowledge score was 34.6% with mean knowledge level 10.38+/- 1.30 and Post-test knowledge score was 82.8% with mean knowledge level 24.83+/- 2.14. The hypothesis has accepted with the calculated paired t-test that was significant at the level of (P=0.001). According to the findings of the study statistically significant association was present between the level of knowledge gain and age, place of residence and education at the P<0.001.

Keywords: *Teaching Program, assess, knowledge, effectiveness, Selected aspects of safe motherhood, Postnatal Primi Para, Safe motherhood.*

Introduction

The safe motherhood initiative placed special emphasis on the need for better and more widely available maternal health services, the extension of family planning education and services, and effective measures aimed at improving the status of women. Safe motherhood begins with a healthy environment which is influenced by women's health and nutritional status, reproductive and health behaviors and access to family planning and maternal care services.³

Postnatal care means "Care after the Birth" during the postnatal period which aims to promote the well being of both the mother and child. A lot of need to be done to make the motherhood safe both in rural & urban area.⁴

India with its one billion people contributes to about 20% of all maternal deaths in the world. Twenty-five per cent of maternal deaths occur during pregnancy; 50 per cent within 24 hours of childbirth; 20 per cent within seven days of delivery; and 5 per cent from two to six weeks of childbirth.⁵

India's child survival and safe motherhood program seeks to achieve immediate improvements by improving health care. Improvements in health care for all women will occur through the provision of essential obstetric care, early detection of complication during pregnancy and labour and emergency services.⁶

The postnatal period (the time just after delivery and through the first six weeks of life) is especially critical for mother and newborn. The highest risk of death

occurs at delivery, followed by the first hours and days after childbirth.⁷

Statement of the Problem: “A study to assess the effectiveness of structured teaching programme regarding selected aspects of safe motherhood on knowledge among primi para mothers in selected Hospital at Hassan, Karnataka.”

Objectives of the Study:

1. To assess the level of knowledge regarding selected aspects of safe motherhood before and after structured teaching programme among primipara mothers.
2. To compare the level of knowledge regarding selected aspects of safe motherhood between pretest and post test knowledge score among primipara mothers.
3. To associate the level of knowledge gain with the selected demographic variables.

Research Hypothesis:

H₁ –There will be significant difference between pretest knowledge score and post test knowledge score regarding selected aspects of safe motherhood among primipara mothers

H₂- There will be significant association between post-test knowledge with the selected demographic variables.

Research Methodology

Research Approach: Evaluative and educative approach

Research Design: Pre-experimental (one group pre-test and post-test) design.

Sampling Size: 60 postnatal primipara mothers

Sampling Technique: Non-probability purposive sampling technique.

Population of the Study: All the primi para mothers admitted in LSCS ward.

Sample: Primipara mothers who fulfill the inclusion and exclusion criteria .

Inclusion Criteria:

1. Primipara mothers who are admitted in LSCS ward.
2. Primipara mothers who are willing to participate in this study.
3. Primipara mothers who are available during the time of study.

Exclusion Criteria:

1. Multipara mothers.
2. The primipara mothers who had delivered with complication during post operative period.
3. The primipara mothers with high risk.

Description of the tool:

The tool consist of two sections

Section I: This section deals with the socio-demographic profile of the subjects, which contains 9 items such as age, religion, education, area (residence), occupation, type of work, type of family, income per month, previous information regarding selected aspects of safe motherhood on postnatal care.

Section II: Knowledge questionnaires of 30 items

Result

The results of the study showed that pre-test overall knowledge score regarding selected aspects of postnatal care was 34.6% with mean and SD 10.38 ± 1.30 . During post-test overall knowledge score was 82.8% with mean and SD 24.83 ± 2.14 . Hence the difference between pre-test and post-test overall knowledge score was >40.0%.

So the results of the study shows difference between the pre-test and post-test knowledge score of the primipara mothers regarding selected aspects of safe motherhood is statistically significant and this difference is due to the structured teaching programme. There is a significant association between the post-test knowledge in the selected socio-demographic variables like-age, type of family and (place)residence.

Objective 1: To assess the level of knowledge regarding selected aspects of safe motherhood before and after STP among primipara mothers.

Table 1: Pre Test Overall Knowledge Score on Selected Aspects of Safe Motherhood

	No. of questions	Mean ± SD	% of knowledge
Overall pretest knowledge	30	10.38±1.30	34.6%

Table no. 1 shows, postnatal primipara mothers overall knowledge on selected aspects of safe motherhood before the administration of Structured Teaching Programme. They are having only 34.6 % of knowledge before the administration of Structured Teaching Programme.

Table 2: Post Test Overall Knowledge Score on Safe Motherhood

	No. of questions	Mean ± SD	% of knowledge
Overall posttest knowledge	30	24.83±2.14	82.8%

Table no. 2 shows, postnatal primipara mothers overall knowledge on safe motherhood after the administration of Structured Teaching Programme. They are having 82.8 percent of knowledge after the administration of Structured Teaching Programme.

Objective 2: To compare the level of knowledge regarding selected aspects of safe motherhood between pretest and post test knowledge score among primipara mothers.

Table 3: Comparison of Overall Knowledge Score Before and After Structured Teaching Programme

	No. of primipara mothers	Pretest Mean±SD	Posttest Mean±SD	Student paired t-test
Overall Knowledge Score	60	10.38± 1.30	24.83 ± 2.14	t=49.24 P=0.001 significant

Table no 3 shows the comparison of overall knowledge score on safe motherhood before and after the administration of structured Teaching Programme. On an average postnatal primipara mothers improved their knowledge from 10.38 to 24.83 after Structured Teaching Programme.

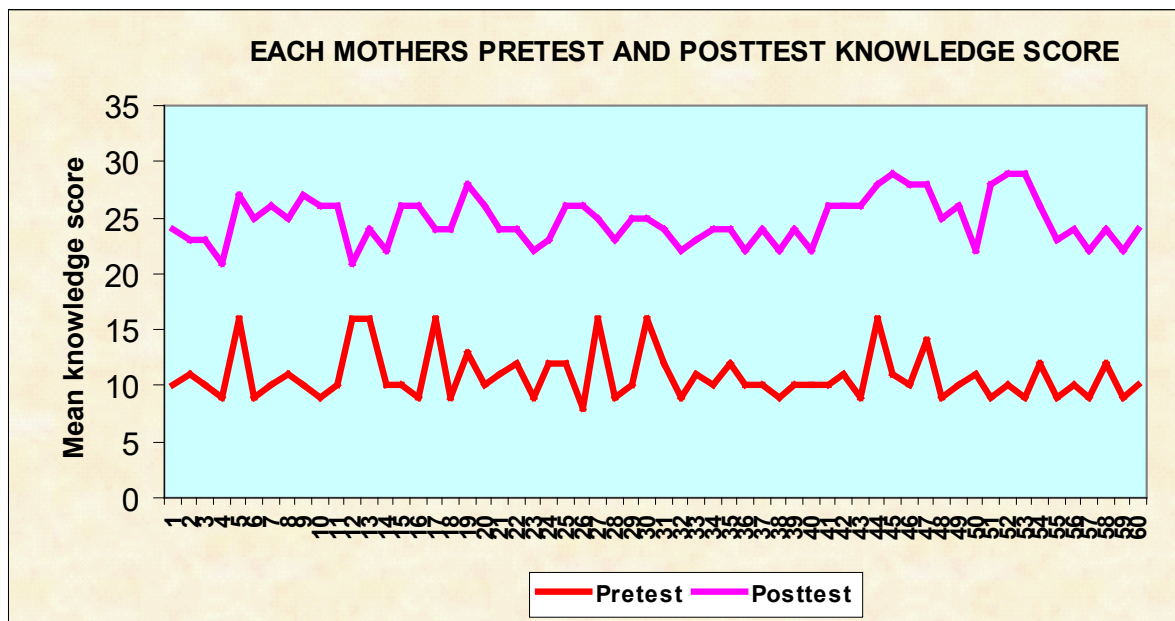


Fig 20: Line graph showing comparison of pre-test and post-test knowledge score of postnatal primi paras.

Objective 3: To associate the level of knowledge score with the selected demographic variable

The study revealed statistically significant association was present between the level of knowledge gain and age, type of family and residence at the $P < 0.001$.

The association between socio demographic variables and pre-test knowledge score is observed as Age $\chi^2 = 3.95$ ($p = 0.26$), religion $\chi^2 = 1.15$ ($P = 0.56$), education $\chi^2 = 4.29$ ($P = 0.51$), residence $\chi^2 = 3.19$ ($P = 0.20$), previous information $\chi^2 = 4.27$ ($P = 0.37$), type of family $\chi^2 = 1.34$ ($P = 0.25$), family income $\chi^2 = 4.32$ ($P = 0.23$), type of work $\chi^2 = 0.28$ ($P = 0.86$), occupation of parents $\chi^2 = 0.54$ ($P = 0.46$).

The association between socio-demographic variables and the posttest level of knowledge on substance abuse i.e, age $\chi^2 = 8.32$ ($p = 0.04$), education $\chi^2 = 14.19$ ($P = 0.001$), residence $\chi^2 = 8.98$ ($P = 0.001$) are significantly associated with their posttest level of knowledge and it was calculated using pearson chi square test/Yates corrected chi square test.

Conclusions

- It was conclude that the overall knowledge score before STP was 34.6% and after STP was 82.8%.
- Implementation of STP was effective to improve the knowledge regarding selected aspects of safe motherhood on postnatal care.
- The findings of the study statistically significant association was present between the level of knowledge gain and age, place of residence and education at the $P < 0.001$.

Recommendation:

1. A similar study with a larger sample size can be conducted on effectiveness of the structured teaching

programme on knowledge regarding selected aspects of safe motherhood among all postnatal primiparas.

2. A similar study can be conducted among eligible couples and family members.
3. A descriptive study can be conducted to assess the knowledge and attitude of the postnatal primiparas .
4. A comparative study can be conducted on normal postnatal primiparas and LSCS postnatal primiparas.

Ethical Clearance: Hoysala Hospital, Jayashree Hospital, Mangala Hospital, Hassan, Karnataka, India

Source of Funding: Self

Conflict of Interest: Nil

Reference

1. Bhat. M, maternal mortality in India; An update studies in family planning 2004, 33(3).
2. D.C. Dutta. Text Book of obstetrics, 6th edition 2004, New Central Book agency (pvt) Ltd. 2004, 599-605.
3. Mac. Lean G. Safe motherhood in the united kingdom, Midwife, 1994 June;4(6):10-4
4. BT Basavanthappa. Community Health Nursing, 2nd edition Jaypee Brother Publication. 474- 475.
5. Goyal S.K Women and Health services. Journal of social welfare 2002, 21(3).
6. Chatterjee A. Strategies for Safe motherhood; Journal Indian Medical Associations 2005 February; 93(2):P43-6, 42.
7. k. Park. Essential of Community Health Nursing, 4th edition/S Banarsidas Bhanot publication 2004,332.

Analysis of Factors that Influence the Stress Assessment of the Parents of Children with Autism

Hasyim As'ari¹, Suriana¹, HilmiYumni³

¹Lectures, ²Associate Professor, Health Polytechnic of the Ministry of Health, Surabaya

Abstract

Introduction: Parental stress arises related to the behavioural problems and abilities of children, cost required, education and therapy, relationship problems and supports of family members of parenting to the children with autism. Parental stress can result in parenting behaviour of children with autism becoming inappropriate. The purpose of study analyses the factors that influence parental stress of children with autism.

Method: The method used the observational quantitative study through a *cross sectional* approach. The data collection used *Multi Stage Random Sampling* in 5 therapy centers/SLB Autism represented Surabaya. The number of samples were 105 that chosen by *random sampling*.

Result: Hypothesis calculation analysis of factor influences to the parental stress assessment used T-test that derived from the result of significant influences with the significance level <0.05 . The insignificant influences are factors of family function, mother and educational services to the stress assessment. The significant influence is the factor of children to the stress assessment.

Discussion: Factors of family, mother and educational services functions insignificantly influence to the stress assessment. The factors of children as personal stressor significantly influences to the assessment of parental stress. The parents are hopefully able to manage the support of family, educational services and mother is more able to adapt to the children in parenting children with autism.

Keyword: *Family function, mother, children, educational services and stress assessment.*

Introduction

Parental stress arises in associated with the behavioural problems and children ability, cost required, education and therapy, relationship problems and members of family supports on parenting children with autism.⁽¹³⁾ Parental stress can result in the behaviour of parenting children with autism become inappropriate.⁽¹³⁾ Parenting inappropriately children with autism results in the failure of physical growth and development, psychology and mental health in children with autism.⁽⁸⁾

Data of WHO on 2013 stated that 7, 6 million of children ail the autism. 2016 data of YAI on 2016 predicted that 140.000 children had ailed Spectrum Autism⁽¹¹⁾ and data of Dispendik of East Java stated that 15% of 1.476 students of SLB are children with autism⁽⁴⁾. The limitation of social skill, cognitive ability, peculiar pattern of behaviour and activity with others and the decline of language ability firstly aroused on the years of 1.5 to 3 years old⁽¹⁶⁾.

The problems of conducting the family function factors by an individual in family⁽¹⁶⁾, behaviour and the bigness of mother's hope to the children with autism, the decline of children with autism ability and the problem of providing educational services for the children with autism are factors that can influence the stress assessment of parents. Children with autism as personal stressor for the parents are a long period of little stress, can and can't be predicted, has strong influences and need

Correspondent Author:

Hasyim As'ari

Lectures, Health Polytechnic of the Ministry of Health, Surabaya

Mobile: 081333577788

e-mail: hasyimazhar@yahoo.com

a big effort which often more difficult to overcome⁽¹²⁾. Lack of support from others who have a same fate can disturb and cause negative stress for the parents⁽¹²⁾. The negative stress assessment of the parents results in a low affection, attention and decreases the parenting behaviour of parents to children with autism⁽¹²⁾.

The accuracy of the relationship and family supports management, the management of educational services that involved parents in learning activity, and the enhancement of mother's ability to adapt the parenting to children with autism are able to decrease the negative emotional reaction and increase the stress assessment of parents to be positive.⁽⁵⁾ The positive assessment results in increasing comfort, knowledge and attention. It also increases the affection and attention in parenting children with autism.⁽¹⁴⁾

Material and Method

Design was an observational using the approach of cross sectional. A research sample was some parents of children with autism who studied in Autism Therapy Centre of Surabaya.

Formula used for sample size calculation were *rule of the thumb*:

$$5 - 10 \times \text{observed variables}$$

Sample size were 105 parents of autistic children who attend therapy centers.

Data Collection taken by using multi stage random sampling. Variables were a family functional factor, mother's behavioural factor, factor of children with autism, factor of educational services and stress assessment. Variables data collection included an affective function, socialization and reproduction, mother's behaviour, parents' hope, communication ability, socialization and cognitive, early and further educational services and stress assessment. The research had been conducted from May to July 2019 in Autism Therapy Centre of Surabaya. The hypothesis calculation analysis of the factors influences to the parental stress assessment used t-test. The result obtained the significant influences with the meaningful level <0.05 .

Result

In this research, Data was collected from 105 participants of autistic children who attend therapy centers.

The result of study stated that the most had a good affective function of 65.7%, a good socialization function of 87.6%, a good reproduction function of 63.8%, a good economical function of 75.2% and a fair health care function of 54.3%. (Table 1).

Table 1. The frequency distribution of the family function factors variables. N = 105

No.	Family function	Category	Frequency	Percentage
1.	Affective	Good	69	65.7
		Fair	28	26.7
		Poor	8	7.6
2.	Socialization	Good	92	87.6
		Fair	10	9.5
		Poor	3	2.9
3.	Reproduction	Good	67	63.8
		Fair	29	27.6
		Poor	9	8.6
4.	Economic	Good	79	75.2
		Fair	25	23.8
		Poor	1	1.0
5.	Health Care	Good	43	41.0
		Fair	57	54.3
		Poor	5	4.8

The result of study showed that mother had a fair attitude of 73.3% and fair parent's hope to children with autism of 51.4%. (Table 2)

Table 2 The frequency distribution of the mother factor variables. N = 105

No.	Mother	Category	Frequency	Percentage
1.	Attitude to children	Good	16	15.2
		Fair	77	73.3
		Poor	12	11.4
2.	Parent's hope	Good	42	40
		Fair	54	51.4
		Poor	27	8.6

The result of study showed that most children had a fair ability of 44.8% and got a good educational service of 94.3%. (Table 3).

Table 3. The frequency distribution of children and education services. N = 105

No.	Children	Category	Frequency	Percentage
1.	The ability of children with autism	Good	31	29.5
		Fair	47	44.8
		Poor	27	25.7
2.	Education services	Good	99	94.3
		Fair	6	5.7

The result of study showed that parental stress assessment to children with autism was mostly severe of 73.3%. (Table 4).

Table 4. The frequency distribution of parental stress assessment. N = 105

No.	Indicator	Category	Frequency	Percentage
1.	Stress assessment	Severe	77	73.3
2.		Moderate	20	19
3.		Mild	8	7.6

Table 5. Paired ‘ t ’ test p value with the factor of children with autism influenced a parental stress assessment. N = 105

No	Between factors	Original Sample (O)	t-statistic	P-value
1.	Family Function Factor -> Stress Assessment	0,010	0,072	0,943
2.	Mother Factor -> Stress Assessment	0,171	1,270	0,205
3.	Children with autism factor -> Stress Assessment	0,207	2,540	0,011
4.	Education services factor of children with autism-> Stress Assessment	0,034	0,391	0,696

Discussion

Family ability to face the stress pressure does not only influence bad or good of family function but also it is based on the family potential. Togetherness of parents and children make the relationship more closely with feelings and thoughts sharing, involves in activities and experiences of managing stress. Therefore it results in family cohesion and higher attributes⁽⁶⁾. Mother is a part of family and close to children with autism. A mother can closely adapt to the condition of children with autism and maintain the balances of stability changes dynamics of children with autism⁽¹⁷⁾. Mother’s attitude and hope to children with autism is not significant influencing parental stress assessment. Close relationship of children and mother can maintain feeling and thoughts. It is also the involvement of family⁽²⁾ activity or an experience of managing stress. So that it results in family cohesion and higher attribute⁽⁶⁾.

An educational service does not significantly

influence a parental stress assessment. The parent sends children with autism to the education services with fully belief based on their economical ability. The parent beliefs that supporting infrastructure is complete, the competence teacher who conducting a fix learning method to children with autism according to their ability, solves the learning problems of children based on the learning style off children with autism⁽¹⁾. Implementing a learning program on high level of patience makes the parents happy and believes that children with autism are able to comply their parents’ hopes⁽⁶⁾.

The condition of children with autism are significant to the parental stress assessment. A child with autism is a daily problem that isn’t harder comparing to the life change and a small stressor for the parents⁽⁵⁾. It becomes important for the parents who need capability in order to be able to adapt the daily problems. Furthermore it is also related to their health problems⁽¹⁴⁾. Although children with autism as personal assessors can or can’t

be predicted, they have a strong influences and need a big effort of coping for the parents. This stressor causes a small effect that going continuously. Therefore it can be disturbing and causes a negative stress to an individual⁽¹⁴⁾. The parents who have a positive stress assessment will be able to manage the support of family function⁽¹²⁾ and the professional people of education services obtain comfortability, attention or a help that is received an individual of parenting children with autism from their circles⁽¹⁰⁾.

Conclusion

The factors of family, mother and education services influence insignificantly to the stress assessment and the children factor as a stressor personal significantly influence the parental stress assessment.

Conflict of Interest: Nil

Source of Founding: List of Budget Implementers Ministry of Health

Ethical Clearance: Health Research Ethics Committee *Health Polytechnic of the Ministry of Health, Surabaya* No.EA/016/KEPK-Poltekkes_sby/V/2019

References

- Bastaman, H.D. Logoterapi, Psikologi Untuk Menemukan Makna Hidup Dan Meraih Hidup Bermakna. Jakarta: Raja Grafindo Persada; 2007.
- Chodijah, Alfiani. Pengalaman Ibu Merawat Anak Usia Sekolahdengan Autis, Jurnal Keperawatan Indonesia, Juli, Volume 21; 2018
- Cronbach, L.J. Educational Psychology. New York: Harcourt, Brace & World, Inc; 1977.
- East Java Education Office. Data on Autistic Students in Special Schools in East Java, not published; 2009.
- Folkman, S. Personal Control and Stress and Coping Processes: a Theoretical Analysis. Journal of Personality and Social Psychology. 1984 Vol. 46, No. 40, 839-858.
- Fower, B.J & Olson D.H. Enrich Marital satisfaction scale; A brief research and clinical tool. Journal of Family Psichology. 1993;7 (2) 176-185.
- Friedman, M.M. Family Nursing : research, Theory and Prctice. (4th Ed.) Norwalk CT : Apleton & Lange; 2009.
- Ginanjar, S.A. Penangananstres pada orang tuadengananak Autis; Jakarta. 2002, paper.
- Hurlock, Elizabeth. Psikologi Perkembangan Suatu Pendekatan Sepanjang - Rentang Kehidupan. Jakarta: Erlangga; 2003.
- Kaplan, H.I, Saddock, B.J, & Greb J.A. Sinopsispsikiatri : Ilmu Pengetahuanperilakupsikiatriklinis (2 nd.ed.) Jakarta, Binarupa Aksara Publisher; 2010.
- Ministry of Women's Empowerment and Child Protection, Indonesian Autistic Children Data; 2015.
- Patel Chandra. The Complete Guide to Stress Manajemen, Springer;2013.
- Pieter, H.Z. Janiwarti & Saragih M. Pengantar PsikopatologiuntukKeperawatan, Jakarta:Kencana; 2011.
- Richard S. Lazarus, Susan Folkman :Stres, Aprasial and Coping, Spinger Pub.Co; 1984.
- Schultz, Duane.Psikologi Pertumbuhan: Model-model Kepribadian Sehat. Yogyakarta: Kanisius; 2012.
- Theo Peeter. Bukupanduan AutismeTerlengkap, Jakarta :Dian Rakyat; 2012
- Tilton A.J. Panduan Lengkap Ibu Bapak Kanak-anak Autism. Kuala Lumpur : Starit Digital Sdn; 2014

Implementation of the Small Group Discussion Method in the Learning Process with the Results of Nurse Competency Test in Akademi Keperawatan Sehat Binjai 2019

Irma Handayani¹, Leli Herawati¹, Sri Wahyuni¹

¹Lecturer, STIKes Sehat Medan, North Sumatera, Indonesia

Abstract

Objects: To analyses implementation of the small group discussion method in the learning process with results of nurse competency test.

Method: The study was analytic with a cross-sectional approach. The samples were thirty-two selected by saturated sampling with inclusion criteria. Data were collected using a questionnaire and analysis using the spearman correlation test.

Result: There was a statistically significant correlation between the implementation of the small group discussion method in the learning process with the results of the nurse competency test ($p < 0.001$).

Conclusion: The learning method of small group discussion can improve student learning abilities in the field of nursing services and the competence of nurses will have an impact on performance which will ensure the quality of nursing services where nurses work.

Keywords: *Small Group Discussion; Nursing Student; Nurse Competency Test.*

Introduction

Guidance and supervision of the quality of health workers are primarily aimed at improving the quality of health workers according to the competencies expected in supporting the delivery of health services for all Indonesian citizens. Coaching and monitoring of the quality of health workers are carried out through increased commitment and coordination of all stakeholders in the development of health workers as well as legislation which includes certification, one of which is through a competency test⁽¹⁾.

The competence test is one of the regulations of the Indonesian government in organizing the quality assurance system and accreditation of health study programs. The purpose of the competency test is to provide recognition of the competence of graduates against competencies of graduates that are relevant to work competencies to ensure patient safety in practice⁽²⁾.

Currently, the percentage of passing the competency test of students in the nursing study program diploma III level in Indonesia has not reached 100%, this can be seen from 82,505 participants from 416 institutions, only 64.38% of graduation. Data on passing the competency test of the diploma III nursing study program in North Sumatra for October 2018 from 47 institutions that took the exam, only 50, 94% were declared competent (passed)⁽³⁾.

Several factors affect the passing of the competency test, such as the results of research conducted by previous researchers conducted by Abdillah, namely factors that contribute to passing students' competency tests which consist of internal factors including intelligence, interests

Corresponding Author:

Leli Herawati

Lecturer, STIKes Sehat Medan, North Sumatera, Indonesia

Gg. Pelajar, Tj. Gusta, Kec. Medan Helvetia, Medan City, North Sumatera 20123, Indonesia

e-mail: lelihrwt@gmail.com

and talents, motivation, while external factors include: try out, lecturer factors, curriculum learning method⁽⁴⁾.

One learning method that can improve student learning outcomes is the small group discussion method⁽⁵⁾, this is relevant to previous studies related to the small group discussion learning method, research conducted by Saraswati which shows learning activities in students increased after the small group discussion learning method was applied from 58.80% to 85.22%⁽⁶⁾.

Relevant to the results of research conducted by Christiani, it shows that the implementation of the small group discussion method can improve student learning outcomes⁽⁷⁾.

It is also in line with the results of research conducted by Stiyoningsih that the implantation of the small group discussion method can improve students' speaking ability in Arabic⁽⁸⁾.

The results of preliminary observations made by researchers at Akademi Keperawatan Sehat Binjai showed that the 2017 passing rate of the competency test was that of the 77 people who took the exam who passed 28 people (36.25%), while in 2018 out of 31 people who took the exam had an increase. Percentage of graduation to 14 people (43.7%). The results of interviews conducted with 10 students and lecturers of Akademi Keperawatan Sehat Binjai, found that the learning method carried out from 2018 to the present is the small group discussion method (small), this is different from the 2017 learning method, namely discovery learning. The results of the interviews also showed that students were more enthusiastic and faster to understand the learning process using the small group discussion learning method than the discovery learning method.

Starting from the description above, the researchers are interested in researching the implementation of the small group discussion method in the learning process with the results of passing the nurse competency test at Akademi Keperawatan Sehat Binjai in 2019.

Method

This study used an analytic with a cross-sectional approach. This research aims to analyze the relationship between the independent variable and the dependent variable, which requires answers to why and how this

research usually uses inferential statistical analysis⁽⁹⁾. The samples were thirty-two selected by saturated sampling with inclusion criteria, namely: alumni of Akademi Keperawatan Sehat Binjai with academic year 2017/2018; and willing to be a respondent. Data were collected using 15 questionnaires to find out how far the small group discussion method is applied while passing the competency test is taken from the observation of the national graduation data of Akademi Keperawatan Sehat Binjai. Data were analyzed using the spearman correlation test.

Results

Table 1. Frequency distribution base on variables

Variables	Frequency	%
Gender		
Male	26	81
Female	6	19
Total	32	100
Age		
22 years	2	6.3
23 years	11	34.4
24 years	14	43.8
25 years	4	12.5
26 years	1	3.1
Total	32	100
Implementation of the small group discussion method		
Applied	23	71.9
Not applied	9	28.1
Total	32	100
Competency test pass		
Competent	14	43.8
Incompetent	18	56.2
Total	32	100

Table 1 shows that the majority of respondents were male, as much as 81.0%, the majority of respondents were 24 years old (43.8%), implemented a Small Group Discussion in the learning process at Akademi Keperawatan Sehat Binjai in 2018, and the majority of respondents have not passed (incompetent) the 2018 nurse competency test at Akademi Keperawatan Sehat Binjai, namely 18 people (56.2%).

Table 2. Correlation between the implementation of the small group discussion method with results of nurse competency test

Implementation of the small group discussion method	Pearson correlation	P-value
Competency test pass	0.552	0.001

Table 2 shows that the implementation of the small group discussion method is statistically significant with the results of the nurse competency test ($p=0.001$), and has positively correlated which means the implementation of the small group discussion method is good, so there will be many nurses who pass the competency test.

Discussions

The test results of the implementation of the small group discussion method in the learning process with the results of passing the nurse competency test can be seen in table 2. With significant value 0.001, it meant there was a significant correlation with the implementation of the small group discussion method in the learning process on the results of passing the nurse competency test.

Based on Sulystiowati study, which is a classroom action research conducted to implement a small group discussion learning model for students in improving student learning achievement, in this study, it was found that there was an increase in student learning achievement using the small group discussion method as evidenced by the increase in learning achievement with grades. Grade Point Average A and pass category⁽¹⁰⁾.

One learning method that can improve student learning outcomes is the small group discussion method⁽⁵⁾, this is relevant to previous studies related to the small group discussion learning method, research conducted by Saraswati which shows learning activities in students increased after the small group discussion learning method was applied from 58.80% to 85.22%⁽⁶⁾.

Relevant to the results of research conducted by Christiani, it shows that the implementation of the small group discussion method can improve student learning outcomes⁽⁷⁾.

It is also in line with the results of research conducted by Stiyoningsih that the implementation of the small group discussion method can improve students' speaking ability in Arabic⁽⁸⁾.

According to Djaali, states that achievement is closely related to expectations (expectations) that are formed through learning in the environment, while expectations always contain a standard of excellence. It can be concluded that an achievement including passing the competency test can be achieved by students after going through the learning process using one of the small group discussion method⁽¹¹⁾.

Conclusion

There was a significant correlation implementation of the small group discussion method in the learning process with the results of passing the nurse competency test.

Suggestions: Maintaining the small group discussion method and developing other learning method in college to improve nurse competency tests.

Conflict of Interest: Nil

Ethical Clearance: This research has passed the test of ethics from the health research ethics committee of the Nursing Faculty of Universitas Sumatera Utara, with registration number 1316/VI/SP/2019.

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References

1. Laws of the Republic Indonesia No.36 of 2014 about health workers [Internet]. [cited 2020 January 27]. Available from: <https://ipkindonesia.or.id/media/2017/12/UU-No.-36-Th-2014-ttg-Tenaga-Kesehatan.pdf>
2. Laws of the Republic Indonesia No. 12 of 2012 about college [Internet]. [cited 2020 January 25]. Available from: <http://www.polsri.ac.id/panduan/01.%20umum/06.%20Undang-Undang%20Republik%20Indonesia%20Nomor%2012%20Tahun%202012%20Tanggal10%20Agustus%202012%20Tentang%20Pendidikan%20Tinggi.PDF>
3. Data Asosiasi Institusi Pendidikan Vokasi Keperawatan Indonesia Regional I Sumatera Utara, 2018 [Internet]. [cited 2020 February 11]. Available from: <http://aipvikireg1.blogspot.com/>
4. Abdillah A. Analisis Faktor-Faktor Yang

- Mempengaruhi Kelulusan Uji Kompetensi Ners Indonesia. *Jurnal Penelitian Administrasi Publik*. 2016 October; 2(2): 373-380.
5. Peraturan Menteri Riset, Teknologi, Dan Pendidikan Tinggi Republik Indonesia Nomor 44 Tahun 2015 Tentang Standar Nasional Pendidikan Tinggi [Internet]. [cited 2020 March 21]. Available from: <http://kopertis3.or.id/v2/wp-content/uploads/PERMENRISTEKDIKTI-NOMOR-44-TAHUN-2015-TENTANG-SNPT-SALINAN.pdf>.
 6. Saraswati NF, Djazari M. Implementasi Metode Pembelajaran Small Group Discussion Untuk Meningkatkan Aktivitas Belajar Pada Kompetensi Dasar Jurnal Penyesuaian Siswa Kelas X Akuntansi SMK Muhammadiyah Kretek Ajaran 2017/2018. *Jurnal Pendidikan Akuntansi Indonesia*. 2018 December; 16(2): 15-23.
 7. Christiani A. Penerapan Metode Small Group Discussion Dengan Model Cooperative Learning Untuk Meningkatkan Hasil Belajar Siswa Di Sekolah Dasar. *JPGSD*. 2014; 2(2): 1-11.
 8. Sulistyowati NW. Implementasi Small Group Discussion dan Collaborative Learning untuk Meningkatkan Proses Belajar Mahasiswa Program Studi Akuntansi IKIP PGRI Madiun. *Jurnal Akuntansi dan Pendidikan*. 2016 April; 5(2): 173-190.
 9. Hidayat A, Aziz A. Metode Penelitian Keperawatan dan Teknik Analisis Data. 2014. Jakarta: Salemba Medika.
 10. Soifah M. Metode Small Group Discussion untuk Meningkatkan Kompetensi Membaca Teks Hortatory Exposition. *Tajdidukasi*. 2018; 8(2): 137-153.
 11. Djaali. Psikologi Pendidikan. 2013. Jakarta: Bina Aksara.

Assessment of Impact of Shift Work on Health among Staff Nurses at SRM General Hospital, Kattankulathur

K. Silambu Selvi¹, Jayabharathi B.², S. Minisha³, K. Swratha³, M. Vairava Priya³

¹Assistant Professor, SRM College of Nursing, ²Professor, SRM College of Nursing, ³B.Sc.(N) IV Year Students, SRM College of Nursing, SRM Institute of Science and Technology, Kattankulathur, Kancheepuram District-603203 Tamil Nadu, India

Abstract

Objective: The objective of the present study was to assess the impact of shift work on health among staff nurse and to associate the level of impact of shift work on health with the selected demographic variables among staff nurses.

Methodology: Descriptive cross sectional research design and Quantitative approach was used to assess the impact of shift work on health among staff nurses. The study was conducted at SRM General Hospital, Kattankulathur, Kancheepuram district .Samples were selected by non-probability purposive sampling technique. Sample includes 100 staff nurses who were working at SRM general hospital and fulfil the inclusion criteria The tool used for data collection was the “modified version of Standard Shift work Index” . It comprises of two sections: Section –A includes Structured questionnaire to elicit demographic variables such as Age, gender, religion, qualification, duration of work, year of experience. Section –B includes Structured questionnaire to assess the impact of shift work on health. Likert scale rating was used to evaluate the level of impact of shift work on health .

Results : The present study findings revealed that the majority of 79% of staff nurses had moderate impact of shift work on health. 20% had less impact,1% had severe impact and none of them had very less impact of shift work on health. There was no significant association between the demographic variables and level of impact of shift work on health among staff nurses.

Conclusion :There was moderate impact of shift work on health among staff nurses and there was no significant association between the demographic variables and level of impact of shift work on health among staff nurses. Nurses involved in shift work are at risk for decreased health and poor job performance. Their needs should be identified and in service education should be frequently conducted in the hospital in order to ensure that the staff nurses maintain healthy life style.

Keywords: Staff nurse, Shift work, Level of impact, Health.

Introduction

Nursing is a noble profession and nurses play vital

role in the health care. If nurses who are the “symbol of service and humanity” are distressed by their ill health or other stressful circumstances they will not be able to give their full attention to this demanding task. Hospital cannot function effectively and efficiently if there is high incidence of ill health among nurses¹. Quality of care for hospital patients is strongly linked to the performance of the nursing staff. Creating a healthy work environment for nurses is crucial to maintain an adequate nursing workforce.²

Shift work is defined as “work beyond the typical

Corresponding Author:

Dr. K. Silambuselvi

Assistant Professor, SRM College of Nursing, SRM Institute of Science and Technology, Kattankulathur, Kancheepuram District-603203 Tamil Nadu, India
e-mail: selvivalavan@gmail.com

Mobile No.: +91 9488603336

daily working hours (about 7–8 AM to 5–6PM)”, including graveyard shift, night shift, early morning shift, and rotational work.³ In this running world, shift work is a very common mode of operation to serve obvious economic and social goals. ‘Shift work’ is a work schedule involving irregular or unusual hours, compared to those of a normal daytime work schedule. According to worldwide epidemiological data, up to 30% of the working population are employed in shifts. Many different work schedules can be described as shift work, including night work and rotating shift work⁴. Nurses serve as the backbone of health care service. In order to be realistic in their health education and patient expectations, nurses must lead by engaging in positive health behaviour⁵. Due to endemic shortages of health care providers all over the world, nurses are exposed to risks which predispose them to poor health as a result of increased workloads and long working hours that lead to burnout⁶

Health Effects of Shift Work

Shift work and job-related stress cause impact on the workers health and safety Researchers have found forceful connections between shift workers and an increased risk of serious health conditions and diseases such as Cardiovascular disease, Cancer, Diabetes and metabolic syndrome, Obesity, Depression and Mood Disorders, Gastrointestinal problems, problems with Fertility and Pregnancy. Study indicates that 24 hours of total sleep deprivation leads to elevated blood pressure through resetting of arterial bar reflexes. Insomnia individuals also show heart period variability, with increased low frequency and decreased high frequency power spectra and increases sympathetic tone on the heart. The progress of a cost-effective and easy to-use strategies for detection of chronic stress accumulation in individual nurses would allow for detection of potential harm to the nurse. It is essential to identify the factors for the evaluation of future stress prevention interventions prior to initiating those interventions. Documentation of adverse health effects affiliated with nursing shift work may prompt the individual, and employers, to take actions directed at preventing negative health effects. Nurses act as direct caregivers and serve hospitals twenty-four hours a day, seven days a week.. Percentage of workforce and health of nurses may be affected due to shift work problems. Thus, the investigators felt the need and conducted this study to assess the impact of shift work on health among staff nurses .

Methodology

Descriptive cross sectional research design and Quantitative approach was used to assess the impact of shift work on health among staff nurses. The study was conducted at SRM General Hospital, Kattankulathur, Kancheepuram district .Samples were selected by non-probability purposive sampling technique. Sample includes 100 staff nurses who were working at SRM general hospital . The inclusion criteria were (a) Staff nurses of both genders, (b) Staff nurses between the age group of 21-50 years (c) Staff nurses who were employed for more than 1 year and willing to participate in the study. The exclusion criteria was (a) Staff nurses who have known chronic illness such as diabetes mellitus, hypertension, etc.(b) Staff nurses who were working for less than one year and not willing to participate. The tool used for data collection was the “modified version of Standard Shift work Index” . It comprises of two sections: Section –A includes Structured questionnaire to elicit demographic variables such as Age, gender, religion, qualification, duration of work, year of experience. Section –B includes Structured questionnaire to assess the impact of shift work on health. It consists of five sub-section, in accordance with the aim of the study.

1. Shift Work – Consist of twelve questions, where it gives detail about their shift working time
2. Sleep and Fatigue –Consists of nine questions, to investigate about their normal and disturbed sleep pattern during shift work
3. Physical Health and Well Being – Consists of eleven questions, to concern on their physical symptoms during shift work
4. Mental Health and Coping – Consists of thirteen questions, to measure the psychological disturbance of staff nurse during shift work
5. Social and Domestic Situation – Consists of five questions, regarding their social participation and daily own works during shift work.

Likert scale rating was used to evaluate the impact of shift work on health among staff nurses..Content validity was obtained from various nursing experts and Reliability of the tool was established by test-retest method. The r value was 0.80 and 0.9 respectively which indicated a positive co-relation to proceed for the main study. Formal approval was obtained from the institution review board and institutional ethical committee of SRM IST, Kattankulathur. The data collection was done after

obtaining Informed consent from the participants and Statistical analysis was performed using SPSS software version 16.

Results

Descriptive and Inferential Statistics were used to assess the impact of shift work on health among staff nurses.

Results of Demographic Variables: Regarding the age, 80% of staff nurses were in the age group of 21-30 years, 19% were between the age of 31-40 years, and 1% staff nurses were in the age group of 41-50 years. Considering the gender of the staff nurses, only 21% were male and 79% of them were females. Regarding the marital status 35% of the staff nurses were married, 1% were divorced, and 64% of the staff were single, there was no widow. On the aspects of religion 57% were Hindu, 14% were Muslim, 28% were Christian, and only 1% were others. Considering qualification 39% of staff nurses were DGNM, 58% were B.Sc.(N), 2% were M.Sc.(N). 44% of staff nurses were working for 6 hours, 22% were working for 7 hours, 27% were working for 8

hours, and 7% of staff were working for >8 hours. 35% of staff nurses had work experience of 1-3 years, 37% were having 3-5 years of experience, 17% were having 5-7 years of experience, and 11% were having >7 years of experience.

Table 1. Assessment of Level of Impact of Shift Work on Health Among Staff Nurses. N=100

S.No.	Level of Impact	No. of respondents	Percentage
1	Very less impact	0	0%
2	Less Impact	20	20%
3	Moderate Impact	79	79%
4	Severe Impact	1	1%
Total		100	

The above data shows the level of impact of shift work on health among staff nurses. 0% of the staff nurses have very less impact of shift work on health, 20% of the staff nurses have less impact of shift work on health, 79% of the staff nurses had moderate impact and 1% of the staff nurses had severe impact of shift work on health.

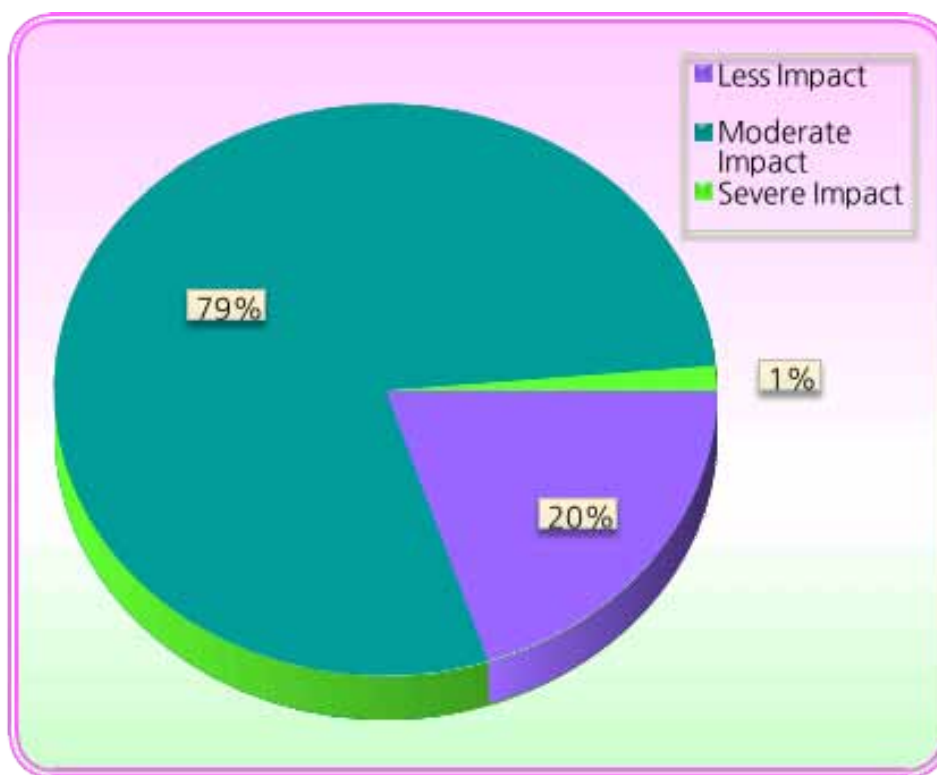


Figure 1: Percentage Distribution of Level of Impact of Shift Work on Health among Staff Nurses

Table 2: Association between the “Demographic variables and level of impact of shift work on health” among staff nurses

S.No.	Demographic Variable	Class	Level of Impact			Chi-Square	DF	P-Value
			Less Impact	Moderate Impact	Severe Impact			
1	Age	21-30 Years	17	62	1	0.825	4	0.935
		31-40 Years	3	16	0			
		41-50 Years	0	1	0			
2	Gender	Male	6	14	1	5.250	2	0.072
		Female	14	65	0			
3	Marital status	Married	5	30	0	5.484	4	0.241
		Divorced	1	0	0			
		Single	14	49	1			
4	Religion	Hindu	13	44	0	3.582	6	0.733
		Muslim	3	11	0			
		Christian	4	23	1			
		Others	0	1	0			
5	Qualification	DGNM	9	29	1	2.684	6	0.847
		B. Sc (N)	11	47	0			
		M. Sc (N)	0	2	0			
		Others	0	1	0			
6	Duration of Work	6 Hours	14	30	0	10.940	6	0.090
		7 Hours	1	20	1			
		8 Hours	4	23	0			
		> 8 Hours	1	6	0			
7	Years of Experience	1-3 Years	9	26	0	3.675	6	0.721
		3-5 Years	5	31	1			
		5-7 Years	3	14	0			
		>7 Years	3	8	0			

**-Significant at 1% level *-Significant at 5% level

From the above table, the p-value corresponding to the demographic variables were not significant at 5% level of significance and hence it was found that there was no significant association between the demographic variables and level of impact of shift work on health.

Discussion

Altered shift schedules will have various impacts on the health of a shift worker. The way the shift pattern is designed affects how shift workers sleep, eat and take holidays. Some shift patterns can aggravate fatigue by increasing stress, limiting rest, overworking staff or

disrupting their time off⁷. The present study reveals that 1% of the staff nurses have severe impact of shift work on health, 79% have moderate impact, 20% have less impact and 0% of staff nurses have very less impact of shift work on health. The results also revealed that there was no significant association between the demographic variables and level of impact of shift work. Deficits in health behaviours of nurses are common issues in a number of countries mainly due to inadequate balanced diet, low level of physical activity, not enough sleep and rest⁸. Findings of this study is similar to Rathore H et al 2012⁹ study with objective of getting an insight into

the problems faced by female nurses in shift work. The results showed that the female nurses in the age groups of 30-45 years and 45-60 years faced many problems related to health and well being, fatigue, social and domestic situations.

Surekha anbazhagan et al 2016¹⁰ study involved 130 nurses, aged of 27.4 ± 2.64 years. The prevalence of shift work disorders was found to be 43.07%. Headache, back pain, gastritis, and menstrual disorders were the most common complaints, which were found in 60.0%, 57.6%, 32.3%, and 30.0% cases, respectively. Anxiety and depression was found in 17.6% and 23.8% individuals, respectively. 53.8% nurses were found to have sleep problem. Researcher found a significant association of shift work disorder with increasing age, more number of nights worked in a year, and longer duration of working hours. Researches also show that nurses who work on rotating shifts had complaints concerning fatigue and this was highest in the night shift, followed by evening then morning shift. The symptoms reported by night shift nurses include sleepiness, sadness, and difficulty concentrating, with numerous complaints about cumulated fatigue and disturbed social life¹¹

Conclusion

The investigators conclude that there was moderate impact of shift work on health among staff nurses and there is no significant association between the demographic variables and level of impact of shift work.. Nurses involved in shift work are at risk for decreased health and poor job performance .Their needs should be identified and in service education should be frequently conducted in the hospital in order to ensure that the staff nurses maintain healthy life style.

Source of Funding: Self

Conflict of Interest: Nil

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Reference

1. South African Department of Health. OH services for health care workers in the national health service of South Africa. A Guideline Booklet. 2003:8–12.
2. Tankha G. A comparative study of role stress in government and private hospital nurses. *Journal of Health Management*. 2006;8:11–22.
3. Wu S Zhu W Wang Z Wang M Lan Y. Relationship between burnout and occupational stress among nurses in china. *Journal of Advanced Nursing* 2007;59:233-239.
4. Shanafelt TD Boone S Tan Let al. Burnout and satisfaction with work –life balance among US physicians relative to the general US population .*Archives of internal medicine* 2012;172:1377-1385
5. H. Blake, S. Malik, P. K. H. Mo, and C. Pisano, 'Do as I say, but not as I do': Are next generation nurses role models for health? *Perspectives in public health* 2011;131(5) : 231–239.
6. M. N. K. Karanikola and C. Kaite, "Greek-Cypriot mental health nurses' professional satisfaction and association with mild psychiatric symptoms: MHNs' Professional Satisfaction and Psychiatric Symptoms," *International Journal of Mental Health Nursing*, 2013 vol. 24, no. 4, pp. 347–358,
7. "Fatigue and Shift Work (Tools And Techniques) eBook: Dr Angela Moore, Alec Jezewski: Amazon. co.uk: Kindle Store". Retrieved 3 February 2016.
8. Magdalena Woynarowska-Sołdan,, Mariusz Panczyk, Lucyna Iwanow,, Robert Gałązkowski, Angelina Wójcik-Fatla, Lech Panasiuk, Joanna Gotlib, Associations between overweight and obesity and health enhancing behaviours among female nurses in Poland, *Annals of Agricultural and Environmental Medicine* 2018, Vol 25, No 4, 714–719
9. Rathore H, Shukla K, Singh S, Tiwari G. Shift work--problems and its impact on female nurses in Udaipur, Rajasthan India. *Work*. 2012;41 Suppl 1:4302-14. doi: 10.3233/WOR-2012-0725-4302.
10. Surekha Anbazhagan, Naveen Ramesh and Bobby Joseph, et al. Shift work disorder and related health problems among nurses working in a tertiary care hospital, Bangalore, South India. *Indian journal of occupational and environmental medicine*. 2016; 20(1):35-38.
11. Ohida, Coffey and Skipper, 2001. Effect of Night Shift on Nurses Working in Intensive Care Units at Jordan University hospital. *European Journal of Scientific Research*. 23:16-25.

Balancing Academia with Clinical Proficiency in the Training of Nurses at the University Level: The Case of Ghana

Lily Yarney¹, Belinda Adzimah-Yeboah², Kwame Ameyaw Domfeh³, Anthony Q.Q. Aboagye⁴

¹Senior Lecturer, Department of Public Administration and Health Services Management, University of Ghana Business School, Legon, Accra, ²Assistant Lecturer, School of Nursing and Midwifery, University of Health and Allied Health Sciences, PMB 31, Ho, ³Professor, Department of Public Administration and Health Services Management, University of Ghana Business School, Legon, Accra, ⁴Professor, Department of Finance, University of Ghana Business School, Legon, Accra

Abstract

Background: At the University level, the preparation of student nurses involves acquisition of theoretical knowledge and clinical practice, when this is done well, it can serve as a double-edged sword for blending theory and practice. We explored the ability, role, and experiences of nurse academics in balancing theory and practice in training nurses.

Method: Using exploratory research with methodical triangulation design, data were collected from nursing lecturers and student nurses using interviews, questionnaires, and focus group discussions.

Conclusion: Findings indicate that clinical practice is recognized by lecturers and students as an important measure for enhancing theoretical preparation of nursing students. University academic calendar does not favor inclusion of clinical practice, thus, balancing theory with clinical practice is difficult. University nurse educators in Ghana are obligated to blend theory and practice. However, challenges are encountered in doing so. Curricula for nursing education should be designed to be autonomous to place priority on clinical practice. The Nursing and Midwifery Council of Ghana should also put monitoring mechanisms in place to ensure clinical practice competencies of nursing lecturers.

Keywords: Nursing Training, Academia, Clinical Proficiency, Ghana.

Introduction

Countries all over the world including Ghana are encouraging the transition of nursing education from hospital-based training Registered Nurse (RN) to a University based Degree Nurse. At this level, the preparation of student nurses involves acquisition of knowledge that should satisfy all the required university

program courses as well as the nursing professional theoretical courses and clinical practice requirements to imbibe practical skills in the neophyte student.

This dual academic and professional proficiency requires the nurse educator to impact both academic knowledge and clinical skills to the student. In high-income-countries, the Professor of Nursing is a double-edged sword- delivering effectively, the theoretically required components as well as the clinical component. Thus, ensuring that, the clinical credibility of a nurse educator is as important as the academic laureates of a dignified Professor.

The nurse educator in the university should therefore be one who must be able to apply theory to practice, and impact theoretical knowledge as well as adequately prepare students to be clinically proficient.

Corresponding Author:

Lily Yarney

Senior Lecturer, Department of Public Administration and Health Services Management, University of Ghana Business School, Legon, Accra

e-mail: lyarney@ug.edu.gh

Tel: +233208137326

Clinical practice is a problematic component of a nurse's academic identity and disciplinary discourse, yet a focus on clinical practice is central to the autonomy, integrity, and distinctiveness of Nursing as an academic discipline¹. Nurse educators, therefore, are faced with the responsibility of balancing the demands of academia and professional practice, to adequately prepare students to confidently acquire psychomotor skills for professional licensing and future practice.

Nursing education in Ghana evolved from hospital-based skill training in the early 1960s and later included the University transition from the 1980s to date.² Hence, for the past four decades, nurse educators in University-based programs are expected to adequately prepare students for professional practice and maintain their professional credentials as they fulfil the demands of academia, conducting research, publishing and other University responsibilities that account for promotions and self-development.

Presently, there are both public and private Universities that are training nurses in Ghana, and the university-based nursing is a four-year degree program consisting of both theory and practicum, at the end of which students are awarded a Bachelor's degree in Nursing, and are subsequently expected to write a professional licensure examination to practice as professional nurses.

Nurses trained at the university are expected to contribute better to meeting the growing healthcare demands of today's society. Whilst this could be considered as a positive development, one critical issue which confronts nursing practice both in high-income and low-and middle-income countries is the issue of safe and quality patient care. These have always been very important part of healthcare delivery, and it is obvious that unsafe patient care is one situation that is not tolerable in any society of the world.

Research from high-income countries have identified several factors in the nursing profession that result in unsafe patient care to include inadequate research on nursing practice, low level of competency in clinical skills, poor knowledge base and inability of nurse educators to balance theory and practice.¹ Arguably, the ability to address unsafe patient care depends largely on the extent to which these factors are addressed. The role of nursing services is critical in determining safety, quality, and high performance in healthcare delivery. Among

the human resources for health, nurses always make up most of the professional group that provide care at all levels, and therefore, use notable amount of operating costs of hospitals.³ Hence, gaining an understanding of the impact of nursing care on patients is important in ensuring quality, safety, and patient-centered care.⁴ Nurses' interaction with patients is also the main determinant of patient satisfaction and recovery.⁵ Thus, the critical role of nursing in quality and safe healthcare requires that nurses be adequately trained both in theory and in practice.

It is a common parlance in Ghana that nurses who begin their training at the university level are not clinically competent and possess inadequate nursing skills, as they usually lack confidence and are scared to touch patients and care for them. Anecdotal evidence in Ghana indicates concerns over the adamant attitudes and laxity flare exhibited by nurses in academia to the acquisition of psychomotor skills toward clinical practice for students, however, this is what will enable them identify with their discipline and legitimize their professional competency. The dual role of teaching and clinical practice seems attractive to faculty and clinical staff, but requires significant amount of investment of time and money.¹ Most nurse educators complain that playing the dual role over a long period of time leads to burnout. If nurse educators are not able to equip students with clinical skills and students feel incompetent to practice, the main purpose of nursing training would be defeated.

Research into bridging the theory and practice gap has also received very little attention in Ghana, and failure to address this gap could lead to unsafe patient care. This can better be managed in healthcare systems where innovative practices are promoted through research. Additionally, there is a dearth of literature in this area in Ghana, and the paucity of data and subsequent lack of information has manifested in the inability of university student nurses' enough acquisition of professional knowledge and skills to enable them link theory to clinical practice, and deliver safe patient care. We therefore sought to investigate the responsibilities and experiences of University nursing lecturers in balancing teaching and clinical practice in their training of students. Specifically, we explored the obligations, expectations, and experiences of Nurse Educators as teachers and as professional nurses shouldering this dual role

Theoretical and Conceptual Framework: The Problem Based Learning (PBL) theory is used to explain some of the interconnections in the conceptual framework for the study.⁶ The PBL is characterized by a student-centered approach, with teachers as facilitators rather than disseminators.⁷ In addition to emphasizing learning by doing, PBL requires students to be meta-cognitively aware.⁸ In nursing practice, this is called critical thinking, an approach that is used to solve client problems. At the entry point of training, many students are not capable of critical thinking, thus, the lecturer must become a ‘cognitive coach’ who models for students to emulate. PBL theory is effective in facilitating student problem-solving and self-directed learning skills.⁹ Nursing is a lifelong act of solving problems, hence, the skill can only be learnt through real life solving of patients’ problems with theoretical knowledge base as the pivot.

University nursing program as a legitimate academic discipline must produce nurses to become scholars, practitioners, and leaders in the discipline, and take the lead in delivering quality and safe patient care. These qualities of a graduate nurse is what the nurse educator is expected to produce, it is therefore imperative that the lecturer posse a dual competence- educator and practitioner (Figure 1), because, the training of nurses ends at the bedside of the patient or in the community.¹⁰ The nurse educator’s experience in teaching and guiding students in a clinical setting provides a foundation for further studies and contribute to the existing body of knowledge in nursing.¹¹ They must thus, be equipped with all the skills to train the caliber of nurses needed to give quality client care and legitimize the nursing profession as an academic discipline.

Figure 1: The Graduate Nurse as a Practitioner, Scholar and Leader



Source: Authors’ construct

Methodology

Research Design and Study Sites: The study was exploratory with methodical triangulation in design to neutralize biases and to ensure confidence in the results.^{12,13}

The study areas were schools and departments of nursing in three Ghanaian universities, namely: University of Ghana School of Nursing in Accra, University of Health and Allied Sciences School of Nursing and Midwifery in Ho, and Valley View University (VVU), Department of Nursing in Accra. These universities have all been involved in the training of nurses and they were easily accessible, cooperation from respondents and information required were relatively easier to obtain.

University of Ghana is the oldest university among the three and was the first to start a bachelor's degree in nursing in Ghana in the late 1980s. The population of lecturers in the School of Nursing was 25 with student population of about 1,500 at the time of the study in 2018. Valley View University was started in the 1990s and had 10 Nursing lecturers with 250 students. University of Health and Allied Sciences was established in 2011. The Nursing school had a lecturer population of 15 to 1,500 students at the time of the study. All the Nursing Schools and Departments run a bachelor's degree program which is a four-year program, made up of theory and clinical practice sections. The University of Ghana School of Nursing in addition, runs postgraduate program in Nursing.

Study Population, Sampling, and Sample Size: The study population was made up of university nursing lecturers and nursing students. There were seven public universities and few private universities that were relatively new in Ghana at the time of the study. Among the public universities five had schools or departments of nursing and some of the private universities also had degree nursing program. Two public universities (University of Ghana and University of Health and Allied Sciences) and one private university were purposefully sampled for the study.

The total number of nursing lecturers and students involved in the quantitative study was 80. Stoker Guideline for Sampling Table was utilized to randomly select 30 lecturers and 50 level 400 students who have gone through the full cycle of a university nursing training program and were being prepared for graduation

and licensure examination.

For the qualitative study, purposive sampling was employed. The authors used their knowledge about the population to handpick the relevant individuals to be included in the sample.¹⁴ Five lecturers made up of three older nurses and two young nurses with at least six years and two years-experience respectively as nurse educators and were willing to participate in the study were selected. Also, twenty level 400 students who had been in the program for more than three years and had gone through at least three clinical practicum periods were selected purposively, making a total of 25 participants for the qualitative study.

Data Collection Methods, Instruments and Procedures: Three main methods, and 4 instruments, made up of questionnaires distribution with separate questionnaires for nursing lecturers and nursing students, in-depth interviews with in-depth interview guide for lecturers, and focus group discussions (FGDs) with FGD guide for students.

The instruments were piloted to check their suitability for collecting relevant information at the university of Ghana and to determine the length of time needed to complete an interview section. The questionnaires were delivered by hand for respondents to complete for collection within a week of receipt. In-depth interviews were conducted by the first author in the comfort of the offices of the lecturers with each interview session lasting about 30 to 45 minutes. Focus group discussions with four (4) groups of level 400 students with five students in each group were conducted at convenient sites on the campuses of the study universities with an experienced FDG facilitator with assistance from the second author. The quantitative method was used to obtain facts and opinions about balancing teaching with clinical practice, whilst the qualitative methods were used to generate in depth information on teaching and clinical practice in the training of nurses at the degree level.¹⁵ Policy documents from the Nursing and Midwifery Council (NMC) of Ghana were also reviewed

Data Analysis: The quantitative data were analyzed using SPSS version 18.0, and descriptive statistics were used to explain the results.

For the qualitative data, interviews and focus group discussions were audio-taped in addition to field notes. These were transcribed verbatim, coded, and categorized into themes and sub-themes. The major themes in tandem

with the study objectives were identified from the coding and categorization of the transcribed interviews for triangulation with the qualitative findings. The concepts of transferability, confirmation and dependability were used to assess trustworthiness of the qualitative findings.^{15,16} Quotes were then selected to represent themes, and pseudo names (Lecturer or student) were used to report the quotes from the respondents.

Ethical Considerations: The research protocol met the guidelines for research involving human subjects of the Ethical Committee for Humanities (ECH) of the Office of Research, Innovation and Development (ORID), University of Ghana. Written informed consent were obtained from all participants before their involvement in the study. Research procedures and purpose were explained carefully and thoroughly to allay the fears of all participants, and confidentiality was assured and maintained for all participants throughout study by the use of code numbers on the transcripts with the participant's identity only known to the researchers. Each participant was also given the opportunity to ask questions, and the chance to opt out of the study anytime he/she wanted to. All participants were assured that their involvement had nothing to do with their job evaluation or their acquisition of their degree. Consent was also obtained from participants to publish the findings of the research with anonymous quotes.

Results and Discussion

Demographic Characteristics of Respondents:

Most of the lecturers (93%; n=28) were in their thirties (30s) to early forties (40s), 20% (n=6) were males and 80% (n=24) were females. Fifty percent (n=25) of the lecturers were married and 50% (n=25) were not married. Eighty percent (n=24) of the lecturers had been employed by the universities for 5 years or less.

Experienced Versus Competent Practitioners:

A competent practitioner is defined as having 2-3 years of experience in the same or similar setting, engages in conscious and deliberate planning, and consistently uses

an analytic framework. An experienced practitioner on the other hand has practiced for 6 or more years in the same or similar setting and does not rely on maxims, rules, or analytic frameworks to practice.¹⁷

Most of the lecturer respondents 66.7% (n=20) can be described as competent in nursing practice and only 3.3% (n=1) can be regarded as experienced. Looking at the demands of being a nurse educator in the university, it takes experience in the practice of nursing to be able to train students to be competent and proficient nurses. The majority of the lecturers are in the beginning stages of their career as nursing lecturers. Engaging students in finding answers to clinical questions through care of real-life patients takes experience to deliver, and lecturers three years on the job might not have that kind of experience. This paints a gloomy picture of the ability of the lecturers to train student nurses to become proficient professionals. Considering the fact that there is ample anecdotal and some empirical evidence indicating dissatisfaction among the Ghanaian public on the state of nursing care¹⁸, this observation is worrisome since incompetent nursing care is likely to compromise quality and safe patient care.

Whilst, Little and Milliken's¹⁹ assertion may be generally true (especially in High-Income Countries), one needs to look beyond length of practice, and cover other relevant factors that may facilitate or hinder competence building in low and middle-income country context like Ghana. These factors may include enabling and supportive work environment, positive attitudes, mentoring, low level of hostility/competition and resources availability, among others.

Nurse Educator's Obligation and Expectation to Teach Theory and Practice:

All the lecturer-participants (100 % (n= 30)) indicated that a lecturer has the obligation to link theory and practice in the training of the student nurse, whilst 92% (n=42) of the student-participants indicated same, 2% (n=1) of the students answered no with the remaining 6% (n=3) indicating they were not sure.

Table 1: Nurse Educator' Obligation to link Theory to Practice, and Perception of Nurse Educators' Clinical Competence

Nurse Educator's Obligation to link theory to Practice	Yes		No		Not Sure	
	Freq.	%	Freq.	%	Freq.	%
Lecturers	30	100.0	-	-	-	-
Students	46	92.0	1	2.0	3	6.0
Perception of Nurse Educators' Clinical Competence						
Lecturers	17	56.7	2	6.7	11	36.7
Students	17	34.0	10	20.0	23	46.0

n (Lecturers) = 30; n (Students) = 50

The qualitative findings showed that both lecturers and nursing students identify clinical competency as an important quality of an effective nurse educator, therefore nursing lecturers are obliged to teach both theory and practice:

"I think being able to teach both theory and practice should be an obligation. I cannot comprehend how you will be teaching nursing and will not teach the practical. If you can't then you are not a nurse." (Lecturer)

"Nursing Lecturer you must have both skills, if you are teaching and you cannot site examples from the field, how can you teach well? We like lecturers who can relate theory to their experiences from the field, it makes me understand things better." (Student)

With reference to integrating clinical practice with theoretical delivery in a university context, this observation blends with the assertion by highlighting the need for nurse educators to gain competency in clinical practice because nursing is a practice-based profession.²⁰ It is also imperative in contemporary times where university student nurses have generally been criticized for not being able to deliver patient care adequately.¹¹ However, the discourse on teaching both theory and practice in the training of nurses at the university level in several advanced countries (where the nursing profession has developed better relative to the Ghanaian context) is polarized. Some researchers have noted that there are conflicting views about whether nurse educator's priority should be in academia or in clinical practice.²¹ Thus, while some studies have argued against the need for nurse educator to be clinically competent, stressing that the theory can be taught in classroom context, leaving the practical aspects to be taught by professional nurses in a hospital context, other

researchers have held a contrary view arguing in support of the need for nurse educators to blend the two aspects of nursing.²²

The argument of the former is pivoted on several considerations, for example, some have cited demands imposed on them by virtue of their position as nurse lecturers which adds further burden on their work, especially when no further compensation is provided for the discharge of such extra responsibilities as supervising and mentoring students on clinicals.²¹ The latter who have argued in support of the claim have underscored the need for this by claiming *inter alia* that nurse educators are equally professional nurses who practiced before becoming lecturers, thus there is no reason why both aspects cannot be integrated to make a whole.

While none of the two claims can be empirically confirmed in Ghana and no research has been carried on this issue, some respondents in the focus group discussions (FGD) for students and the in-depth interviews for lecturers expressed sentiments which confirm the latter.

"Most nurse educators know it is an obligation to teach both, but some did not work before entering the teaching field, so they do not have the practical experience. They want to justify their relevance by insisting that practical experience is not necessary for one to be a lecturer, but it is necessary". (Lecturer)

"How can you be teaching nursing if you are not proficient in the practice? We do not nurse the air, we nurse patients". (Lecturer)

"It will be better the lecturers teach us the practical themselves. We have preceptors to coach us on the

clinical, but most of the time we never see them the whole time that we we're the ward. They do not put us in the same ward or shift as the preceptors, and the ward nurses don't have time for us, they're overwhelmed with workload." (Student)

"The lecturers know us better and can mentor us better in the clinical environment." (Student)

Perception of Nurse Educator's Clinical Competence: The majority (56.7%; n=17) of lecturers perceived that they were clinically proficient, and 6.7% (n=2) felt they were not, the remaining 36.7% (n=11) were not sure. However, only 34% (n=17) of the student-participants perceived that their lecturers were clinically competent, 20% (n=) felt they were not, and 46% (n=23) indicated they were not sure. (see table 2)

These findings were further clarified by responses from the FGDs:

"You can tell those who are experienced in practice and those who are not. Those who know the job always site examples from the field, their teaching is not abstract, Those who do not have experience are defensive and do not entertain questions, they are always reading to us not teaching" (Student)

Perception shapes the way people relate to each other; it also shapes expectations from one another. Where the perceptions of two people meet favorably, the outcome is usually positive. On the other hand, where the perceptions of two people are at variance with each other, the outcome is likely to yield negative results. The same applies in the student nurse- lecturer relationship. For example, when the perception of the lecturer's clinical competency by the student is in doubt, it is likely to affect the student nurse's ability to learn clinical skills. The findings present a paradox, particularly when the two groups are supposed to work together towards a common outcome of producing competent nurses. The perception of the majority of lecturers on their clinical proficiency and the perception of the majority of students on the clinical proficiency of their lecturers are at variance with each other, a situation that may yield negative results. Thus, although the students acknowledged that their lecturers have the obligation to both theory aspect and clinical skills, they do not perceive most of their lecturers as being able to do so effectively.

Theory and Practice Gap in the Training of Nurses: Ninety percent (n=27) of lecturers agreed

that there is a theory and practice gap in the training of nurses whilst and only 10 % (n=3) disagreed. Forty-eight percent of students (n= 24) also agreed that there is a theory and practice gap, 32% (n=16) felt there is no theory and practice gap, and 20% (n=10) stated they were not sure (Table 2).

The qualitative findings were in support of the quantitative results:

"With the few clinical experiences I had, I wouldn't say that I am competent, I still have a lot to learn, we do not get to practice much in school because the university curriculum is full of theory" (Lecturer)

Some reasons given by lecturers were: University academic calendar does not provide enough time for clinical practice. Autonomy is not given to nurse educators to plan clinical activities for student nurses.

"The university system has contributed in a way because it is difficult to get the university authorities to accept that we need time for practical. The nursing school uses the university-wide timetable and trying to fit in time for practical is very difficult."(Lecturer)

"For us to adequately train nurses, the universities have to give us the autonomy to have our own timetable so we can plan our activities to suit the demands of our program, but this is difficult since the students take other courses from other departments."(Lecturer)

Nursing is a profession based on scientific knowledge and clinical practice.²³ The student nurse therefore needs to be prepared to play a dual role of using scientific knowledge to deliver a holistic and appropriate patient, family, and population care. Other studies have suggested that there is a gap between theory and practice in the training of nurses where students find out they were unable to integrate what they learnt in the classroom with real life patients.²⁴ The shock of practice is a crisis moment experienced by most nursing students when they enter the clinical workplace.²³ This is marked by a decrease in their ability to incorporate the basic Biomedical Science knowledge into their clinical reasoning. Although no empirical data exist about this problem in the Ghanaian context, anecdotal evidence exists to affirm this fact.

In Ghana, the entry level rank for a university graduate nurse is Nursing Officer, which is a senior supervisory position. Thus, the new graduate nurse does

not take instructions from staff nurses who may be more competent and experienced in the clinical environment. Hence, the graduate nurse does not get the chance to learn and master clinical skills. These graduates are the ones who get the opportunity for higher education and get employed as lecturers.

“University-trained nurses are made senior staff as soon as they qualify and take on supervisory role, thus, they’re not involved in most of the basic care giving activities, so they continue to lack practical experience. The junior staff know the practical work more than them, they are proficient in theory” (Lecturer)

“The ward nurses are not willing to teach us clinical skills because we’ll be their bosses when we graduate, Even the registered nurses who are now pursuing their degree with us are unwilling to teach us. They teach the Nursing Training College (NTC) students, and send us on errands when we’re with them for practical” (Student)

Since the graduate nurse enters the profession at senior level the training curriculum might have to be designed to allow enough practical components to equip them with experience and confidence in the clinical environment to enhance their competence after graduation

Requirement for Nurse Educators’ Clinical Practice: Most high-income-countries have policies in place that require nurse educators to engage in clinical practice to enable them balance teaching theory and practice effectively. It is expected that Ghana should have similar policies in place, and all the lecturer participants indicated that the Nursing and Midwifery Council (NMC) of Ghana has a requirement for clinical practice for nurse educators. However, the in-depth interviews revealed that there is no monitoring as to whether the requirements are fulfilled or not:

“There is a logbook that we’re required to record our practice periods in it and use it to renew our PIN. But how many times has the NMC even asked about it? No one monitors to see whether you go and practice and fill the logbook or not.” (Lecturer)

Elsewhere, nurse educators are committed to their clinical roles because regulatory bodies have developed competency requirements for nurses in academia to follow and have put in place monitoring mechanisms in place. For instance, in the United Kingdom, the National

Board for Nursing, Midwifery and Health Visiting has mandated that nurse educators spend 20% of their time in practice, Ghana may have to emulate this.²⁵

Conclusion

The advent of higher education in nursing has come both as a bane and a blessing to nursing education in low-and-middle-income countries such as Ghana. Looking at the role of nursing in ensuring quality patient care and patient safety, it is important that nurses are adequately trained in theory and practice. Hence, the essence of emphasizing clinical practice in university nursing programs cannot be omitted. Most nursing lecturers in Ghana had a short duration of clinical exposure for two to three years before joining academia, thus, the gap in theory and clinical proficiency. Since the graduate nurse enters the profession at senior level, the training curriculum may have to be re-designed to allow enough practical components that will equip them to gain confidence in the clinical environment and become competent in clinical practice by the time they graduate from school. This can only be possible if the universities recognize that Nursing education should be granted the autonomy to design their own calendar of activities.

There is also the need for the NMC of Ghana to put monitory regulations in place to ensure that nurse educators update and maintain their clinical proficiency. Future research that investigates the policies of the NMC to monitor clinical competence of the nurse educator will be beneficial to the Ghanaian nursing education at the university level.

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References

1. McNamara S. Development and implementation of specialized nurse practitioner role: Use of the PEPPA framework to achieve success. *Nursing and Health Sciences*. 2009 Aug 17; 11(3):318-325
2. Akiwumi A. Roles, competencies and qualities of the nurse in Ghana in the 21st century. A. Akiwumi (Ed.), *Nursing education in Ghana for the 21st century*. Accra, Ghana: Woeli Publishing Service. 1992.
3. Dubois CA, D’Amour D, Pomey MP, Girard F, Brault I. Conceptualizing performance of nursing care as a prerequisite for better measurement: a

- systematic and interpretive review. *BMC nursing*. 2013 Dec 1;12(1):7.
4. Desborough J, Banfield M, Parker R. A tool to evaluate patients' experiences of nursing care in Australian general practice: development of the Patient Enablement and Satisfaction Survey. *Australian Journal of Primary Health*. 2014 Jun 6;20(2):209-15.
 5. Larrabee JH, Ostrow CL, Withrow ML, Janney MA, Hobbs Jr GR, Burant C. Predictors of patient satisfaction with inpatient hospital nursing care. *Research in nursing & health*. 2004 Aug;27(4):254-68.
 6. Hmelo-Silver CE, Chernobilsky E, DaCosta MC. Psychological tools in problem-based learning. In: Tan O, editor. *Enhancing thinking through problem-based learning approaches: International perspectives*. 2004:17-37.
 7. Wilkerson L, Gijsselaers W. Concluding comments. In Wilkerson L, Gijsselaers W. *Bringing problem-based learning to higher education: Theory and practice*. New directions in teaching and learning. San Francisco: Jossey-Bass Publishers. 1996;101-104.
 8. Gijsselaers WH. Connecting problem-based practices with educational theory. In Wilkerson L, Gijsselaers W. *Bringing problem-based learning to higher education: Theory and practice*. New directions in teaching and learning. San Francisco: Jossey-Bass Publishers. 1996: 13-22
 9. Dochy F, Segers M, Van den Bossche P, Gijbels D. Effects of problem-based learning: A meta-analysis. *Learning and instruction*. 2003 Oct 1;13(5):533-68.
 10. Punjot P. Nurse's Role: Beyond the Bedside. *International Journal of Nursing Education and Research*. 2019 Feb 6;7(3):432-434.
 11. D'Souza MS, Venkatesaperumal R, Radhakrishnan J, Balachandran S. Engagement in clinical learning environment among nursing students: Role of nurse educators. *Open journal of nursing* .2013 Mar 1; 27(4): 254-268
 12. Creswell JW. *Research Design: Qualitative and Quantitative Approaches*. Thousand Oaks, CA: Sage.2000
 13. Jick TD. Mixing qualitative and quantitative methods: Triangulation in action. *Administrative science quarterly*. 1979 Dec 1;24(4):602-11.
 14. Hungler BP, Beck CT, Polit DF. *Essentials of nursing research: methods, appraisal, and utilization*. Lippincott-Raven; 1997
 15. Richards L, Morse JM. *Readme first for a user's guide to qualitative methods*. Sage publications; 2012
 16. Lincoln YS, Guba EG. *Naturalistic inquiry*. Newberry Park.1985
 17. Benner P. Beware of technological imperatives and commercial interests that prevent best practices. *American Journal of Critical Care*. 2003 Sep 1;12(5):469-71.
 18. Yarney L, Buabeng T, Baidoo D, Bawole JN. Operationalization of the Ghanaian patients' charter in a peri-urban public hospital: voices of healthcare workers and patients. *International journal of health policy and management*. 2016 Apr 23;5(9):525.
 19. Little MA, Milliken PJ. Practicing what we preach: Balancing teaching and clinical practice competencies. *International Journal of Nursing Education Scholarship*. 2007 Feb 12;4(1).
 20. Fawcett TN, McQueen A. Clinical credibility and the role of the nurse teacher. *Nurse Education Today*. 1994 Aug 1;14(4):264-71.
 21. Grisetti O, Jacono B, Jacono J. The nurse educator's clinical role. *Journal of advanced nursing*. 2005 Mar 14;50(1):84-92
 22. Myrick F, Yonge O. *Nursing preceptorship: Connecting practice and education*. Lippincott Williams & Wilkins; 2005.
 23. Boshuizen H. *The Shock of Practice: Effects on Clinical Reasoning*. Eric.1996.
 24. Fatima N, Hussain M, Afzal M, Amir Gilani M. Nursing Students Challenges at Educational and Clinical Environment. *Journal of Health, Medicine and Nursing*. 2019 May 31; 62: 41-48
 25. Aston L, Mallik M, Day C, Fraser D, Collaborative Research Group. An exploration into the role of the teacher/lecturer in practice: findings from a case study in adult nursing. *Nurse Education Today*. 2000 Apr 1;20(3):178-88.

Comparison of Effectiveness between PBL and LBL in Improving Student Learning Outcomes

Lisbeth Laora Silitonga¹, Rahmaini Fitri Harahap¹

¹Senior Lecturer, Faculty of Nursing and Midwifery, Indonesia University of Prima

Abstract

This research explores the differences in test results and the use of some generic skills in the Problem-Based Learning (PBL) model and the Lecture-Based Learning (LBL) model. This research was conducted with a mixed research method, namely quantitative method and qualitative method. The researcher implemented the two models in two different classes, the control class (N = 28) and the experimental class (N = 72). Both learning method successfully activate the use of self-directed learning skills, teamwork skills, critical thinking skills, and problem-solving skills. However, PBL is better in motivating and increasing awareness about lectures so there is a better use of these skills in lectures. Students are very challenged to solve clinical problems relevant to the nursing profession with their group of friends. This in turn has an impact on the higher test results obtained by the experimental class than the control class. Therefore, researchers suggest applying it widely in all nursing majors.

Keywords: *Problem Based Learning, Lecture-Based Learning, Nursing Education, Generic Skills.*

Introduction

Nurse competency is still one of the health problems in Indonesia. Many prospective nurses in Indonesia have not passed the nurse competency test¹ mainly because of lack of activeness, focused learning, and clinical experience². Many stakeholders have expressed concern about graduates who have lacked many of generic attributes which are essential for them to enter the workforce³.

Nursing education programs should prepare students for lifelong learning in order to adapt to a diverse, evolving, and challenging patient care environment^{3,4}. To be a successful nurse, one must have personal attributes, such as: resilient, gregarious, methodical, optimistic, patient, and empathic. Nurses also need to have generic skills, such as critical thinking, assessment and good communication, and be able to balance multiple tasks at the same time⁵.

In medical education, PBL has become an important method and strategy to involve students in active learning to find answers to clinical problems in nursing practice^{6,7}. There are many PBL models that have been developed and adapted to educational goals⁸, one of which is the Aalborg University PBL model. The Aalborg University PBL model, designated as a PBL center by UNESCO, has never before been implemented in Indonesian nursing education.

Objectives: The application of this model in the context of nursing education in Indonesia is an innovation. Therefore, the researcher applies it and wants to explore the differences in the effectiveness of PBL with the LBL method in the Biochemistry course in 2020. The results of this study are expected to contribute to the development of PBL and can provide insights and changes in lecture practice on the research campus.

In addition, researchers want to know how this model can be applied naturally so that it becomes an example for other lecturers, including how to measure it, its effect on the ability to learn independently and solve problems, and the significance of increasing student knowledge. This research is expected to be the forerunner to the application of PBL in all nursing education courses throughout the research campus itself.

Corresponding Author:

Lisbeth Laora Silitonga

Senior Lecturer, Faculty of Nursing and Midwifery,
Indonesia University of Prima
e-mail: lisbethlaora@gmail.com

Materials and Method

The design of this study, which is an experimental research approach, uses a mixed method concurrent triangulation design in which qualitative and quantitative data are collected and analyzed at the same time⁹. The research emphasis on quantitative method and qualitative method is used to analyze more comprehensively why things happen^{9,10,11}. **Quantitative Research Components**

Quantitative instruments used in this research: pre-test and post-test, self-evaluation, and awareness and motivation surveys. The developed pre-test instrument was equivalent to a post-test standard with three cognitive

levels of Bloom’s taxonomy: knowledge, understanding and application. The test is given in the form of multiple choice with a total of 40 questions.

The self-evaluation instrument as well as motivation and awareness in the form of a 5-point Likert-type scale is an instrument developed by Aalborg University¹². The results of the instrument trial showed very high validity and reliability, except for the self-evaluation of knowledge applications with Cronbach Alpha = 0.350 (Table 1).

The questionnaire was administered independently by students at the end of the Biochemistry lecture in the experimental class and the control class.

Table 1. A summary of the variance calculation of the questionnaire items (N = 30)

Scale	Number of Items	Cronbach Alpha (Aalborg)	Cronbach Alpha (researchers)
Awareness and Motivation	10	0,82	0,881
Self-evaluation			
Knowledge Application	2	0,59	0,350
Self-directed learning	4	0,63	0,873
Problem Solving and Critical Thinking	9	0,78	0,802
Team Work	10	0,82	0,919

Qualitative Research Components: Ethnographic methodology with interview strategy is used to determine the culture being studied¹³. Group interviews are used to evaluate students' motivation about PBL and its benefits in helping them gain generic skills.

PBL Universitas Aalborg: The Aalborg University PBL model used is the lecture and case modules (Figure 1). This module is designed to increase knowledge and skills of generic methodology with one mini project¹⁴.

Students form a work team consisting of 7-8 people to solve problems at each lecture meeting and the main task is to complete a mini project^{14,15}. In both the lecture and case modules as well as the lecture modules, learning is carried out following the flow of problem solving starting from problem submission, independent search for information and solutions, group discussions, online group presentations, question and answer sessions, lecturer feedback, and group and individual reflection.

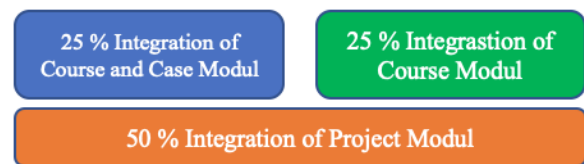


Figure 1. Combined course model and case modules (adapted from¹³)

Each group determines their own video project topic with a duration of 2-5 minutes that provides explanation, data, information and behavior related to Covid-19. Project appraisal is carried out individually by looking at the project work reports they submit.

Meanwhile, for the control group, the LBL model was implemented. At the first meeting, the lecturer gave an overview of the lecture material and divided them into 7 groups. Each group was given the task of finding different lecture materials to be presented to the class.

Results

Demographic information of participants: PBL was applied to students with a total of 72 people, most of them were 19 years old (43.06%) and dominated by women (76.39%). The total number of participants in the control class was 28, all of whom were women, mostly aged 19-20 years (85.72%), only 14.29% were 18 years.

Pre-test and Post-test Results: The Post-test was only followed by 69 students (Table 2). In general, there was a significant increase from the pre-test and post-test in the experimental class, from 55.47 to 84.02 with a difference of 28.55 points. The average post-test obtained by the experimental class students was higher than the D3 Nursing students with a difference of 4.73. Thus, PBL is very effective in improving the knowledge or cognitive aspects of nursing students in Biochemistry courses.

Table 2. Statistic of Post-test

	Experimental class (N=69)		Control class (N=28)
	Pre-test	Post-test	Post-test
Mean	55.47	84.02	79.29
SD	8.695	8.747	10.338

Sig value. Levene’s test for Equality of Variances is $0.345 > 0.05$, it means that the data variance between the experimental class and the control class is homogeneous or the same. Value Equal variance assumed Sig. (2-tailed) of $0.005 < 0.05$ (Table 3), it can be concluded that there is a significant difference between the post-test average of the experimental class and the control class.

Table 3. Summary of the independent sample t-test of post-test

	Levene’s test		t-test
	F	Sig.	Sig. (2-tailed)
Equal variances assumed	0.901	0.345	0.005
Equal variances not assumed			0.011

Self-Evaluation Results:

Motivational awareness: Data analysis shows that the implementation of lectures, both PBL and LBL, is followed by students with high motivation and awareness. The T test for independent samples t-test shows that $p > 0.05$, except for item numbers 4, 5, 7 and 8 (Table 4). This means that students are more motivated

to learn through discussion in small groups, and are more challenged to learn so that they become active learners and practice critical thinking than in the LBL.

The qualitative findings suggest that students are aware of PBL and are motivated to study harder. Students realize that PBL is able to develop self-directed learning, critical thinking, and solve problems through lectures. The unstructured contextual problems introduced by the researcher at the beginning of the lecture were stated by students as a trigger to gain knowledge, think critically, and solve problems as medical personnel. PBL is able to provide meaningful learning experiences for them.

Knowledge Application: Students apply their initial and latest knowledge in lectures with high categories both in PBL and in the LBL. The T test for independent samples t-test shows that $p < 0.05$ for item no. 1 (Table 4). PBL makes students use their previous knowledge to solve new problems rather than by LBL.

The results of the interview stated that the experimental class students used existing knowledge and tried to find new knowledge to solve the root of the problem at hand. They strive to dig deeper and obtain broader information that can increase their understanding.

Self-directed learning: The data analysis shows that the implementation of lectures, both PBL and the LBL, is experienced by students with experience of applying highly self-directed learning skills. The T test for independent samples t-test shows that $p < 0.05$ for items no. 1 and 4 (Table 4). PBL makes students independently seek more relevant information from various learning sources to solve new problems and identify any opportunities for improvement in learning rather than through LBL.

The above findings are supported by qualitative results which reveal that Aalborg PBL allows them to gain the ability to search for relevant sources and information to solve problems. They are also used to providing critical ideas and ideas in accordance with the topic of the problem at hand. Problems are considered as clinical cases experienced by nurses in the field, so they must be resolved methodologically and carefully. They want to make the most informed decisions to help others.

Critical Thinking and Problem Solving: Data analysis shows that students attend lectures by applying

critical thinking skills and high levels of problem solving in PBL and the LBL. The T test for independent samples t-test shows that $p < 0.05$ for item number 3 (Table 4). PBL encourages students to propose one or more solutions to solve problems rather than LBL.

The quantitative findings above are in line with the qualitative findings from the interview results. PBL stimulates the ability to solve problems through increased thinking power, quickly responds to problems, looks at problems and digs deeper into relevant information. Sharing information with friends is one way to improve problem-solving skills.

Team Work: Data analysis shows that the implementation of lectures, both PBL and LBL, is

followed by students with experience in applying high team work skills. The T test for independent samples t-test shows that $p < 0.05$ for item numbers 1, 4, 7, and 9 (Table 4). This means that PBL makes students more committed to completing tasks in teams and helping friends who are left behind, compared to the LBL.

The qualitative findings support the quantitative research results. They want to complete assignments on time and be successful in teamwork. Teams are the best place to share assignments, find information, share knowledge, offer best feedback and help to stay connected to recovery. They also want to contribute to their group by giving different views on the problems at hand, as well as helping their friends who are left behind.

Table 4. Resume Statistic of Motivational Awareness and Self-evaluation

	N	Mean	SD	Levene's test Sig	t-test Sig (2-tailed)
Awareness and Motivation					
1. Realizing the rational implementation of lectures in Biochemistry courses	72	4.22	0.42	0.463	0.115
	28	4.04	0.69		
2. Be aware of the competencies that will be obtained from the lecture approach	72	4.22	0.42	0.08	0.407
	28	4.14	0.36		
3. Recognizing to practice self-directed learning from the lecture approach	72	4.25	0.44	0.895	0.251
	28	4.11	0.74		
4. Recognizing the importance of small discussion groups in the lecture approach	72	4.33	0.50	0.145	0.001
	28	4.18	0.39		
5. Be aware that the lecture approach can stimulate student learning	72	4.24	0.54	0.428	0.027
	28	4.14	0.36		
6. Recognizing the lecture approach can improve communication skills.	72	4.21	0.47	0.079	0.008
	28	4	0.47		
7. Being aware of the lecture approach can shape into an active learner	72	4.28	0.48	0.066	0.031
	28	4.11	0.31		
8. Recognizing the lecture approach can train to think critically	72	4.31	0.55	0.09	0.025
	28	4.07	0.26		
9. Recognizing the lecture approach can shape problem solving skills	72	4.26	0.53	0.328	0.001
	28	3.75	0.89		
10. Recognizing the lecture approach can increase students' intrinsic motivation	72	4.24	0.43	0.08	0.407
	28	4.14	0.36		
Knowledge application					
1. Using previous knowledge to solve new problems	72	4.29	0.49	0.325	0.029
	28	4.11	0.32		
2. Adapt and apply the concepts associated with the new problem situation	72	4.1	0.54	0.955	0.69
	28	4.14	0.45		

	N	Mean	SD	Levene's test Sig	t-test Sig (2-tailed)
Self-directed learning					
1. Set and achieve learning goals	72	4.36	0.64	0.439	0.036
	28	4.36	0.49		
2. Looking for relevant information from various learning sources independently to solve new problems	72	4.33	0.53	0.03	0.427
	28	4.25	0.44		
3. Pushing to the limit of students' knowledge and abilities	72	4.31	0.64	0.131	0.882
	28	4.29	0.46		
4. Identify any opportunities for improvement in learning	72	4.29	0.52	0.44	0.033
	28	4.21	0.42		
Critical thinking and problem solving					
1. Giving causes and synthesizing information	72	4.24	0.49	0.068	0.579
	28	4.18	0.39		
2. Identify several approaches to solving the problem	72	4.28	0.45	0.174	0.521
	28	4.21	0.42		
3. Propose one or more solutions to solve the problem	72	4.33	0.50	0.34	0.031
	28	4.07	0.54		
4. Identify the importance of the issues in the problem	72	4.25	0.47	0.564	1
	28	4.25	0.52		
5. Evaluate the results of the solution and determine appropriate action if needed	72	4.13	0.53	0.568	0.628
	28	4.18	0.39		
6. Having a different way of doing things to solve a problem	72	4.14	0.56	0.749	0.975
	28	4.14	0.59		
7. Think of better ways to do something or to solve a problem	72	4.26	0.44	0.089	0.898
	28	4.25	0.59		
8. Analyze the problem or goal, before beginning each action	72	4.22	0.42	0.212	0.509
	28	4.29	0.46		
9. Evaluating possible solutions, answers or plans for the problem	72	4.18	0.54	0.104	0.518
	28	4.11	0.42		
Team Work					
1. Submit work/assignments on time	72	4.38	0.54	0.029	0.411
	28	4.29	0.46		
2. Attend every group meeting and arrive on time	72	4.26	0.65	0.337	0.671
	28	4.32	0.48		
3. Strive towards achieving team learning goals	72	4.36	0.48	0.124	0.48
	28	4.29	0.46		
4. Interested to be actively involved in group discussions	72	4.35	0.61	0.049	0.266
	28	4.21	0.50		
5. Respect group members' opinions, ideas and contributions	72	4.4	0.49	0.855	0.928
	28	4.39	0.50		
6. Respect the opinions, ideas and contributions of others outside the group	72	4.29	0.46	0.098	0.335
	28	4.39	0.50		
7. Helping the members who are lagging behind the team	72	4.21	0.50	0.019	0.132
	28	4.04	0.51		

	N	Mean	SD	Levene's test Sig	t-test Sig (2-tailed)
8. Share information and literature sources with group members	72	4.26	0.44	0.501	0.4
	28	4.18	0.48		
9. Offer feedback to teammates in a constructive and friendly manner	72	4.28	0.54	0.034	0.533
	28	4.21	0.42		
10. Support group decisions even if they do not agree completely	72	3.9	0.65	0.146	0.21
	28	3.71	0.71		

Statistically, PBL increased students' awareness and motivation to learn better than in the LBL. Obviously, PBL makes students more intrinsically motivated to become active learners given the clinical problems their future profession has to solve^{16,17} through small group discussion¹⁸. They are also more challenged to solve problems effectively which in turn spurs them to think critically^{18,19,20}.

PBL makes students generate prior knowledge relevant to the problem at hand¹⁹ and be aware of the knowledge they do not have¹⁸. From this point, they know the direction to find the knowledge and ideas needed to solve problems^{6,18}. They use metacognition strategies to plan, monitor, and evaluate the completion of mini project tasks¹⁸. This condition does not occur in the LBL. Working in small groups to solve clinical nursing problems is of the utmost importance in PBL. Student commitment to problem solving makes collaborators effective^{18,19,20} and has the effect of increasing awareness and intrinsic motivation¹⁸. They discuss actively, and help their friends understand by providing logical, constructive and friendly explanations^{18,19,20}.

Finally, PBL succeeded in increasing test results to be higher than the LBL. Deep learning occurs when students understand content through problem solving. They want to fill in the knowledge gaps by looking for relevant information, ideas, doubting their knowledge, questioning and explaining opinions, evaluating problem solving processes, especially in mini projects^{20,21,22}, as well as tutoring their friends^{18,19}.

Conclusion

Aalborg's PBL model is more effective at improving test results and some generic skills in nursing education. Therefore, researchers suggest applying it widely in all nursing majors. Multi-year research needs to be done to see the academic and non-academic results of students. The instrument in this study can be used as a tool for

quality assurance of education to monitor and evaluate learning management.

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References

1. Ristekdikti. Statistik Uji Kompetensi Tahun 2018. <http://ukners.dikti.go.id/pages/statistik> lulus. Jakarta. 2018
2. Alvin. Faktor-Faktor yang Mempengaruhi Kelulusan Uji Kompetensi Ners Indonesia (UKNI). The Indonesian Journal of Health Science. 2019;11(1),1-8.
3. Murdoch-Eaton, D, Whittle, S. Generic Skills in medical Education: developing the tools for successful lifelong learning. Medical Education. 2012;46, 120–128.
4. Berkhout J.J., Helmich E., Teunissen P.W., Van der Vleuten C.P., Jaarsma A.D.C. Context matters when striving to promote active and lifelong learning in medical education. Medical Education. 2018;52. 34–44.
5. Hampton DC., Keys Y. Generation Z students: will they change our nursing classrooms? Journal of Nursing Education and Practice. 2017;7(4).111-115.
6. Schmidt H. G., Rotgans J. I., Yew E. H. (2011). The process of problem-based learning: What works and why. Medical Education. 2011;45.792– 806.
7. Stentoft D., Duroux M., FinkT., Emmersen J. From cases to projects in problembased medical education. Journal of Problem Based Learning in Higher Education. 2014;2(1).45-62.
8. Savin-Baden, M. Problem-Based Learning in

- Higher Education: Untold Stories. SRHE and Open University Press, Buckingham. 2000.
9. Hanson, W. E., Creswell J. W., Plano Clark V. L., Petska K. P., Creswell, J. D. (2005). Mixed method research designs in counseling psychology. *Journal of Counseling Psychology*. 2005;52(2).224–235.
 10. Ivankova, N. V. dan Creswell, J. W. Mixed method. In J. Heigham, R. A. Croker (Eds), *Qualitative Research in Applied Linguistics*, Palgrave Macmillan, New York. 2009;135–164.
 11. Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. Advanced mixed method research designs. In A. Tashakkori & C. Teddlie (Eds.), *Handbook of mixed method in social and behavioral research*. Sage, Thousand Oaks, CA. 2003; 209–240.
 12. Mohamad, Hashim. *The Impact of Problem-based Learning on Students' Competencies in Technical Vocational Education and Training*. (Phd dissertation, Aalborg University, Denmark). Aalborg University Press, Aalborg. 2017.
 13. Cruz, E.V., Higginbottom, G. The use of focused ethnography in nursing research. *Nurse Researcher*. 2013;20(4).36-43.
 14. Kolmos, A.; Holgaard, J. E., Dahl, B. Reconstructing the Aalborg Model for PBL: A case from the Faculty of Engineering and Science, Aalborg University. *PBL Across Cultures*. In K. Mohd-Yusof, M. Arsat, M. T. Borhan, E. de Graaff, A. Kolmos & F. A. Phang (Eds.). Aalborg: Aalborg Universitetsforlag. 2013.289-296.
 15. Graaff, E.d., Kolmos, A. Characteristics of problem-based learning. *International Journal of Engineering Education*. 2003;19(5).657–662.
 16. He, Y., Du, X., Toft, E., Zhang, X, Qu, B., Shi, J., Zhang, H., Zhang, H. A comparison between the effectiveness of PBL and LBL on improving problem-solving abilities of medical students using questioning. *Innovations in Education and Teaching International*. 2017; 55(1).44-54.
 17. Loyens S.M.M., Magda J., dan Rikers R.M.J.P. Self-directed learning in problem-based learning and its relationships with self-regulated learning. *Educational Psychology Review*. 2008;20.411–427
 18. Hmelo-Silver, C. E. Problem-based learning: What and how do students learn? *Educational Psychology Review*. 2004;16.235–266
 19. Steinert, Y. Student perceptions of effective small group teaching. *Medical Education*. 2004;38.286–293.
 20. Dolmans, D.H.J.M., Schmidt, H.G. What do we know about cognitive and motivational effects of small-group tutorials in problem-based learning? *Advance Health Science Education*. 2006;11.321–36.
 21. Dolmans, D., Loyens, S., Marcq, H., Gijbels, D. Deep and surface learning in problem-based learning: a review of the literature. *Advances in Health Science Education*. 2016; 21(5). 1087–1112.
 22. Dolmans, D.H.J.M., De Grave, W., Wolfhagen, I.H.A.P., van der Vleuten, C.P.M. Problem-based learning: future challenges for educational practice and research. *Medical Education*. 2005;39.732–741.

Exploring Factors on Quality of Life of Pregnant Women: A Qualitative Study

Nunik Puspitasari¹, Yuly Sulistyorini², Mahmudah³

¹Assistant Professor, ²Instructor, ³Associate Professor; All Dept. of Biostatistics and Population Study, Public Health Faculty, Universitas Airlangga, Indonesia

Abstract

This study aimed to identify factors of quality of life in pregnant women in East Java Province, Indonesia. This research is a qualitative assessment. The research participants were 13 pregnant women in rural and urban areas in East Java Province, who were asked for information on all aspects related to the quality of life during pregnancy based on their perceptions. The research was conducted using a qualitative content analysis approach. The data analysis results resulted in 123 codes, 25 sub-categories, and 4 main categories: physical health factors, mental health factors, social health factors, and environmental factors. This study's conclusion consists of physical factors: the ability to perform daily activities, mobility abilities, need for help from others, sleep disorders, and pain and discomfort. Mental health factors consist of aspects of self-perception, positive feelings, and negative feelings about pregnancy. Social factors consist of the husband's support aspects, family support, social support, and sexual relations. Meanwhile, social factors consist of financial aspects, social health insurance, opportunities to obtain information, the physical environment, recreation and hobbies, and transportation.

Keywords: *Physical health factors, Mentalhealth factors, Social health factors, Environmental factors, Quality of Life, Pregnant Women.*

Introductions

World Health Organization stated that quality of life is a society's assessment of position they in life in the context of the culture and value system in which they live, related to goals, combined aspects of physical, psychological (mental) health, level of self-confidence, social relationships, personal beliefs and their relationship to the environment⁽¹⁾. The definition of health-related QoL is as optimum levels of mental, physical, role (e.g., work, parent, carer, etc.) and social functioning, including relationships and perceptions of health, fitness, life satisfaction, and well-being⁽²⁾. The problem that arises is that not many specific instruments

are currently developed to measure pregnant women's quality of life.

Some generic and specific instruments have been frequently used to measure the quality of life in pregnant women, including the SF-36, the WHOQOL-BRIEF, the SF-12, and the Nausea and Vomiting of Pregnancy-Specific Health-Related Quality of Life. Given the lack of a specific tool designed to assess pregnant women's quality of life, available tools were used for its assessment. Further studies are thus required to develop a particular localized tool that can be used specifically to measure pregnant women's quality of life⁽³⁾.

Developing a particular instrument to assess pregnant women's quality of life is not accessible due to differences in socio-cultural conditions that form the background of a pregnant woman's life. Many aspects shape a pregnant woman's physical, mental, and social health factors. This study aimed to identify factors of quality of life in pregnant women in East Java Province, Indonesia.

Corresponding Author:

Nunik Puspitasari

Dept. of Biostatistics and Population Study, Public Health Faculty, Universitas Airlangga, Indonesia

Phone: + 62-081333453979

e-mail: nuniksay@yahoo.com

Materials and Method

This research is a qualitative assessment. The research participants were 13 pregnant women in rural and urban areas in East Java Province, who were asked for information on all aspects related to the quality of life during pregnancy based on their perceptions. The research was conducted using a qualitative content analysis approach. Semi-structured, in-depth interviews, field notes, and voice recordings were used as strategies for data collection. Interviews and voice recordings were carried out with the consent of the participants using informed consent.

Purposive sampling is carried out until saturation is reached; that is when the information generated is saturated, and no new information is obtained for the concept in question. Each interview took an average of 1 hour. The research sites are at the Community Health Center in the capital city of Sumenep Regency and the rural areas of Ngawi Regency, East Java Province. This research has obtained a certificate of ethical approval from the Ethics Commission of the Faculty of Public Health, Universitas Airlangga No. 553/EA/KEPK/2018.

Data analysis used a qualitative content analysis method with a directed content analysis approach⁽⁴⁾. The first step is to identify existing theory or previous research; the researchers begin by identifying the critical concept or variable as the initial coding category. The second step is to formulate an operational definition for each category that is determined using existing theories. The third step, collecting data through interviews using open-ended questions. In the fourth step, record all participants' answers and do the coding by reading the transcript and highlighting all the texts on the first impression seem to represent participants' reactions. The fifth step, coding all the highlighted sections using predefined codes.

Results

Demographic characteristics of the participants:

Most of the participants aged 20-29 years, high school education, do not work, do not have children, this is the first time pregnant, and the second trimester of pregnancy. Besides, most participants stated that their current pregnancy is planned, a pregnancy is currently desired, lives in the nuclear family, and does not have their own income. Most participants also manage family finances and have good relationships with husbands, relatives, neighbors, and friends.

Table 1 Characteristics of participants (pregnant women) in East Java in 2019

Characteristics of Informants	Frequency	Percentage
Age:		
20-24	4	30.8
25-29	4	30.8
30-34	3	23.1
35-39	2	15.4
Level of education:		
Junior high school	4	30.8
Senior High School	8	61.5
College	1	7.7
Job status:		
Does not work	8	61.5
Work	5	38.5
Number of children alive:		
Don't have children yet	7	53.8
1 child	4	30.8
Two children	2	15.4
Number of pregnancies:		
1 time	7	53.8
2 times	4	30.8
3 times	2	15.4
Pregnancy trimester:		
Trimester I	0	0.0
Trimester II	6	46.2
Trimester III	7	53.8
Pregnancy is currently planned:		
Not	1	7.7
Yes	12	92.3
Current pregnancy is desired:		
Not	0	0.0
Yes	13	100.0
Family type:		
Nuclear family	6	46.2
Extended family	7	53.8
Self-income informants:		
Not	8	61.5
Yes	5	38.5
Mother helps manage family finances:		
Not	0	0.0
Yes	13	100.0
Relationship with husband:		
Not	0	0.0
Harmonious	13	100.0
Relationship with relatives:		
Not	0	0.0
Harmonious	13	100.0
Relationships with neighbors and friends:		
Not	0	0.0
Harmonious	13	100.0

Main categories and sub-categories: The data analysis results resulted in 123 codes, 25 sub-categories, and 4 main categories, namely physical health factors, mental health factors, social health factors, and environmental factors.

Table 2 Categories, sub-categories, and codes of factors that affect the quality of life of pregnant women

Category	Sub-categories	Number of Codes
Physical health factors	Life activities every day	6
	Dependence on the help of others	2
	Exertion and fatigue	3
	Mobility	4
	Pain and discomfort	3
	Sleep and rest	3
	Ability to work inside and outside the home	4
Mental health factors	Self-perception and appearance	5
	Negative feelings in pregnancy	16
	Positive feelings in pregnancy	11
	Spirituality, religion and belief	7
	Learning, memory and concentration	3
Social health factors	Husband's support	13
	Support of other family members	9
	Support of neighbors and friends	3
	Health service support	4
	Sexual activity	4
Environmental factor	Financial resources	3
	Freedom, safety and physical security	3
	Health social security	2
	Home environment	4
	Chances of obtaining pregnancy information	2
	Recreational opportunities and leisure activities	3
	Physical environment	3
	Transportation	3

Physical health factors that affect the quality of life of pregnant women: During pregnancy, almost all mothers carry out their daily activities as usual. Pregnant women continue to cook, wash clothes, clean the house as usual. Pregnant women also continue to care for and serve their husbands and children. The work results are still as expected, but the number and types of work that can be done have decreased. Almost all pregnant women say they need help from others to help with the daily activities that they feel are quite heavy, such as lifting things.

Nearly all mothers experience nausea, aches, cramps, heavy body, and sometimes back pain. This discomfort is especially a problem for mothers who are pregnant for the first time. However, mothers who are already pregnant for the second or third time perceive discomfort in the body as usual, as long as it is not excessive. Almost all pregnant women stated that they could still walk, but only at a short distance or around the house. In general, pregnant women indicated that they did not experience significant sleep disturbances or difficulty sleeping, only felt a little uncomfortable when sleeping due to limitations in sleeping positions.

Mental health factors that affect the quality of life of pregnant women: Anxiety disorders, the dominant mental illness felt by pregnant women who were participants in this study. The anxiety you feel includes being anxious about changes in body shape due to weight gain during pregnancy. However, some pregnant women do not feel worried about body shape changes because this is not the first pregnancy. Other worries that bother you are concerned about the fetus's health condition worry about not giving birth naturally and worry because you don't have the cost for childbirth.

All pregnant women were pleased with their pregnancy. Pregnancy is currently being planned and very much expected. For the first time, pregnant mothers also feel happy because they languish to be complete women after they get pregnant. There is only one pregnant woman who did not plan her pregnancy because she already has two children. However, pregnant women who don't prepare for their pregnancy will still feel happy and still want their pregnancy.

Pregnant women and their families are very grateful to God because they are trusted to entrust their children. Pregnant women, husbands, and other family members often pray to God so that mothers and their babies are given health and safety until the time of delivery. There are several families of pregnant women who carry out Islamic religious rituals, namely the recitation of the holy Koran to ask for safety and health for the mother and baby. There are no mothers who have negative feelings about their pregnancy because most mothers are pregnant for the first time.

Social factors that affect the quality of life of pregnant women: All pregnant women participants stated that they received support and attention from their husbands. Many pregnant women indicated that their husbands seemed more affectionate to her. Support from the husband in the form of helping with daily housework, helping to care for children, asking about the health condition of pregnant women, meeting all the needs of mothers and their future babies, accompanying pregnant women during pregnancy checks, praying for the health and safety of mothers and their babies, asking about the mother's health pregnant, and often invite the fetus in the womb to communicate. Even though all pregnant women stated that their husbands paid attention, pregnant women felt that their husbands' support and attention were not maximal because the husbands work

in other areas far from where the pregnant women live.

Some husbands prohibit their wives from working to help earn income during pregnancy, as a form of the husband's affection for the mother and her fetus. The husband prohibits the mother from working because the husband thinks the work is too hard for pregnant women to do, such as working in a factory or working in the fields or looking for animal feed. However, the husband does not prohibit pregnant women from working in the office because it is considered not too heavy for pregnant women.

Pregnant women also claim to get attention and support from other family members during their pregnancy. Apart from her husband and other family members' attention, pregnant women also stated that they received attention and support from neighbors, friends, and health workers.

Most pregnant women admit to having sexual intercourse with their husbands during pregnancy even though the frequency is reduced. Some pregnant women claim to be uncomfortable having sexual intercourse during pregnancy, worry that sexual intercourse will interfere with their pregnancy, especially when the first trimester of pregnancy or has entered the third trimester

Environmental factors that affect the quality of life of pregnant women: Most pregnant women feel that their daily needs are fulfilled, but there are worried because they do not have savings for childbirth costs. Pregnant women also expect to be free to do the activities they want, expect a safe and comfortable environment, and free from any threat of harm.

All pregnant women have health insurance, namely the Healthy Indonesia Card, which the Indonesian government administers, but none of them have private health insurance. Health insurance issued by the Indonesian government is relatively cheaper than private health insurance. Some pregnant women even get health insurance subsidies from the government.

Every pregnant mother who needs pregnancy information commonly obtains pregnancy information from midwives or the Community Health Center (PHC). The information that most pregnant women want to know is about the health condition of the fetus. Besides, pregnant women who have entered the third trimester usually ask about the possibility of having a normal delivery when giving birth later.

Seju Therefore, pregnant women can still do recreation with their families, but pregnant women whose pregnancy is approaching delivery do not do recreational activities. Pregnant women also still have their favorite hobbies in their spare time, including cooking, listening to music, cleaning the house, and reading books.

All pregnant women stated that the physical environment around where they lived was comfortable. Only one pregnant woman noted that the air around her house was hot during the dry season. All pregnant women also stated that they had no difficulty getting clean water for their daily needs. As for transportation, all pregnant women rely on personal means of transportation.

Discussion

Physical health factors: Pregnancy causes pregnant women's physical abilities to generally decrease, even though pregnant women are still able to carry out their daily activities. This result follows Fatemeh A, which stated that pregnant women could be limited due to their pregnancy⁽⁵⁾. The same is said by Lagadec N noted that the physical component of QOL decreases during pregnancy⁽⁶⁾.

Pregnant women who have decreased physical abilities need help from their husbands, other family members, and even other people to help with their daily activities. This result corresponds to Cioffi J, which stated that pregnant women in all phases need support to carry out their daily activities and control body weight, which generally increases quite a lot during pregnancy⁽⁷⁾.

During pregnancy, women usually experience many physiological complaints, nausea, vomiting, nasal congestion, tiredness, urinary frequency, urinary tract infection, sensitivity in breasts, ptialism, and increased vaginal discharge. These physiological complaints can interfere with the daily activities of pregnant women. Yikar SK stated that husbands and other family members need to get information about changes and objections that occur in women during pregnancy to adjust to their new roles to help reduce complaints that arise due to pregnancy⁽⁸⁾.

Several pregnant women experience mild sleep disturbances during their pregnancy. According to research Sut HK, this result states that pregnant women have lower sleep quality than women who are not pregnant⁽⁹⁾.

Mental health factors: Anxiety disorders were the dominant mental disorder felt by pregnant women in this study, although a few pregnant women only felt anxiety. The results of this study are following the research Silva MM de J, which stated that 26.8% of pregnant women experience anxiety, and it usually occurs in the third trimester⁽¹⁰⁾.

All pregnant women who participated in this study were pleased with their pregnancy. This study's results are following the research of Türk R, which stated that pregnant women's happiness level was found to increase during pregnancy⁽¹¹⁾.

Social factors: All pregnant women participants stated that they received support and attention from their husbands, family members, friends, and neighbors. This study's results follow Abdollahpour S, which indicated that support from husband, family, and community would reduce complaints during pregnancy and the possibility of poor pregnancy outcomes⁽¹²⁾.

Most pregnant women admit to having sexual intercourse with their husbands during pregnancy even though the frequency is reduced. This study's results follow the research Hasani M, which states that generally, the frequency of vaginal intercourse decreases in the first trimester while the second-trimester increases. However, a sharp decrease was observed between the second and third trimesters of pregnancy⁽¹³⁾.

Environmental factor: Most pregnant women feel that their daily needs are fulfilled, but some are worried because they do not have savings for childbirth costs, even though all of them have health insurance. According to research Aftab S, this result states that poverty is a significant obstacle to the welfare of women, especially during pregnancy that results in malnutrition, anemia, low births, or miscarriage⁽¹⁴⁾.

In general, pregnant women can obtain pregnancy information from midwives or the Community Health Center (PHC), although some also get pregnancy information from the internet. This study's results are somewhat different from the research of Javanmardi M, which stated that the use of the internet by pregnant women is driven by the need for information, ease of access and speed of entry, and finding people in similar situations⁽¹⁵⁾.

Conclusion

There are several physical health factors, mental health factors, social factors, and environmental factors that contribute to the quality of life of a pregnant woman. Physical factors consist of aspects of performing daily activities, mobility abilities, need for help from others, sleep disturbances, and pain and discomfort. Mental health factors consist of aspects of self-perception, positive feelings, and negative feelings about pregnancy. Social factors consist of the husband's support, family support, social support, and sexual relations. Meanwhile, social factors consist of financial aspects, social health insurance, opportunities to obtain information, the physical environment, recreation and hobbies, and transportation.

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References

1. The WHOQOL Group. The World Health Organization Quality Of Life Assessment (WHOQOL): Development and General Psychometric Properties. *Soc Sci Med*. 1998; 46 (12): 1569–85.
2. Theofilou P. Quality of life: Definition and measurement. *Eur J Psychol*. 2013; 9 (1): 150–62.
3. Kazemi F, Nahidi F, Kariman N. Assessment Scales, Associated Factors and the Quality of Life Score in Pregnant Women in Iran. *Glob J Health Sci*. 2016; 8 (11): 127–39.
4. Hsieh HF, Shannon SE. Three Approaches to Qualitative Content Analysis. *Qual Health Res*. 2005; 15 (9): 1277–88.
5. Fatemeh A, Azam B, Nahid M. Quality of life in pregnant women results of a study from Kashan, Iran. *Pakistan J Med Sci*. 2010; 26 (3): 692–7.
6. Lagadec N, Steinecker M, Capacance A, Magnier AM, Chastang J, Robert S, et al. Factors influencing the quality of life of pregnant women: a systematic review. *BMC Pregnancy Childbirth*. 2018; 4 (18): 1–14.
7. Cioffi J, Schmied V, Dahlen H, Mills A, Thornton C, Duff M, et al. Physical activity in pregnancy: Women's perceptions, practices, and influencing factors. *J Midwifery Women's Heal*. 2010; 55 (5): 455–61.
8. Yikar SK, Nazik E. The Effect of Complaints During Pregnancy on Quality of Life. *Int J Caring Sci*. 2018; 11 (1): 623–6.
9. Sut HK, Asci O, Topac N. Sleep quality and health-related quality of life in pregnancy. *J Perinat Neonatal Nurs*. 2016; 30 (4): 302–9.
10. Silva MM de J, Nogueira DA, Clapis MJ, Leite EPRC. Anxiety in pregnancy: Prevalence and associated factors. *Rev. Esc Enferm USP*. 2017; 51 (e03253) (September): 1–8.
11. Türk R, Sakar T, Erkaya R. The Effect of Pregnancy on Happiness. *Procedia - Soc Behav Sci* [Internet]. 2017; 237: 1247–53. Available from: <http://dx.doi.org/10.1016/j.sbspro.2017.02.198>
12. Abdollahpour S, Ramezani S, Khosravi A. Perceived Social Support among Family in Pregnant Women. *Int J Pediatr*. 2015; 3 (21): 879–88.
13. Hasani M, Keramat A, Maasoumi R, Farjamfar M, Yunesian M, Afshar B. The Frequency of Vaginal Intercourse During Pregnancy: A Systematic and Meta-Analysis Study. *International J Women's Heal Reprod Sci* [Internet]. 2019; 7 (1): 1–9. Available from: <https://doi.org/10.15296/ijwhr.2019.01>
14. Aftab S, Ara J, Kazi S, Deebea F. Effects of Poverty on Pregnant Women. *Pakistan Journal of Med Res*. 2012; 51 (1): 5–9.
15. Javanmardi M, Noroozi M, Mostafavi F, Ashrafi-Rizi H. Internet Usage among Pregnant Women for Seeking Health Information: A Review Article. *Iran J Nurs Midwifery Res*. 2018; 23 (2): 79–86.

Reducing Anxiety among Heart Failure Patients by Doing the Six-Minute Walk

Nurhayati Nurhayati¹, Fatsiwi Nunik Andari¹, Larra Fredrika¹

¹Lecturer at Department of Nursing, Muhammadiyah Bengkulu University, Indonesia

Abstract

Heart failure has been one of the emerging diseases in terms of prevalence, morbidity, and mortality, which cause a physical and psychological impact on society. Anxiety was found as the most common issue among them. Inadequate anxiety management leads to the treatment compliance, aggravate functional status, prolong hospitalization and increase mortality rate, thus effective management is essential. The present study was to investigate the impact of a safety exercise of the six-minute walk in reducing anxiety level among heart failure patients. A quasi-experimental study was performed at a cardiovascular outpatient of the acute care setting in Indonesia. The anxiety level of respondents was measured by using the Zung Self-rating Anxiety Scale. A descriptive and paired t-test was performed for data analysis. Fifteen heart failure outpatients enrolled in the study, most were male with the maximum age of 78 years. More than half of respondents experienced anxiety during pre-test in the first week of this program, then their anxiety level reduced after a month implementation of the six-minute walk. This study provides baseline information reflecting the effectiveness of the six-minute walk in reducing anxiety level among heart failure patients.

Keywords: Anxiety, exercise, heart failure, six-minute walk

Introduction

Heart failure has been one of the emerging epidemic health problems in terms of prevalence, morbidity, mortality and use of health services in the world. Based on an updated report of the American Heart Association, the estimation of people with heart failure will increase by 46% from 2012 to 2030.^{8,12} In developing countries, the prevalence of heart failure increases due to population ageing, longer patient survival and the effectiveness of secondary prevention. This problem has a major impact on the lifestyle and prognosis of patients and an increasingly greater challenge for health policymakers.^{5,8}

Heart failure has become among the two top leading causes of death, representing 11.34% of cases in Indonesia, which cause physical, psychological, social, and economical problem impact on society. Uncontrolled hypertension and smoking history are the most dominant factors of this issue.⁵

Furthermore, previous studies found that one of the health-related problems among health failure patients was psychological status.^{2,7} Anxiety was the most widely explored on the psychological issue of heart failure patients, about 23% to 45% among them experience severe anxiety, which affects the treatment compliance, aggravate functional status, prolong hospitalization and increase mortality rate.^{3,9,14} Thus management of anxiety in heart failure patients is essential. The NICE guideline proposed the appropriate care for heart failure patients, one of its an exercise program. The present study sought to investigate the effectiveness of the six-minute walk in reducing the anxiety level among heart failure patients.

Corresponding Author:

Nurhayati

Department of Nursing, Faculty of Health Science,
Muhammadiyah Bengkulu University. UMB 4 Jl Adam
Malik KM 8.5 Kota Bengkulu 38211 Indonesia
e-mail: nurhayati@umb.ac.id

Materials and Method

a. Design, Setting, and Participants of Study:

A quasi-experimental study was conducted at a

cardiovascular outpatient of the acute care setting in Indonesia. The eligible participants were recruited as follows; adult outpatients, patients who confirmed diagnosis of heart failure, and no cognitive impairment. The sample size was estimated based on the results of other studies on heart failure in the literature review, with a significance level of .05 and expected power of .80, the sample size required was 15 patients.

b. Measures and Data Collection Procedure: Patients’ information was collected through medical records and sociodemographic form in an acute care setting. The eligible participants were informed on how to rate the Zung Self-rating Anxiety Scale (SAS). The participants were given the Six-Minute Walk Test within a month. The SAS questionnaire was rated by the participants in the first week and the fourth week of this program.

The Zung Self-rating Anxiety Scale (SAS): The SAS was used to determine the patients’ perceptions of anxiety level that was developed by William W. K. Zung in 1971. The Indonesian version of this tool was conducted by Anggi Setyowati et al (2019) that was performed following the World Health Organization guideline.¹³ Reliability and validity have been supported in this population.¹¹ The SAS is a Likert-scale of 1 (None) to 4 (Most of the time), which consists of 20-item self-report assessment to measure how respondents felt during the last month. Each score is categorized into three levels representing normal, moderate anxiety, and severe anxiety level.

The Six-Minute Walk: The 6-Minute walk procedures in accordance with the American Thoracic Society guideline were implemented to the respondents.¹ This exercise consisted of 6-minute walk on 30 meters in length. Turn around points marked with a cone and indicate starting position. Having the patient seated at rest for at least 10 mins prior to the test by the starting position. Measure blood pressure, pulse rate, oxygen saturation, and borg scale. Patients were not allowed to do exercise if they had blood pressure upper than 180/100 mmHg and pulse rate more than 120 beats per minute. If the patient gets tired while walking, they were allowed to rest. Calculate the distance walked, round to the nearest meter.

c. Statistical Analysis: The statistical analysis package was done by using SPSS program. The sociodemographic data were presented by

descriptive analysis. A paired t-test model was performed to determine the impact of the six-minute walk test on patients’ anxiety before and after the intervention of the 6-minute walk.

Results

a. Sociodemographic of Respondents: Fifteen heart failure patients enrolled in this study had a minimum age of 19 years and a maximum age of 78 years. Most were male (73.3) and living at home with family (96.7%). Majority of respondents had previous surgery (CABG and MVR) and had been diagnosed with heart failure for 1-5 years (Table 1).

Table 1. Demographic data of respondent (n=15)

Characteristics	n	%
Age (Min 19, Max 78)		
18-40	1	6.6
41-60	7	46.7
>60	7	46.7
Gender		
Male	11	73.3
Female	4	26.7
Living arrangement		
Yes	14	96.7
No	1	
Previous surgery		
Yes	8	53.3
No	7	46.7
HF presence duration (years)		
<1	6	40.0
1-5	9	60.0

b. Anxiety levels of heart failure patients: Table 2 shows that most heart failure patients were anxious during pre-test (60%), then the anxiety level decreased significantly during post-test (73.3%) (Table 2).

Table 2. The anxiety level of heart failure patients (n=15)

SAS	Pre-test		Post-test	
	N(%)	M(SD)	N(%)	M(SD)
Anxiety	9 (60.0)	53.56(2.92)	4 (26.7)	51.40(1.14)
Normal	6 (40.0)	39.33(7.63)	11 (73.3)	36.50(5.21)

- c. **The impact of the six-minute walk test on anxiety level of heart failure patients:** This study found that the mean of anxiety level perceived by heart failure patients before participating in the six-minute walk test program was 47.87 (SD 8.81) and 41.47 (SD 8.40) after the intervention. This study indicates that the anxiety level among heart failure patients during pre-test was significantly higher than post-test (t 7.04, $p < .001$) (Table 3).

Table 3. The impact of the six-minute walk on anxiety level of heart failure patients (n=15)

SAS	Mean	SD	t	P Value
Pre-test	47.87	8.814	7.04	0.001
Post-test	41.47	8.408		

Discussion

The present study illustrated that mostly heart failure patients experienced anxiety. This may be related to the presence of anxiety symptoms that was reported by the patients during the previous month. This finding in line to previous studies which stated that anxiety was the most psychological issue reported by the heart failure patients. Anxiety as a negative emotion appears to be more common among cardiac patients than among healthy individuals.^{3,7,9,14}

According to the completed questionnaires, a young female patient had the highest SAS score (56 out of 80). She is 19th years. Most of the time she gets tired and upset easily, she was bothered by stomach aches, she also had a little of the time for night's rest due to she had to empty her bladder so often. These clinical symptoms were also reported by other respondents who had a high SAS score in this study. This phenomenon is congruent with the psychological distress of individuals. Younger age and women are more likely to suffer anxiety than older age and man.^{3,7}

Furthermore, this study describes that majority heart failure patients experienced anxiety before implementing the six-minute walk test at the first week of this program, then their anxiety level decreased rapidly after implementing the six-minute within four weeks. This indicates that the six-minute walk test program effectively reduced the anxiety level among heart failure patients. This finding in line to Millani study (2011) which stated that exercise training effect in reducing depression and anxiety level on heart failure patients. Psychou study (2020) illustrated that the exercise

program is beneficial on mood profile which can reduce the anxiety and stress level.^{6,10}

In addition, some important findings were found in this study. Our findings illustrated that heart failure patients face harsh emotional challenges, particularly anxiety which may have led to negative health outcomes. Several researchers have found that the presence of anxiety affected worsening functional status, reducing the health-related quality of life, and more frequent hospital revisit in heart failure patients.^{2,4,14} This indicates that nurses and clinicians need to utilize interventions that can simultaneously treat anxiety. However, in the current clinical setting, the psychological distress, particularly anxiety, are under-recognition and untreated well. This may be due to the clinicians think that emotional distress after a cardiac event is a normal response to an illness that will diminish without treatment. Others fail to appreciate the extent of the problem or believe that they will easily recognize serious emotional distress in their patients when it is present.

Conclusion

The present study has shown that patients with heart failure frequently report anxiety symptoms. Our findings indicate that well-designed a safety exercise of the six-minute walk distance affect the anxiety level in heart failure patients. This study provides baseline information reflecting the effectiveness of the six-minute walk test in reducing anxiety level among heart failure patients.

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Conflict of Interest: Nil

References

1. ATS statement: guidelines for the six-minute walk test. ATS committee on proficiency standards for clinical pulmonary function laboratories. *Am J Respir Crit Care Med.* 2002;166(1):111-7.
2. De Jong MJ, Chung ML, Wu JR, Riegel B, Rayens MK, Moser DK. Linkages between anxiety and

- outcomes in heart failure. *Heart & Lung*. 2011 Sep 1;40(5):393-404.
3. Dekker RL, Lennie TA, Doering LV, Chung ML, Wu JR, Moser DK. Coexisting anxiety and depressive symptoms in patients with heart failure. *European Journal of Cardiovascular Nursing*. 2014 Apr;13(2):168-76.
 4. Hallas CN, Wray J, Andreou P, Banner NR. Depression and perceptions about heart failure predict quality of life in patients with advanced heart failure. *Heart & lung*. 2011 Mar 1;40(2):111-21.
 5. Kusuma DY, Shatri H, Alwi I, Abdullah M. Validity and Reliability Studies of the Indonesian Version of the Minnesota Living with Heart Failure Questionnaire (MLHFQ): Quality of Life Questionnaire for Patients with Chronic Heart Failure. *Acta Medica Indonesiana*. 2019 Jan;51(1):26-33.
 6. Milani RV, Lavie CJ, Mehra MR, Ventura HO. Impact of exercise training and depression on survival in heart failure due to coronary heart disease. *The American journal of cardiology*. 2011 Jan 1;107(1):64-8.
 7. Moser DK, Dracup K, Evangelista LS, Zambroski CH, Lennie TA, Chung ML, Doering LV, Westlake C, Heo S. Comparison of prevalence of symptoms of depression, anxiety, and hostility in elderly patients with heart failure, myocardial infarction, and a coronary artery bypass graft. *Heart & Lung*. 2010 Sep 1;39(5):378-85.
 8. Mozaffarian D, Benjamin EJ, Go AS, Arnett DK, Blaha MJ, Cushman M, De Ferranti S, Després JP, Fullerton HJ, Howard VJ, Huffman MD. Executive summary: heart disease and stroke statistics-2015 update: a report from the American Heart Association. *Circulation*. 2015 Jan 27;131(4):434-41.
 9. Polikandrioti M, Christou A, Morou Z, Kotronoulas G, Evagelou H, Kyritsi H. Evaluation of depression in patients with heart failure. *Health Science Journal*. 2010 Jan 31;4(1):37-47.
 10. Psychou D, Kokaridas D, Koulouris N, Theodorakis Y, Krommidas C, Psycho C. Impact of exercise intervention on anxiety levels and mood profile of Greek prison inmates.
 11. Samakouri M, Bouhos G, Kadoglou M, Giantzelidou A, Tsolaki K, Livaditis M. Standardization of the Greek version of Zung's Self-rating Anxiety Scale (SAS). *Psychiatrike= Psychiatriki*. 2012;23(3):212-20.
 12. Savarese G, Lund LH. Global public health burden of heart failure. *Cardiac failure review*. 2017 Apr;3(1):7.
 13. Setyowati A, Chung MH, Yusuf A. Development of self-report assessment tool for anxiety among adolescents: Indonesian version of the Zung self-rating anxiety scale. *Journal of Public Health in Africa*. 2019 Jan 2;10.
 14. Shen BJ, Eisenberg SA, Maeda U, Farrell KA, Schwarz ER, Penedo FJ, Bauerlein EJ, Mallon S. Depression and anxiety predict decline in physical health functioning in patients with heart failure. *Annals of Behavioral Medicine*. 2011 Jun 1;41(3):373-82.

Risk Perception and Precautionary Behaviour Against Covid-19 Pandemic among Health Workers in Calabar, Nigeria

Okoi, Nta Obono¹, Etim, John John², Akomaye, Thomas Udida¹,
Inde, Margaret Uyilewhoma³, Usen, Ime-Obong Jerome²

¹Lecturer, Department of Family Medicine, University of Calabar Teaching Hospital, Calabar, Nigeria,

²Researcher, Department of Public Health, Faculty of Allied Medical Sciences, University of Calabar, Calabar, Nigeria, ³Lecturer Cross River State College of Health Technology, Calabar, Nigeria

Abstract

This study aimed at assessing risk perception and precautionary behaviour against COVID-19 pandemic among health workers. Through descriptive cross-sectional survey, 400 respondents were conveniently sampled to elicit data using respondent's self-administered questionnaire designed by the researchers. Data collection which spanned through two months were collected, cleaned, sorted, coded, inputted and analyzed using SPSS version 20 software. Association between risk perception and precautionary behaviour was tested using Chi-square statistics significant at 95% confidence level. Results were presented in descriptive and inferential statistics. Risk perception and the feeling of being very susceptible to contracting COVID-19 was high 382 (95.5%). This created a spike in improved and positive precautionary behaviour 398 (99.5%) by strict adherence to consistent use of Personal Protective Equipments (PPEs) amidst the COVID-19 pandemic. To majority 339 (84.8%), the frequently use of PPEs was to prevent COVID-19 and other hospital-related diseases while for some 312 (78.0%), the consistent use of PPEs has been habitual. The study found a significant association between risk perception and precautionary behaviour of healthcare workers against COVID-19 pandemic ($P < 0.001$; $df = 1$; Chi-square = 11.280). There is need for healthcare workers to continue in the habit of always being conscious in the use of their PPEs even after the COVID-19 pandemic. This is because, there are still and may still be re-emerging diseases that needs to be prevented. Therefore, there is need for healthcare workers to always be proactive and be at alert at all times because the healthcare setting is like a war front for all manner of diseases where the first attack or target is the healthcare worker.

Keywords: Risk perception, Precautionary behaviour, COVID-19, Pandemic, Health workers.

Introduction

The same way perception influences people's actions and behaviour in all spheres of life is also the same way risk perception influenced precautionary behaviour against COVID-19 pandemic among healthcare workers.

A study by group of Nigerian researchers documented that perception and knowledge about the COVID-19 has brought about a positive shift in practice.¹ When people perceive the risk of contracting a disease or risk of being susceptible to a disease, they tend to take precautionary measures and responsibility. Perception by concept is the process of identifying (awareness), organizing (gathering and storing), and interpreting (binding to knowledge) sensory information which deals with the human senses that generate signals from the environment through sight, hearing, touch, smell and taste. The understanding that, any slack in taking precautionary measures like constant washing of hands with soap and water, use of hand sanitizers and consistent/proper use of all the Personal Protective Equipments such as face

Corresponding Author:

Etim, John John

Researcher, Department of Public Health, Faculty of Allied Medical Sciences, University of Calabar, Calabar, Nigeria

Contact No.: +2348063809268

e-mail: etmjhn@gmail.com

mask, face shield, hand gloves, and other body gears may make healthcare workers susceptible to contracting COVID-19 has triggered better behaviour among health teams.

Due to COVID-19 cosmopolitan nature, Nigeria is prone to its outbreak if stringent public health measures are not put in place.² These emphasize the need to have well equipped diagnostic laboratories, trained diagnosticians and public health measures to forestall the occurrence of COVID-19 epidemic in Nigeria. Adequate knowledge of the novel COVID-19 has aggravated this consciousness and adherence to the guidelines towards its prevention among healthcare practitioners. A very recent survey-based study by team of researchers on assessment of knowledge, practice and guidelines towards the novel COVID-19 among eye care practitioners in Nigeria, has found knowledge of the virus to trigger risk perception and encourage adherence to precautionary measures and better behaviour among eye care practitioners in Nigeria.³

The thought of the reality that there is currently no vaccine for COVID-19 really became source of risk perception to healthcare workers and encourages better behavior towards its prevention.⁴ The awareness and knowledge of symptoms of COVID-19 which include fever, flu-like symptoms such as a cough, sore throat and fatigue and/or shortness of breath, loss of taste, loss of smell, diarrhea, nausea and vomiting is also a determinant to this risk perception and behaviour change.⁵ More so, the knowledge that the risk of death in COVID-19-infected individuals increases with older age, presence of hypertension, diabetes and coronary heart diseases⁶ as well contributes to the risk perception and better behaviour among healthcare practitioners on strict adherence to guidelines towards the prevention and management of COVID-19. The alarming, continuous experience in steady increase in the number of confirmed cases and increasing daily infection (not less than 138 daily new cases with a total of 53,865)/death rates (1,013 total deaths)⁷ are not exemptions as these also spiked the risk perception among healthcare teams and, this has arose the consciousness of better compliance to COVID-19 guidelines across all health facilities.

The objective of this study was to assess risk perception and precautionary behaviour against COVID-19 pandemic among health workers in Calabar, Nigeria. Appraisal of strict adherence to COVID-19 guidelines and protocols by health workers was

also carried out. Evidence from this study will raise consciousness on the need for consistent adherence to the use of PPEs by health workers during and post COVID-19 pandemic. This study, however, stresses the reality that the healthcare setting is a 'war front' for almost all contagious diseases, not just COVID-19 and as such encourages healthcare workers to 24/7 be conscious of protecting themselves, the patient and others from nosocomial infections.

Methodology

Study Design: This study was a descriptive cross-sectional survey.

Study Area: The study was conducted on health workers in healthcare facilities across Calabar Metropolis. These health facilities included government-owned (public) health facilities (teaching hospitals, secondary hospitals and Primary Healthcare Centers-PHCs) and private healthcare facilities in the study area. There are a total of 128 healthcare facilities in the study area (2 tertiary federal health facilities, 20 secondary state health facilities, 18 Primary Healthcare Center-PHCs, 65 health posts, and 44 private-owned healthcare facilities)⁸.

Sample size determination: The required sample for the study was determined using a single population proportion formula given as: $n = (Z^2pq)/d^2$

Where:

n = required sample size.

Z = standard normal deviation, estimated at 1.96 at 95% confidence level.

p = proportion of the desired attribute

q = 1-p

d = the acceptable sampling error

$n = (Z^2pq)/d^2 = (1.96^2 \times 0.50 \times 0.50)/(0.05)^2 = 0.9604/0.0025 = 384.16$

To make up for non-response rate of 4% = 15.3664 + 384.16 = 399.5264. Therefore, the total sample size was 400 healthcare workers. In the absence of similar studies and data to give the exact number of healthcare workers in Calabar, the study assumed a proportion of 50% of the population and used a desired precision of 5% and 95% confidence level for a two-sided test. To make up for non-response rate of 4%, the sample size was determined to be 400 respondents, which was adequate to investigate the situation under study.

Data collection and analysis: Respondents were conveniently sampled and respondent's self-

administered questionnaire designed by the researchers was used for data collection. It consisted of 15 items with two sections. Section A collected data on socio-demographic characteristics of respondents while section B elicited data on risk perception of healthcare workers and their behaviour against COVID-19 pandemic. The questionnaire required that respondents provide responses based on how susceptible and how often they carry out some positive health behaviours in the course of delivering healthcare. Items were rated 0 and 1 respectively, where 0 implies not doing it often while 1 implies doing it often. The implication of this scale is in the fact that, in measuring behaviour, it is either it is positive or negative, it is either one is doing it right or wrongly, which implies that there is no middle playing ground. Data collection spanned through two months. Collected data were cleaned, sorted, coded, inputted and analyzed using SPSS version 20 software. Hypothesis was tested using Chi-square statistics significant at 95% confidence level. Results are presented using descriptive and inferential statistics.

Results

Demographic profile or respondents: A total of 400 healthcare workers (males, n = 167, 41.8%, females, 233, 58.2%) participated in the study. Most of

the respondents (194, 48.5%) were aged 28-37 years, followed by those (115, 28.8%) aged 38-47 years. A greater proportion (116, 29.0%) were nurses followed by Medical Laboratory Scientists (83, 20.8%) and Medical Doctors (60, 15.0%) who came third while the least group of professionals were Public Health (14, 3.5%). Majority had Bachelor's degree (245, 61.3%) as their highest level of education. Most of the healthcare workers (312, 78.0%) were practicing in public (government-owned) health facilities and greater proportion of the respondents (251, 62.8%) were from secondary health facilities.

Risk perception of healthcare workers to COVID-19 pandemic: Almost all the respondents 382 (95.5%) have high risk perception and feel very susceptible to contracting COVID-19. A total of 396 (99.0%) healthcare workers feel very susceptible to contracting it from patients while some 218 (54.5%) feel they can contract it from colleagues in the course of their duty. The susceptibility and risk perception was more felt among Nurses 113 (28.3%) followed by Medical Laboratory Scientists 83 (20.8%) but all the Public Health Experts 14 (3.5%) has high risk perception. Details are shown in Table 1.

Table 1: Risk perception of healthcare workers to

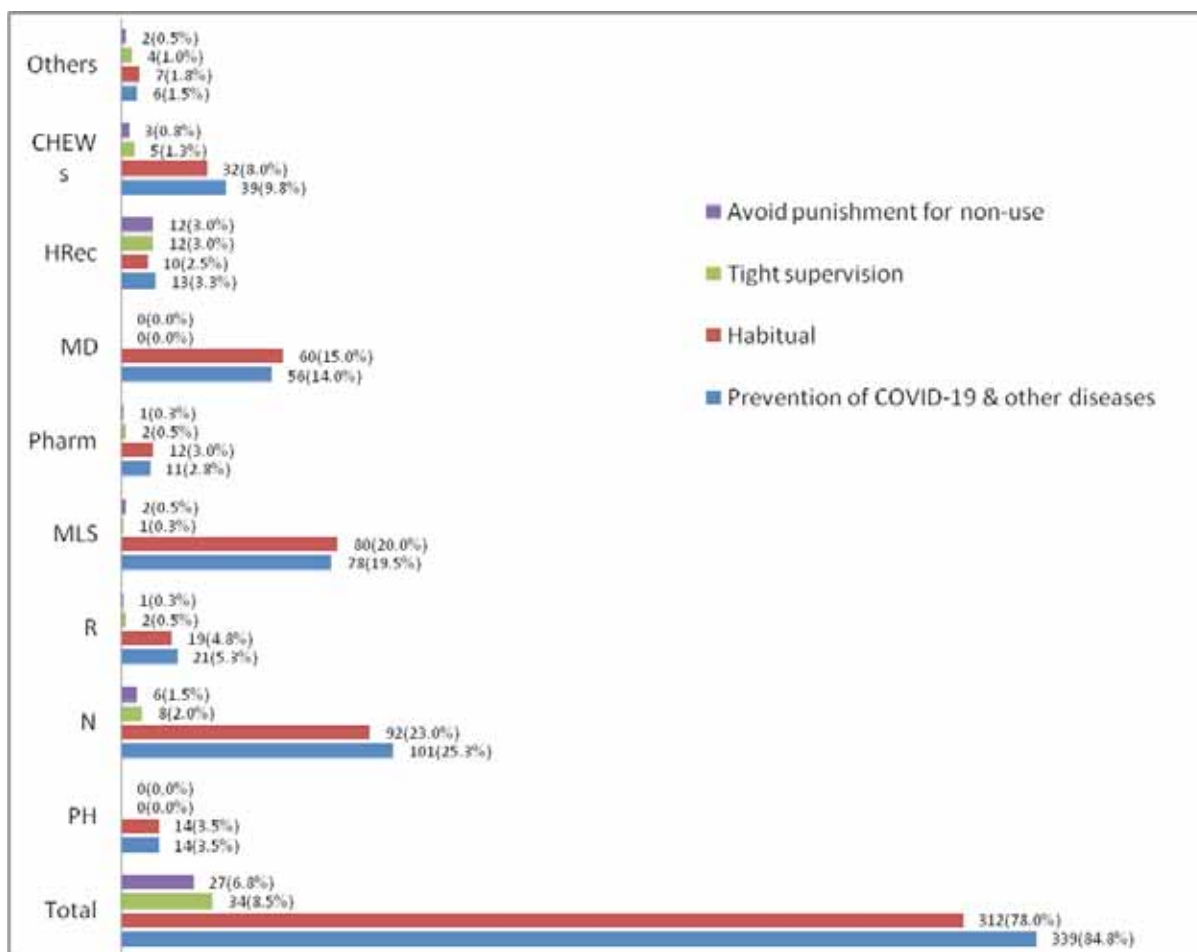
COVID-19 pandemic (n = 400)

Risk Perception	Total	PH	N	R	MLS	Pharm	MD	HRec	CHEWs	Others
1. Susceptibility of contracting COVID-19										
Very Susceptible	382(95.5)	14(3.5)	113(28.3)	26(6.5)	83(20.8)	20(5.0)	60(15.0)	16(4.0)	40(10.0)	9(2.3)
Not Susceptible	18(4.5)	0(0.0)	3(0.8)	2(0.5)	0(0.0)	4(1.0)	0(0.0)	5(1.3)	0(0.0)	4(1.0)
2. Susceptibility of contracting COVID-19 from patient										
Very Susceptible	396(99.0)	14(3.5)	116(29.0)	28(7.0)	83(20.8)	24(6.0)	60(15.0)	20(5.0)	40(10.0)	10(2.5)
Not Susceptible	4(1.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(0.3)	0(0.0)	3(0.8)
3. Susceptibility of contracting COVID-19 from colleagues										
Very Susceptible	218(54.5)	13(3.3)	38(9.5)	21(5.3)	60(15.0)	18(4.5)	35(8.8)	10(2.5)	18(4.5)	5(1.3)
Not Susceptible	182(45.5)	1(0.3)	78(19.5)	7(1.8)	23(5.8)	6(1.5)	25(6.3)	11(2.8)	23(5.8)	8(2.0)
4. Susceptibility of patients and other colleagues contracting COVID-19 from asymptomatic healthcare workers										
Very Susceptible	247(61.8)	14(3.5)	53(13.3)	23(5.8)	40(10.0)	12(3.0)	45(11.3)	18(4.5)	30(7.5)	12(3.0)
Not Susceptible	153(38.2)	0(0.0)	63(15.8)	5(1.3)	43(10.8)	12(3.0)	15(3.8)	3(0.8)	11(2.8)	1(0.3)
5. Susceptibility of family and friends contracting COVID-19 by coming in contact with an asymptomatic health worker										
Very Susceptible	312(78.0)	14(3.5)	92(23.0)	24(6.0)	67(16.8)	16(4.0)	42(10.5)	6(1.5)	40(10.0)	11(2.8)
Not Susceptible	88(22.0)	0(0.0)	24(6.0)	4(1.0)	16(4.0)	8(2.0)	18(4.5)	15(3.8)	1(0.3)	2(0.5)

Figures in parenthesis represent percentages (%); PH=Public Health; N=Nurses; R=Radiographers/Radiologists; MLS=Medical Laboratory Scientists; MD=Medical Doctors; HRec=Health Recorders; CHEWs=Community Health Extension Workers.

Precautionary behaviours of healthcare workers against COVID-19 pandemic: Almost all the healthcare workers 398 (99.5%) adhere strictly to consistent use of their Personal Protective Equipments (PPEs) amidst the COVID-19 pandemic (Table 2). The data in Figure 1 shows that majority of the respondents 339 (84.8%) frequently use their PPEs to protect themselves from contracting COVID-19 and other hospital-related

diseases while for some of the workers 312 (78.0%), the consistent use of PPEs has been a habit to them. The data in Table 2 shows a high consistent use of face masks and/or face shield by healthcare workers 396 (99.0%) and there is also a good proportion of respondents 329 (82.2%) who are all the time consistent in washing of hands with soap and water before and after attending to patients.



*Respondents gave multiple responses.

Figure 1: Healthcare workers' reasons for consistent use of Personal Protective Equipment (PPEs).

Table 2: Precautionary behaviours of healthcare workers against COVID-19 pandemic (n = 400)

Precautionary behaviour	Total	PH	N	R	MLS	Pharm	MD	HRec	CHEWs	Others
1. Consistent use of PPEs										
Consistent/all the time	398(99.5)	14(3.5)	115(28.7)	26(7.0)	83(20.8)	20(5.0)	60(15.0)	20(5.0)	41(10.3)	9(3.3)
Not consistent	2(0.5)	0(0.0)	1(0.3)	0(0.0)	0(0.0)	0(0.0)	0(0.0)	1(0.3)	0(0.0)	0(0.0)
2. Consistent use of face mask or shields										
Consistent/all the time	396(99.0)	14(3.5)	112(28.0)	28(6.5)	80(20.0)	20(5.0)	60(15.0)	20(5.0)	38(9.5)	10(2.5)
Not consistent	20(5.0)	0(0.0)	4(1.0)	2(0.5)	3(0.8)	4(1.0)	0(0.0)	1(0.3)	3(0.8)	3(0.8)

Precautionary behaviour	Total	PH	N	R	MLS	Pharm	MD	HRec	CHEWs	Others
3. Consistent use of hand sanitizers										
Consistent/all the time	306(76.5)	10(2.5)	110(27.5)	23(5.8)	63(15.8)	18(4.5)	58(14.5)	20(5.0)	40(10.0)	5(1.3)
Not consistent	94(23.5)	4(1.0)	56(14.0)	5(1.3)	20(5.0)	6(1.5)	2(0.5)	1(0.3)	1(0.3)	1(0.3)
4. Consistent washing of hands with soap and water (before/after attending to patient)										
Consistent/all the time	329(82.2)	11(2.8)	79(19.8)	21(5.3)	66(16.5)	18(4.5)	60(15.0)	20(5.0)	41(10.3)	13(3.3)
Not consistent	71(17.8)	3(0.8)	37(9.3)	7(1.8)	17(4.3)	6(1.5)	0(0.0)	1(0.3)	0(0.0)	0(0.0)
5. Consistent use of hand gloves										
Consistent/all the time	345(86.2)	12(3.0)	107(26.8)	25(6.3)	83(20.8)	12(3.0)	56(14.0)	8(2.0)	35(8.8)	7(1.8)
Not consistent	55(13.8)	2(0.5)	9(2.3)	3(0.8)	0(0.0)	12(3.0)	4(1.0)	13(3.3)	6(1.5)	6(1.5)

Figures in parenthesis are percentages (%); PH=Public Health; N=Nurses; R=Radiographers/Radiologists; MLS=Medical Laboratory Scientists; MD=Medical Doctors; HRec=Health Recorders; CHEWs=Community Health Extension Workers; PPEs=Personal Protective Equipments.

Hypothesis (Ho₁): There is no statistically significant association between risk perception and precautionary behaviour of healthcare workers against COVID-19 pandemic (n = 400). The data in Table 3 shows an increase in the precautionary behaviour of healthcare workers as the risk perception to contracting COVID-19 increases, the more consistent health worker were in the use of Personal Protective Equipments (PPEs)

300 (95.5%). Analysis using Chi-square test showed that the association was statistically significant (P < 0.001; df = 1; Chi-square = 11.280). The null hypothesis was therefore rejected and then concluded that there is statistically significant association between risk perception and precautionary behaviour of healthcare workers against COVID-19 pandemic (Table 3).

Table 3: Association between risk perception and precautionary behaviour of healthcare workers against COVID-19 pandemic (n = 400).

Test variables	Precautionary behaviour		Chi-square	P-value
	Consistent use of PPEs	Not consistent		
Very susceptible to COVID-19	300 (95.5)	82 (89.5)	11.280	<0.001*
Not susceptible to COVID-19	8 (4.5)	10 (10.5)		

Figures in parenthesis represent percentages, *Statistical significance based on P-value < 0.05; df = 1; Critical value = 3.841

Discussion

This is a study that investigates the risk perception of healthcare workers to COVID-19 pandemic and the precautionary behaviour it triggers. This study found that there is a high risk perception of contracting COVID-19 among healthcare working in the course of delivering healthcare. This high risk perception could be attributed to the fact that healthcare workers are at the forefront of delivering care to patients at this period that may or not show signs/symptoms similar to COVID-19. This makes healthcare workers more susceptible to contracting the virus. This is in line with a current Nigerian study where healthcare workers were very much certain that

COVID-19 has changed their way they practice amidst the pandemic.³ This to some extent has mental and psychological underpinning that triggered carefulness in the course of providing healthcare in a very recent study.⁹ This same similar risk perception in a very current study in Calabar Metropolis triggered nosophobia and hypochondriasis among respondents.¹⁰ Similarly, a team of researchers also found that healthcare workers had high risk perception of contracting COVID-19 in the course of delivering healthcare.¹¹

This study found a positive precautionary behaviour among healthcare workers. This could be attributed to the risk perception of contracting COVID-19. This

justifies that fact that when people perceive harm they tend to find precautionary measures. Several independent novel studies by team of researchers have found a similar finding in line with this study where the fear of contracting the novel virus has triggered positive attitude and behaviour not just among the general public but also among health teams especially among frontline healthcare workers.^{10,11} This positive precautionary behaviour is reflected in the consistent use of hand sanitizers, face masks, face shield, and washing of hands with soap and water among others.¹²

The significant association found between risk perception and precautionary behaviour of healthcare workers against COVID-19 pandemic can be attributed to the reality that perceived susceptibility, perceived severity, perceived risk, perceived barriers, and cues to action can trigger positive behaviour. This association was also found in similar studies by different team of researchers on the perception of COVID-19 and attitude/practice of people towards its prevention across the world especially in Africa and Nigeria in Particular.^{10,11,12} The test of this hypothesis being significant is very apt in that, the health care worker knowing that he/she is a forefront worker protects his/herself by adhering to COVID-19 protocols despite the discomfort associated with the use of the PPEs. However, this was a similar fact documented by researchers in an Indian study on healthcare workers.¹³

Conclusion

This study documents that there is a link between risk perception and adopting precautionary behaviour. In the midst of COVID-19, healthcare workers in Calabar Metropolis had high risk perception of contracting COVID-19 in the course of providing healthcare and as such have improved their adherence to positive behaviour of frequent use of their PPEs and other non-pharmaceutical approaches for the prevention of COVID-19. However, there was an encouraging precautionary behaviour among all the myriads of healthcare workers who partook in the study. There is need for healthcare workers to continue in the habit of always being conscious in the use of their PPEs even after the COVID-19 pandemic. This is because, there are still and may still be re-emerging diseases that needs to be prevented. Therefore, there is need for healthcare workers to always be proactive and be at alert at all times because the healthcare setting is like a war front for all manner of diseases where the first attack or target is the

healthcare worker. The researchers are not ignorant of the fact that this study could be limited in that the sample size is small and may not allow for generalization, choice of methodology, study area/setting and time of the study. Therefore, the researchers suggest that this study can be replicated with a larger sample size, different or similar methodology, study area/setting and time to allow for generalization and authentication of this study finding.

Acknowledgement: The researchers are appreciates the efforts and pains taken time of all the healthcare workers that partook in the study. They appreciate their consent to participate in the study and appreciate the consent given by the various Departmental and Unit heads to allow for data collection. The effort of the research assistants is also appreciated by the researchers.

Ethical Clearance: Taken from State Research Ethics Committee and the study was done in accordance with the Declaration of Helsinki. No harm was done to the respondents, their autonomy and confidentiality was ensured. Written and verbal informed consents were obtained from all the heads of healthcare facilities, departments and units as well as from respondents before commencement of data collection.

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Conflict of Interest: Nil

References

1. Reuben, R. C., Danladi, M. M. A., Saleh, D. A. & Ejembi, P. E. Knowledge, attitudes and practices towards COVID-19: An epidemiological survey in North-Central Nigeria. *Journal of Community Health*, 2020, Epub (7), 1-14.
2. Mustapha, J. O., Adedokun, K. A. & Abdullahi, I. N. Public health preparedness towards COVID-19 outbreak in Nigeria. *Asian Pacific Journal of Tropical Medicine*, 2020, 13(1), 1-3. doi: 10.4103/1995-7645.279650.
3. Ekpenyong, B., Obinwanne, C. J., Ovenseri-Ogbomo, G., Ahaiwe, K., Lewis, O. O., Echendu, D. C. & Osuagwu, U. L. Assessment of knowledge, practice and guidelines towards the novel COVID-19 among eye care practitioners in Nigeria—A survey-based study. *International Journal of Environmental Research and Public Health*, 2020, 17(1), 1-13.
4. Jones, L., Walsh, K., Willcox, M., Morgan, P. &

- Nichols, J. The COVID-19 pandemic: Important considerations for contact lens practitioners. *Contact Lens Anterior Eye*, 2020, 43, 196–203.
5. Chang, L., Yan, Y., Wang, L. Coronavirus disease 2019: Coronaviruses and blood safety. *Transfusion Medical Review*, 2020, 34, 75–80.
 6. Zhou, F., Yu, T., Du, R., Fan, G., Liu, Y. et al. Clinical course and risk factors for mortality of adult in-patients with COVID-19 in Wuhan, China: A retrospective cohort study. *Lancet*, 2020, 395, 1054–1062.
 7. NCDC. COVID-19 Nigeria. Nigeria Centre for Disease Control. Available online: <https://covid19.ncdc.gov.ng/2020> (accessed on 14 August, 2020).
 8. Cross River State Department of Health, Information and Statistics. List of health facilities in Cross River State. DHIS, Calabar, Nigeria. 2020.
 9. Nayar, N., Joseph, S. J., Bhandari, S. S., Dutta, S. & Shoib, S. Gearing up to tackle mental health issues in the post-COVID-19 world. *Open Journal of Psychiatry & Allied Science* 2020, [serial online], Jul 22 [cited 2020 Aug 11]. [Epub ahead of print] Available from: [https://www.ojpas.com/get_file.php?id=34181467 & vnr=795233](https://www.ojpas.com/get_file.php?id=34181467&vnr=795233)
 10. Okoi, N. O., Etim, J. J. Nosophobia, hypochondriasis, and willingness of people to seek healthcare amidst the COVID-19 pandemic in Calabar Metropolis of Cross River State, Nigeria. *Open Journal of Psychiatry & Allied Science*, 2020, Aug 26. [Epub ahead of print], 1-7.
 11. Ogolodom, M. P., Mbaba, A. N., Alazigha, N., Erondu, O. F., Egbe, N. O., et al. Knowledge, attitudes and fears of healthcare workers towards the Corona Virus Disease (COVID-19) pandemic in South-South, Nigeria. *Health Science Journal*, 2020, 1(2), 1-10.
 12. Ayinde, O. & Usman, A. B. A cross-sectional study on Oyo State health care workers knowledge, attitude and practice regarding corona virus disease 2019 (COVID-19). *Research Square*, 2020, DOI: 10.21203/rs.3.rs-23501/v1
 13. Vaishya, R. & Vaish, A. The plight of health care workers in India during COVID-19 pandemic. *BioMedical Journal*, 2020, 269(1324), 1-4.

An Exploratory Study to Assess Knowledge Regarding Complementary Feeding among Postnatal Mothers

Ramandeep Kaur¹, Navneet Kaur²

¹Tutor, College of nursing, GMCH, Chandigarh, ²M.Sc. Nursing SGRD, Hoshiarpur

Abstract

The self structured questionnaire was prepared to assess the knowledge of postnatal mothers regarding complementary feeding. The study was conducted on 60 postnatal mothers in civil hospital and Gurcharan Kanwal hospital, district Hoshiarpur Punjab. Purposive sampling technique was used to select the sample. The results of present study concluded that as per the knowledge majority of postnatal mothers i.e. 53.33% of postnatal mothers had average knowledge regarding complementary feeding followed by 30% subjects had poor knowledge and only 16.67% of subjects had good knowledge regarding complementary feeding. While analyzing, As per the findings related to the association of knowledge regarding complementary feeding among postnatal mothers with demographic variables, there was statically significant relationship between the education, type of family, place of residence, parity and knowledge regarding complementary feeding among postnatal mothers where as there was statically non significant relationship between age, occupation, religion, family income, source of information, number of children and level of knowledge regarding complementary feeding. Guidelines were distributed regarding complementary feeding to study subjects that are postnatal mothers in civil hospital and Gurcharan Kanwal hospital, district Hoshiarpur Punjab.

Keywords: *Complementary feeding, postnatal mothers.*

Introduction

Complementary foods are specially formulated for infants aged between 6-9 months for transition between breast or bottle feeding and normal intake of solid foods. Before six months, the baby's gut is still developing and they need only breast or formula milk. Weaning too soon may increase the risk of infections, allergies.¹

Solid food is needed to provide baby with enough important nutrients like iron. Also giving solid food from around six month is important for learning to chew and accept different tastes and textures. Introduce small amount of pureed fruits and vegetables and gradually build upto larger amount of more solid food.²

Start complementary feeding with cereals such as baby rice mixed with milk, mashed cooked vegetables such as potato, yam, sweet potato or carrot, mashed banana, avocado, cooked apple or pear, pieces of soft fruit or vegetables small enough for your baby to pick up. Gradually move to rice(mashed), dhal or pulses, noodles, pasta, full-fat dairy products such as yoghurt or custard(choose lower sugar varieties).³

Complementary food should be well balanced nutritionally and at least 8-10% of energy should be obtained from the protein of good quality. Essential amino acids like lysine is deficient in wheat, so wheat should be consumed simultaneously along with legumes. Infants also require iron supplements to prevent iron deficiency anaemia⁴. Generally infants complementary feeding is started with mashed banana, as it is easily digestible, within a week or to the infant put on the suji cooked in milk. Both of these provide adequate calories to the infant. Shortly thereafter well cooked and mashed lentils or peas, followed by khichri are added. By the 8 or 9 months of age, the child should be taking most

Corresponding Author:

Mrs. Ramandeep Kaur

Tutor, College of Nursing, Govt. Medical College & Hospital, Sector-32, Chandigarh

of foods cooked in house for adults. If done “gradually and with love” complementary feeding can be a positive experience for both mother and baby⁵.

The weaning period is very crucial period in the child development. Complimentary feeding, if not done properly is often followed by diarrhoea and growth failure leading to kwashiorkor, marasmus and immunodeficiency marked by recurrent and persistent infections which may be fatal for the child’s survival. Knowledge of complementary foods and practices is an important aspect of preventive and social paediatrics. There is enough evidence to show that children can be properly weaned by local foods, a kind usually consumed by the older children and adults in their families. At the age of one year, the child should receive solid food consisting of cereals, pulses, vegetables and fruits. Efforts should therefore be made to design and promote the use of homemade complementary foods⁶.

To support the growth and development of the infant, weaning is very essential to meet their energy requirement. Infants stomach is around ten times smaller than an adult. So they need small frequent meals rather than few large meals.⁷

Problem Statement: An exploratory study to assess knowledge regarding complementary feeding among postnatal mothers in selected hospitals Hoshiarpur, Punjab.

Objectives:

- To assess knowledge regarding complementary feeding among postnatal mothers.
- To find out relationship of knowledge regarding complementary feeding among postnatal mothers with selected demographic variables like age, education, occupation, type of family, religion, family income, place of residence, parity, number of children and source of information.
- To prepare guidelines regarding complementary feeding for postnatal mother.

Assumptions: Women whose education and parity is more have more knowledge regarding complementary feeding.

Research Methodology

Research Approach: A Quantitative research approach (exploratory) was adopted to assess the

knowledge regarding complementary feeding among postnatal mothers.

Research design: Non-experimental exploratory research design was used.

Research setting: The present study was conducted in Gurcharan kanwal and civil hospital of Hoshiarpur, Punjab.

Target population: Postnatal Mothers admitted in maternity ward of Civil hospital and Gurcharan kanwal hospital Hoshiarpur.

Independent variables: The independent variable in this study were age, education, occupation, type of family, religion, family income, place of residence, parity, number of children and source of information.

Dependent variable: The dependent variable in this study was knowledge regarding complementary feeding among postnatal mothers.

Sample Size: Sample size of the study was 60 postnatal mothers who were admitted in civil Hospital and Gurcharan Kanwal Hospital, Hoshiarpur, Punjab were selected as a sample.

Sampling technique: Purposive sampling technique was used in this study to select sample who is representative of the population under study.

Description of tool:

Section-A: Demographic data-demographic data which include 10 variables such as age, education, occupation, type of family, religion, family income, place of residence, parity, number of children and source of information.

Section-B: It contained self-structured questionnaire for the assessment of knowledge regarding complementary feeding among postnatal mothers. This part consisted of 36 multiple choice questions having one best answer among four options to assess the knowledge regarding complementary feeding among postnatal mothers.

Criterion measure score for assessing knowledge was as follows:

Maximum score: 36

Minimum score: 0

On the basis of score subject were categorized as

Level 1: subjects having good knowledge

Score above: > 75% (>27)

Level 2: subjects having average knowledge

Score: 50-75% (18-27)

Level 3: subjects having poor knowledge

Score: < 50% (< 18)

Results

Table 1: Frequency and percentage distribution of postnatal mothers regarding complementary feeding according to level of knowledge N=60

Level of knowledge	Criterion measure	n	% age
Good	>27 (>75%)	10	16.67
Average	18-27 (50-75%)	32	53.33
Poor	<18 (<50%)	18	30

Maximum knowledge score = 36

Minimum knowledge score = 0

Table 2: Mean, mean percentage and rank order of sub-category of knowledge regarding complementary feeding among postnatal mothers

Items	Mean	Mean %	Rank order
Meaning and initiation of complementary feeding	7.95	66.72	1
Quantity, frequency & consistency of complementary feeding	8.13	54.22	3
Feeding children during illness and after illness	2.16	54.16	4
Care during feeding	3.33	66.66	2

Table 2 shows ranking order of knowledge of postnatal mothers regarding complementary feeding. In this meaning and initiation of complementary feeding rank 1 with mean % of 66.72, followed by care during feeding rank 2 with mean % of 66.66, followed by quantity, frequency and consistency of complementary feeding rank 3 with mean % of 54.22 and least by feeding children during illness and after illness rank 4 with mean % 54.16.

Table 3: Relationship of knowledge regarding complementary feeding among postnatal mothers with selected demographic variable. N= 60

Sample characteristics	n	Mean	SD	df	Test values
Age (in years)					
18-23	16	21.06	6.11	2,57	F=0.2783 ^{NS}
24 -29	31	21.16	6.18		
30 – 35	13	22.53	5.47		
Education					
Illiterate	2	19	9.89	4,55	F=6.136*
Primary	7	18.14	4.25		
Matric	23	19.26	5.69		
Senior Secondary	12	21.5	3.7		
Graduation and Above	16	26.25	5.48		
Occupation					
Working	15	23	7.92	58	F=1.183 ^{NS}
Non- working	45	20.91	5.13		
Type of family					
Nuclear	21	19.92	5.74	58	F=2.85*
Joint	31	24.23	5.28		

Sample characteristics	n	Mean	SD	df	Test values
Religion					
Hindu	28	21.6	5.58	2,57	F=0.3352 ^{NS}
Sikh	29	21.55	6.28		
Any other	3	18.67	7.63		
Family income (per month) Rs					
<5000	16	19.43	4.47	3,56	F=3.6945 ^{NS}
5001-10,000	22	19.32	6.1		
10, 001- 15000	11	20.91	5.73		
>15000	11	21.09	4.8		
Place of residence					
Urban	21	23.57	6.69	58	t=2.103*
Rural	39	20.28	5.24		
Parity					
Primi para	24	20.5	6.1	58	t=2.023*
Multi para	39	23.05	5.84		
Number of children					
1	20	20.8	6.24	2,57	F=0.6389 ^{NS}
2	36	22.05	5.84		
3	4	19	5.94		
Source of information					
Newspaper & magazines	10	23.4	5.92	5,54	F=2.778 ^{NS}
Television & Radio	19	22.42	4.5		
Internet	3	28	1.73		
Family	20	20.25	6.06		
Peer group	1	17	0		
Health personnel	7	14.14	7.51		

NS = non significant, * = significant at P<0.05 level

Discussions

The results shows that maximum numbers of postnatal mothers had average knowledge regarding complementary feeding which is consistent with the same study conducted by kumara S in Mangalore, of coastal south India regarding knowledge of mothers related to complementary feeding. The study reveals that 75.5% mothers had average knowledge regarding complementary feeding⁸. Findings of present study are comparable with study conducted by Kusloom U to assess the knowledge of multipara mothers regarding complementary feeding revealed that 58% multipara mothers had average knowledge regarding complementary feeding, 32% of multipara mothers had

poor knowledge regarding complementary feeding and 10% of multipara mothers had good knowledge regarding complementary feeding.⁹ Present study is also comparable with study conducted by Halt C N in Holland to assess the knowledge and practice of parents regarding complementary feeding which showed that from 60 postnatal mothers, 85% mothers had knowledge regarding complementary feeding¹⁰. The finding of present study in relation with education revealed a significant relationship with knowledge regarding complementary feeding which is comparable with a study conducted by Brown A to assess maternal attitudes and trends in initiation of complementary feeding- in lady Hardinge Medical College, baltimore, study results

revealed that education had statistically significant relationship with knowledge. Hence mothers with higher education had more knowledge¹¹. This finding is similar to that in the study conducted by Zeilitin MF et al on knowledge, attitudes and practices of mothers regarding complementary feeding study results revealed that type of family had statistically significant relationship with knowledge. Mothers from joint family having more knowledge regarding complementary feeding.¹² Findings of present study showed that place of residence had significant relationship with knowledge of postnatal mothers regarding complementary feeding which is comparable with a study conducted by Jerome and Ostergren (2007) results revealed that there is statistically significant relationship of place of residence, type of family and age with knowledge of mothers.

Findings of present study showed that parity had significant relationship with knowledge of postnatal mothers regarding complementary feeding which is comparable with a study conducted by Cameron A rural revealed that there is statistically significant relationship of parity with knowledge. Multi para mothers had more knowledge regarding complementary feedings¹³.

Conflict of Interest: Nil

Source of Funding: Self

Ethical Clearance: Taken from Institutional ethical committee.

References

1. Marlow D.R, Redding B.A. Textbook of Paediatric Nursing. 5th ed. United State: WB Saunders; 2008.
2. Margaret G.M. Introductory pediatric Nursing. 1st ed. London: elseveir; 1998.
3. Lawrie S.N, Scaloven M.A. Introductory foods to infant. NJI. 2006 (cited 2012 jan 10); 10(2): 82-4 .
4. Terrikyle. Essential of paediatric Nursing. 1st ed. New Delhi: Walters Kluwer; 2007.
5. Park K. Preventive and Social Medicine. 10th ed. Jabalpur: Banarsidasbhanot; 2007.
6. Jindal KA. A study on Weaning. NJI. 2008 (cited 2012 feb 2): 12 (3);2009.184-6.
7. D.Souza, Valsaeaj PB, breast feeding and weaning. IJN. 2012(cited 2012 feb 6); 16 (4):102-4.
8. Kumari S, Saili A, Jain S, Bhargava U, Gandhi G, Seth P. maternal attitudes and trends in initiation of complementary feeding in Lady Hardinge Medical College, New Delhi in India: Indian journal of Paediatrics 1998; 55 (6) : 905-11. 44)
9. Kulsoom U, Saeed A, Effect of improper weaning and degree of stunting: Journal of the Pakistan Medical Association, Karachi 2005; 10(2): 45-47. 45)
10. Hart CN, Drotar D. Maternal knowledge of nutrition, problem solving abilities and the introduction complementary foods into infants" diet. Early child development and care.2006 Oct; 176(7): 693-705. 46)
11. Brown A, Leem. Maternal child feeding style during the weaning period, Association with infant weight & maternal eating style: <http://www.ncbi.nlm.nih.gov/pubmed/21385639>. reviewed on 12/4/2011. 47)
12. Brown LV, Zeitlin MF, Peterson KE, Chowdhury AM, Rogers BL, Weld LH et. Al. Evaluation the impact of weaning food messages on infant feeding practices and child growth in rural Bangladesh: American journal of clinical nutrition 1992; 56: 994-1003.
13. Cameron. A, James. SR. Attitude, knowledge and belief related to weaning: Journal of paediatrics Africa 2001; 34(8): 78-79.

Comparison of the Attitude of Nursing Students towards their Clinical Learning Environment in Selected Private and Government Colleges of Nursing

Rebecca Dillu¹, Roseline Soren¹

¹Assistant Professor, Amity College of Nursing, Amity University, Haryana

Abstract

A comparative study was conducted to assess the attitude of B.Sc. nursing 4th year students towards their Clinical Learning Environment in selected Private and Government Colleges of Nursing. 160 Samples were selected from Private and Government Colleges of Nursing. The structured questionnaire was used to assess the demographic variables among nursing students while Clinical Learning Environment Scale was used to assess the Attitude of Nursing Students towards their Clinical Learning Environment. The data were analyzed by using descriptive statistics (mean, frequency, percentage and standard deviation) and inferential statistics (unpaired 't' test, ANOVA).

The study indicated that students of Private Colleges were having higher Attitude than the Students of Government Colleges of Nursing which was compared by using unpaired 't' test which project 't' value of 1.975 which was statistically significant at $p < 0.005$. The calculated 't' value was greater than the table value. The study also shows the comparison of mean, SD, mean % and mean difference of Attitude score of nursing Students towards their CLE in selected Private and Government Colleges of Nursing in terms of certain areas i.e. pedagogical environment, work culture, clinical assignment, method of evaluation. This was compared by using unpaired 't' test which showed 't' value 1.98 of which was statistically significant at $p < 0.005$. The calculated 't' value was greater than the table value. The study concluded that the students of B.Sc. Nursing 4th year studying in Private colleges are having more positive attitude then the students studying in Government colleges of Nursing.

Keywords: Attitude, Nursing students, Clinical learning environment.

Introduction

The clinical learning environment is important in facilitating students to achieve their learning outcomes. Learning transferring in the clinical context needs an encouraging clinical learning environment It has been suggested that student learning outcomes from clinical practice can be improved by adjusting the clinical environment to assemble their expressed needs. It is

important to understand students' satisfaction with their clinical learning environment in order to maximize their learning experience¹.

The clinical learning environment can have a great influence in the development of the attitude, knowledge, skills, and problem solving ability of students who engage into this situation. Clinical learning environment plays a crucial role, especially during the clinical training of student nurses, as they face the reality of their function. It is important that, clinical learning environments to meet the student's satisfaction and expectations especially with the presence of critical shortage of fieldwork placement experiences. As the time allocation for the clinical component of nurse education is limited so the clinical time needs to be used efficiently. The outcomes of clinical field placement may be improved through

Corresponding Author:

Ms. Rebecca Dillu

Designation: Assistant Professor, Amity College of Nursing, Haryana, Address: Amity University, Panchgaon, Gurugram-122413, Haryana
e-mail: rebeccadillu@gmail.com

matching the student's satisfactions and their clinical learning environment².

The clinical learning environment is understood as conditions in clinical wards that influence students' learning experiences. Most studies investigating nursing students' clinical learning environments have focused on hospital settings. A good climate for learning experiences in clinical placements depends on supervision and innovative teaching and learning activities from ward nurses and clinical teachers. Planned and organized learning activities, including specific patient allocation, contribute to students' learning outcomes. Attention towards students' possible problems, student-involvement at the wards, and opportunities for students to interact personally with teachers and nurses are all aspects that may strengthen a climate for learning. To improve nursing students' learning outcomes, routines and instructions for ward assignments should be planned, clear, and well-organized³.

Clinical placement provides the opportunity for student to observe role models, practice, develop the skills and the problem solving abilities, and reflect on what they see, hear and do. The quality of clinical learning environment is a valid indicator to show the quality of nursing education therefore, assessment of CLE is the duty of nursing education administration. Anecdotal evidences suggest that students do not get adequate clinical supervision when they are in the clinical area. They are sometimes left to work on their own, which could affect the health of the patient, their learning process and also the Nursing profession. Hospital provides suitable Clinical atmosphere, the learning and caring premises to the students and also provides suitable supervisory relationship for the production of clinically competent among nurses. This study will help to raise the awareness on the part of the nursing staff and nurse educator to understand the expectation of students when they are allocated to the wards for clinical experiences. The result may inform nurse educator to search better ways to supervise students⁴.

Objectives of the Study: To compare the attitude of nursing students towards their clinical learning environment in selected private and government colleges of nursing in Delhi NCR.

Materials and Method

A quantitative research approach and non-experimental, comparative descriptive design was used

for the study to assess the attitude of Nursing students towards their clinical learning environment. In this study the independent variables was Attitude of B.Sc. Nursing 4th year Students while the dependent variable was Clinical Learning Environment. The sample were 80 B.Sc. 4th year Nursing students of Private Colleges (Amity College of Nursing and RR College of Nursing) and 80 B.Sc. 4th year Nursing students of Government Colleges of Nursing (RAK College of Nursing and Ahilya Bai College of Nursing) at Delhi NCR. The sample was selected by adopting **convenient sampling technique**.

Structured Clinical Learning Environment Scale was used to assess the attitude of nursing students towards their clinical learning environment. It consists of 6 areas related to Clinical Learning Environment i.e. Pedagogical environment, Work culture, Supervision, Teaching learning process, Clinical assignments, method of clinical Evaluation.

To ensure the content validity of the structured questionnaire was validated by a panel of 7 expertise from nursing field. The experts were requested to review and verify these items for adequacy, relevance, clarity, suitability. The necessary modification was done accordingly and final draft of the tool was prepared. The reliability of Structured rating scale on Clinical learning environment was tested with split half technique using **Karl Pearson's coefficient** of co-relation and the result was **0.82**. It signifies a good internal consistency.

Results

Table 1: Frequency and Percentage distribution of B.Sc. nursing 4th year Students according their Attitude towards their Clinical Learning Environment in selected Private Colleges of Nursing N= 80

Attitude	Range of score	Frequency	Percentage
		(f)	(%)
Positive attitude	46-90	79	98.8%
Negative attitude	30-45	1	1.3%

Maximum score: 90, Minimum score: 30

The data in table 1 shows that maximum (98.8%) students were having Positive Attitude while very few (1.3%) students were having Negative Attitude towards their Clinical Learning Environment in selected Private College of Nursing.

Table 2: Frequency and Percentage distribution of B.Sc. nursing 4th year Students according their Attitude towards their Clinical Learning Environment in selected Government colleges of Nursing. N= 80

Attitude	Range of score	Frequency	Percentage
		(f)	(%)
Positive attitude	46–90	80	100%
Negative attitude	30–45	0	0%

Maximum score : 90, Minimum score : 30

The data in table 2 shows that all students were having Positive Attitude (100%) towards their Clinical Learning Environment in selected Government College of Nursing.

Table 3: Mean, median, SD of Attitude score and Mean % of B.Sc. nursing 4th year Students according their Attitude towards their Clinical Learning Environment in selected Private and Government Colleges of Nursing N= 160

	Range	Mean	Median	SD	Mean %
Private (n=80)	41-90	73.49	74	9.223	81.65
Government (n=80)	48-86	64.55	63.5	8.401	71.72

The data in table 3 shows that the mean of the Private Colleges of Nursing was 73.49 where as mean of the Government Colleges of Nursing was 64.55 with range of score 41- 90 and 48- 86 respectively. Median of scores of Private colleges of nursing was 74 whereas the median of Government Colleges of Nursing was

63.5. Standard deviation of Private Colleges of Nursing was 9.223 whereas Standard deviation of Government Colleges of Nursing was 8.401. The table shows that the Attitude score was higher in the students of Private colleges of Nursing than the Government Colleges of Nursing.

Table 4: Mean score, Standard Error of Mean percentage 'p' and 't' Value of B.Sc. Nursing 4th year students according their attitude towards their Clinical Learning Environment in selected Private and Government colleges of Nursing. N=160

Unpaired T Test		Mean Score	S.D.	N	Mean %	Mean Diff.	Unpaired Test	P Value	Table Value at 0.05
Attitude Score	Private	73.49	9.223	80	81.65	8.94	6.408	0.000*	1.975
	Government T	64.55	8.401	80	71.72				

df = 158, p < 0.05

Data in table 4 shows that the Attitude of Nursing students of Private and Government colleges of Nursing towards their Clinical Learning Environment were compared by using unpaired T test. Mean of Private colleges was 73.49 while in Government Colleges mean was 64.55 with mean difference of 8.94. The

mean difference was found to be statistically significant as evident from 't' value of 1.975 at 0.05 level of significance. This shows that there was a significant difference between the Attitude score of nursing students of Private and Government Colleges of Nursing.

Table 5: Comparison of Mean, SD, Mean%, Mean difference and ‘t’ and ‘P’ value of attitude score areas wise of Nursing students towards their CLE in selected Private and Government Colleges of Nursing N=160

Unpaired T Test		Mean Score	S.D.	Mean %	Mean Difference	Unpaired t Test	P value	Table Value at 0.05
Pedagogical Environment	Private	12.35	1.897	82.33	0.838	3.001	0.0031*	1.98
	Government Ent	11.51	1.623	76.75				
Work Culture	Private	12.01	1.818	66.74	1.225	4.159	0.0001	1.98
	Government Ent	10.79	1.907	59.93				
Supervision	Private	12.06	2.125	57.44	1.488	4.475	<0.001*	1.98
	Government Ent	10.58	2.079	50.36				
Teaching Learning Process	Private	12.14	2.067	50.57	0.575	1.940	0.0542	1.98
	Government Ent	11.56	1.660	48.18				
Clinical Assignments	Private	12.56	2.299	46.53	3.450	8.675	<0.001*	1.98
	Government Ent	9.11	2.714	33.75				
Evaluation	Private	12.36	2.088	41.21	1.363	4.081	0.0001*	1.98
	Government Ent	11.00	2.135	36.67				
Overall	Private	73.49	9.223	81.65	8.938	6.408	<0.001*	1.98
	Government Ent	64.55	8.401	71.72				

df (158) $P < 0.05$

Data in table 5 shows the comparison of mean, SD, mean % and mean difference of Attitude score of nursing Students towards their CLE in selected Private and Government Colleges of Nursing.

In the **pedagogical environment** domain the mean of Private colleges was 12.35 while in government colleges it was 11.51 with mean difference of 0.838. The obtained mean difference was found to be statistically significant as evident from ‘t’ value of 1.98 at 0.05 level of significance. This shows that there was a significant difference in the pedagogical domain of Private and government colleges of Nursing. The attitude of students of Private colleges had comparatively higher attitude than the Government colleges of Nursing.

In **work culture** domain the mean of Private colleges was 12.01 while in Government colleges it was 10.79 with mean difference of 1.225. The obtained mean difference was found to be statistically significant as evident ‘t’ value of 1.98 at 0.05 level of significance. This shows that there was a significant difference in the work culture of Private and Government colleges of Nursing. The attitude of students of Private colleges was higher than the Government colleges of nursing.

In **supervision domain** the mean of Private colleges was 12.06 while in Government colleges it was 10.58 with mean difference of 1.488. The obtained mean difference was found to be statistically significant as evident from ‘t’ value of 1.98 at 0.05 level of significance. This shows that there was a significant difference in the supervision of Private and Government colleges of Nursing. The attitude of students of Private colleges was higher than the Government colleges of Nursing.

In **teaching learning process** domain, the mean of Private colleges was 12.14 whereas in Government colleges it was 11.56 with mean difference of 0.575. The obtained mean difference was not found to be statistically as evident from ‘t’ value 1.98 at 0.05 level of significance. This shows that there was no significant difference in the teaching learning process of Private and Government colleges of Nursing.

In **clinical assignment** the mean of private colleges was 12.56 while in Government colleges it was 9.11 with mean difference of 3.450. The obtained mean difference was found to be statistically significant as evident from ‘t’ value of 1.98 at 0.05 level of significance. This shows that there was significant difference in the clinical area of Private and Government colleges of Nursing.

In **evaluation** domain the mean of Private colleges was 12.36 while in Government colleges it was 11.00 with mean difference of 1.363. The obtained mean difference was found to be statistically significant as evident from 't' value of 1.98 at 0.05 level of significance. This shows that there was significant difference in the evaluation of Private and Government colleges of Nursing. The attitude of students of Private colleges is higher in the evaluation domain than the students of Government Colleges of Nursing.

Discussion

The findings of the present supported by similar study done by Papastavrou E. et al i.e. present study showed that the mean of the Private Colleges of Nursing was 73.49 where as mean of the Government Colleges of Nursing was 64.55 with range of score 41- 90 and 48- 86 respectively. Median of scores of Private colleges of nursing was 74 whereas the median of Government Colleges of Nursing was 63.5. Standard deviation of Private Colleges of Nursing was 9.223 whereas Standard deviation of Government Colleges of Nursing was 8.401. The table shows that the Attitude score was higher in the students of Private colleges of Nursing than the Government Colleges⁵.

Recommendations: From the findings of the study, the following recommendations are offered for further research:

- Similar kind of study can be conducted on large sample size.
- The same study can be conducted to compare the Attitude and skill of Nursing students of various Nursing programme.
- The descriptive study can be conducted on knowledge of various courses of Nursing students towards Clinical Learning Environment.

Conclusion

From the findings of present study, it is concluded that the students of B.Sc. Nursing 4th year studying

in Private colleges are having more Positive attitude then the students studying in Government colleges of Nursing in relation to their pedagogical environment, work culture, clinical assignment, method of evaluation.

Conflict of Interest: There is no conflict of interest.

Source of Funding: Self

Ethical Consideration: Ethical approval was obtained from the institutional ethical committee and prior to data collection the formal permission was taken from the principal/nursing director of all the selected nursing colleges. Written informed consent form was taken from the study subjects regarding their willingness to participate in the research project.

References

1. Mokadem N, Ibraheem S. Nursing Student's with their Clinical learning environment. American Journal of Nursing Research. 2017; 5(4):104-108. doi:10.12691/ajnr-5-4-1.
2. Songlan C, Hui C, Yun X. A study on education of professional attitude for nursing students. Chinese Nurs Res. 2005; 19:1704-170. From: http://en.cnki.com.cn/Article_en/CJFDTOTALSXHZ200519007.htm Accessed: Jan 2012.
3. Berntsen K, Bjork I, Brynildren G. Nursing Student's Clinical Learning Environment in Norwegian Nursing Homes. August 2017; Vol. No.8: 949-961.
4. Cukljek S, Juresa V, Bile Grgas C, Rezek B. Changes in Nursing Student's Attitude towards Nursing during Undergraduate Study 2017; Vol. 56 No. 1:36-43.
5. Dimitriadou M, Papastavrou E, Efstathiou G, Theodorou M. Baccalaureate Nursing student's perception of Learning and supervision in the clinical Environment. Nursing and Health Sciences. 7 November 2014. Available from: <https://doi.org/10.1111/nhs.12174>.

Effect of Simulation on Maternity Nurses' Knowledge, Practice and Self-efficacy During Management of Eclamptic Fits

Samah Abd Elhaliem Said¹, Elham Abozied Ramadan Saied²,
Hanan Amin Ali Gaafar², Amira A. El-Houfey³

¹Assistant Professor of Obstetrics and Woman's Health Nursing, Faculty of Nursing, Benha University, Egypt,

²Lecturer of Obstetrics and Woman's Health Nursing, Faculty of Nursing, Benha University, Egypt,

³Assistant Professor of Community Health Nursing, Faculty of Nursing, Assiut University, Egypt, ³Assistant Professor of Community Health Nursing, Faculty of Nursing, University Collage of Aldarb, Jazan University, King Saudi Arabia

Abstract

Background: Simulation-based nursing education is an increasingly and wide-spread preferred educational approach. It offers opportunities to acquire clinical skills and decision-making through various situational experiences.

Aim: Evaluation of simulation effects on maternity nurses' knowledge, practice and self-efficacy during management of eclamptic fits.

Design: A quasi experimental design was utilized.

Setting: The study done in Obstetrics and Gynecology Department of Benha Teaching Hospital.

Samples: A convenient samples include 40 nurses.

Tools: Data collecting by using 3 tools: A Structured self-administered questionnaire, observational checklists and self-efficacy scale.

Results: A highly significant difference among pre-intervention and immediate post-intervention and 8 weeks' post-intervention regarding knowledge, practices and self-efficacy of nurses concerning management of eclamptic fits.

Conclusion: Simulation-based training is effective training approach that enhances maternity nurses' knowledge, practice and also increases their self-efficacy regarding management of eclamptic fits.

Recommendations: All maternity nurses in different settings should attend regular simulation-based and refreshing courses to improve their knowledge, practice and self-efficacy.

Keywords: *Simulation; Self-efficacy; Maternity nurses; Eclamptic fits.*

Introduction

Simulation is training methodology and technique to increase applied to health-care education, and provided many benefits for practitioners, patients and the health service. Self- efficacy is a cite results of simulation train programs which could effect and confidence on achieve targets and performances¹.

Simulation has an essential role especially in settings with limited resources who could have shortage of health-care skills. Simulation is used for teaching medical and nursing trainees who had constraints than counterpart in higher setting resources; so, used simulation for increase fundamental obstetric and gynecologic skill would very useful².

Eclampsia can be identified as development of generalized fits in preeclampsia cases and without prior history of epilepsy. In developing countries increased eclampsia rates are complicates (16–69) births/10000, while in Europe, was complicates (2–3) births/10000. Shortage or lack of antenatal care utilization, and deficiency in hospital services were mainly the reasons of variance. Appropriate identification and preeclampsia a treatment at global scope was reduced this contrast³.

Eclamptic fits are life-threatening emergency and could occurred during ante partum (53%), intrapartum (19%), or postpartum (28%). Generally, eclamptic fits commonly persist 60-90 seconds. Postictal confusion, agitation, or combativeness might be follow. Through eclamptic seizure, fetus illustrated hypoxia related bradycardia, while recovers after proper management⁴.

Self-efficacy is personal capacity to perform at many levels Bandura (1977), and abilities of selecting, using, and modifying the appropriate teaching strategy. Increasing self-efficacy is achieved throughout increasing understand and experiences and later influenced on teaching and professionally behaviors⁵.

As health-care provider, nurses are responsible about diagnosis, and eclampsia managing, so increasing nursing skills for prevent, identify, and management complications of pregnancies such preeclampsia and eclampsia led to reduce maternal and fetal mortalities rate. Increase nursing education and abilities to do decisions would improve their performances⁶.

Significance of the study: The pregnant women expect that their labor and obstetric staff have been prepared for dealing with complications and emergencies so, they trust that the hospital will use everything available to ensure the best possible outcomes⁷. In Egypt, maternal mortality ratio was 45/100000 live births (World Health Organization). Our study aim to estimating the prevalence of pregnancy hypertensive diseases in Egypt, (4.2%) had pregnancy inducing hypertension, (3.8 %) eclampsia⁸.

Nurses have important roles in hypertensive disorders managing of pregnancy, so it is found that it may be helpful to implement a simulation to improve, knowledge, practice and self-efficacy of maternity nurses in management of eclamptic fits.

Aim of Study: To evaluate the effect of simulation on maternity nurses' knowledge, practice and self-

efficacy during the management of eclamptic fits.

Research Hypothesis: Research hypotheses are formulated as: Nurses' knowledge, practice and self-efficacy will improve after implementation of simulation framework regarding management of eclamptic fits.

Material and Method

Research design: A Quasi experiment.

Research Setting: This research done at Obstetrics and Gynecology Department of Benha Teaching Hospital. This setting is located in Benha City.

Sample type: A convenient sample was used.

Sample size: 40 nurses were recruited from Obstetrics and Gynecology Department of Benha Teaching Hospital.

Tools of Data collecting:

Three tools used to collecting the necessary information's about the study subject as:

I. A structured self-administered questionnaire; which design by the researcher post survey pervious literature and under guidance of supervisors included the following:

A: Socio-demographic characteristics of samples such as (personal characteristics, training courses for eclampsia, source of information about eclampsia, etc.) itcontain 8 questions.

B: Assessing knowledge of nurses working in obstetrics and gynecology department at Benha Teaching Hospital regarding management of eclamptic fits through items written in simple Arabic language containing (17 questions) in the form of multiple choice and open-ended questions for assessing the nurses' knowledge regarding the following: Definition, causes, signs and symptoms, prevention, and complications of Eclamptic fits. Management of eclamptic fits, magnesium of sulfate dose, toxicity, antidote and precautions.

Knowledge Scoring: All our variables weight according to include items for every question; answers of questions were classified into 3 categories. The answers are given score (2) for complete knowledge when more than 60% of a given answer was selected, or if correct answer was selected, score (1) for incomplete knowledge when less than 60% of a given answer was

selected, moreover score (0) was given if the participant don't know or wrong answer. Using the following score system to assess the level of knowledge, good= score \geq 75% complete answers). While average = 60 - < 75% complete answers, and poor = < 60% complete answers.

II. Observational checklists: to assess nurses the level of practice, management and nurses role regarding eclamptic fits.

Observational checklists scoring system: Each statement scored as follow: (1) if done and (0) if not done. The total score of practice was classified as the follows: satisfactory level= score \geq 80%, as well as unsatisfactory level = score < 80%.

III. Self-efficacy scale: This tool was adopted from *Christian and Krumwiede*⁹, then it was translated into Arabic, post construction and translate our tools, moreover the tool revised by three professors, one Community Health Nursing, and two Obstetrics and Woman's Health Nursing specialty. The scale was implemented by the researcher to assess self-efficacy of the studied nurses regarding management of eclampsia. Scale has 16 statements with five-point about issues that measure self-efficacy of the studied nurses regarding management of eclampsia.

Self-efficacy scoring: Attitude outcome of scale, every statement scored as: (5) if response was "Very confident", (4) if it was "Confident", (3) "Uncertain", (2) if it was "Not confident" and (1) if it was "absolutely not confident". Total score used as percentage. Self-efficacy Scores were considered as follows: high self-efficacy= score \geq 75%, moderate self-efficacy= score 60 - < 75%; moreover low self-efficacy= score < 60%.

Validity and Reliability of the tools: Data collecting Tools reviewed using expertise panel from three specialized university professionals in obstetrics and gynecology fields. According to their judgments on clarified sentence and appropriateness contents, Modifications were done, such as rearranging some questions, some punctuation and merge observational checklists to be: -observational checklist for management of eclamptic fits. Cronbach's alpha coefficient calculating for reliability assessment and each tool consisted as relatively homogenous items. The internal consistency of knowledge was 0.856, the internal consistency of practice was 0.869. Internal consistency of self- efficacy was 0.879.

Ethical considerations: Study aim was explained

to every nurse pre applying tools to get confidence and more trust. An oral consent obtained from every nurse to participating in our study or refuse without obligation. No physical, social or psychological risk on her participations. Data collected and treated confidentially. Every nurse informed about time for our study, such as duration of pretest, discussion, previewing simulation video, training on certain procedures, posttest and follow up. In addition to the approval of the Ethical Committee was obtained from Nursing College for our research.

1. Operational Design:

(1) Approval: Official letter from Dean of Benha Faculty of Nursing, contains title and our objectives directed to Director of Benha Teaching Hospital to get official agreement.

(2) Tools: Pervious review either national or international relevant literature related to eclamptic fits, was carried out by using local and international books, journals, periodicals in addition to computer search to develop the study tools and contents. Developing and translating tools into simple Arabic language.

(3) Pilot Study: After developing the tool, a pilot study was carried out on 10% of the total sample size (4) nurses were randomly chosen. The individuals who participated in the pilot study were excluded from the sample. The aim of the pilot study was to test the feasibility and clarity of the tool and also to estimate the time required to fill in the questionnaire.

(4) Collection of data: The study was implemented during seven months, start from October 2018 to April end 2019. Implementation of the study was carried out at Obstetrics and Gynecology Department of Benha Teaching Hospital. The researchers began the study by visiting the Hospital two days per week, from 9 A.M. to 2 P.M. At times, researchers collect data at afternoon or Night Shift, the time was determined according to the participating nurses' suitable time.

(5) Procedure of the study:

1. Interviewing and Assessment Phase: The researcher introduced herself and all nurses interviewed, our purposes were explained and an oral consent was taken from them to participate in the study, socio-demographic data collected through pre-test questionnaire depending on knowledge baseline data. This phase took nearly 15-25 minutes.

2. Planning phases: Based on pre-test results, the simulation frame work regarding management of eclamptic fits was prepared by our researchers. It was a video to simulate care for eclamptic women; this video was collected from YouTube and translated in Arabic to suit the nurses 'simulation scenario. The second tool was booklet about eclampsia management.

3. Implementation phase: All nurses divided to studied groups; every group comprised 4-5 nurses. Simulation was applied through series of sessions;

Session 1: Discussion of theoretical information on eclampsia through the booklet which lasted for half an hour.

Session 2: View simulation video which lasted for 10 minutes.

Session 3: Training the nurses on procedures concern the care of women with eclampsia As: Measuring blood pressure, weighing pregnant women, assessing deep tendon reflex and pitting edema. This session lasted for one hour.

Session 4: was half an hour for debriefing and feedback from nurses.

4. Evaluation phase: After applying the simulation, the researchers used the same previous assessment tools except socio-demographic data posttest, to evaluate simulation effects on nurses' knowledge, practice and self-efficacy regard to eclampsia management, this phase takes approximately 20 minutes.

5. Follow up: After eight weeks the researcher used the same previous assessment tool (Posttest) to follow up the effect of simulation on nurses' knowledge, practice and self-efficacy regarding management of eclampsia, this phase lasts for 25-30 minutes.

6. Statistical analysis: Data analyzed using SPSS version 20.0 followed by data tabulation and

analysis. Descriptive statistics applied. A paired t-test, Chi-square test and Pearson Correlation Coefficients used. $p < 0.001$.

Results

Table (1): Distribution of Studied Sample Regarding their Socio-Demographic Data (N= 40)

Socio-Demographic Data	Frequency	%
Age in years		
21-31	30	75.0
32-41	5	12.5
42-51	5	12.5
Mean±SD	29.02±7.66	
Educational qualification		
Secondary nursing education	13	32.5
Technical nursing education	25	62.5
Bachelor of nursing	2	5.0
Current job		
Bedside nurse	13	32.5
Technical nurse	25	62.5
Head nurse	2	5.0
Years of experience		
<10	28	70.0
10 - <20	7	17.5
20-30	5	12.5
General Idea about Eclampsia		
No	8	20.0
Yes	32	80.0
Source of Information (n=32)		
Studying	9	28.1
Workexperience	23	71.9

Table (1) shows three quarters of nurses (75%) were 21 to 31 years old, (29.02±8.66). 62.5% have technical nursing education, more than two thirds (70%) had experience rang from one to ten years, More than three quarters of nurses (80%) have a general idea about eclampsia, more than three quarters had source of information from work experience.

Table (2): Comparison of mean score of studied sample knowledge regarding magnesium sulfate and management of eclamptic fits.(N= 40)

Variable	Pre-intervention		Immediate post-intervention		Follow up (8 weeks)		Paired t test (1)	P. value	Paired t test (2)	P. value
	Mean±SD		Mean±SD		Mean±SD					
Side effect of magnesium sulfate	.9250±.57233		1.6250±.70484		1.5000±.71611		-4.583	<0.001**	-3.797	<0.001**
Symptoms of magnesium sulfate toxicity	.9750±.86194		2.8000±.46410		2.2250±.83166		11.429	<0.001**	-7.017	<0.001**
Antidote used for magnesium sulfate toxicity	.3250±.47434		.9000±.30382		.6750±.47434		-7.264	<0.001**	-4.149	<0.001**
Level of MgSo4 that cause respiratory decline	.1500±.36162		.8000±.40510		.6500±.48305		-7.093	<0.001**	-4.937	<0.001**
The initial dose of magnesium sulfate	.3500±.48305		.8750±.33493		.7250±.50574		-5.188	<0.001**	2.418	<0.05*
Maintenance dose for magnesium sulfate	.7500±.43853		.9250±.26675		.6500±.48305		-2.014	<0.05*	1.892	>0.05
Deep tendon reflexes (Times for follow up)	.3250±.47434		.7000±.46410		.6250±.50574		-3.365	<0.001**	-2.35	<0.05*
Fetal heart rate	1.8250±.38481		2.0000±.00000		1.7250±.45220		-2.876	<0.001**	1.000	>0.05
Nursing care during eclamptic fit	1.9000±1.46410		3.6000±1.10477		2.9500±1.19722		-6.171	<0.001**	-3.163	<0.001**

*Significant (P<0.05), ** Highly Significant (P<0.001). Paired (t1) before intervention and immediately after. Paired (t2) before intervention and after 8 weeks follow up

Table (2): Shows a highly statistically significant improvement immediately post-intervention and during follow-up (8 weeks) compared to pre-intervention regarding: side effect of magnesium sulfate, symptoms of magnesium sulfate toxicity, antidote used for magnesium sulfate toxicity, respiratory decline (P<0.001), and there is significant improvement immediately post-intervention compared to pre-intervention regarding:

Maintenance dose for magnesium sulfate and there is significant improvement during follow-up (8 weeks) compared to pre-intervention regarding: the initial dose of magnesium sulfate and deep tendon reflexes (P <0.05). It was found no statistically significant difference between pre intervention and follow-up (8 weeks) regarding maintenance dose for magnesium sulfate (P >0.05).

Table (3): Frequency Distribution of Studied Sample Practice Regarding Management of Eclamptic fits (N= 40)

Item	Pre-intervention				Immediate post-intervention				Follow up (8 weeks)				Chi square (1)	P value	Chi square (2)	P value
	Not done		Done		Not done		Done		Not done		Done					
	No	%	No	%	No	%	No	%	No	%	No	%				
Call obstetric team	26	65.0	14	35.0	10	25.0	30	75.0	14	35.0	26	65.0	12.92	<0.001**	7.20	<0.05*
ABC (Airway, Breathing, Circulation)	16	40.0	24	60.0	1	2.5	39	97.5	4	10.0	36	90.0	16.80	<0.001**	9.60	<0.05*
Put oral airway	29	72.5	11	27.5	0	0.0	40	100	4	10.0	36	90.0	45.49	<0.001**	32.23	<0.001**
Perform nasopharynx suction	34	85.0	6	15.0	19	47.5	21	52.5	21	52.5	19	47.5	12.57	<0.001**	9.83	<0.05*
Ensure safe environment and put in lateral position.	14	35.0	26	65.0	0	0.0	40	100.	5	12.5	35	87.5	16.97	<0.001**	5.59	<0.05*
Give oxygen by face mask	29	72.5	11	27.5	0	0.0	40	100	5	12.5	35	87.5	45.49	<0.001**	29.46	<0.001**
Prepare bed for fits and protect with padded side rails.	13	32.5	27	67.5	0	0.0	40	100	3	7.5	37	92.5	15.52	<0.001**	7.81	<0.05*

Item	Pre-intervention				Immediate post-intervention				Follow up (8 weeks)				Chi square (1)	P value	Chi square (2)	P value
	Not done		Done		Not done		Done		Not done		Done					
	No	%	No	%	No	%	No	%	No	%	No	%				
Consider loading dose of magnesium sulphate and assess for its toxicity. or IV diazepam if seizure does not stop spontaneously	31	77.5	9	22.5	0	0.0	40	100	3	7.5	37	92.5	50.61	<0.001**	40.10	<0.001**
Arrange transfer to Labour Suite area/Additional Obstetric Care area	29	72.5	11	27.5	10	25.0	30	75.0	13	32.5	27	67.5	18.06	<0.001**	12.83	<0.001**
Ensure good IV access	31	77.5	9	22.5	5	12.5	35	87.5	9	22.5	31	77.5	34.14	<0.001**	24.20	<0.001**
Send bloods for investigation	34	85.0	6	15.0	0	0.0	40	100	4	10.0	36	90.0	59.13	<0.001**	45.11	<0.001**
Start continuous CTG monitoring (depending on gestational age)	19	47.5	21	52.5	0	0.0	40	100	4	10.0	36	90.0	24.91	<0.001**	13.73	<0.001**
Insert bladder catheter and start hourly urine measurements	32	80.0	8	20.0	1	2.5%	39	97.5	3	7.5	37	92.5	49.56	<0.001**	42.71	<0.001**
Commence a chart for hourly observation of blood pressure, pulse, oxygen saturation, urine output, fluid input (IV and oral)	35	87.5	5	12.5	1	2.5	39	97.5	4	10.0	36	90.0	58.38	<0.001**	48.08	<0.001**
Commence/continue serial blood results sheet	14	35.0	26	65.0	1	2.5	39	97.5	5	12.5	35	87.5	13.86	<0.001**	5.59	<0.05*
Inform Obstetric Consultant	33	82.5	7	17.5	13	32.5	27	67.5	16	40.0	24	60.0	20.46	<0.001**	15.22	<0.001**
Inform Obstetric Anaesthetist	39	97.5	1	2.5	3	7.5	37	92.5	7	17.5	33	82.5	64.96	<0.001**	52.37	<0.001**
Inform Neonatal Unit if < 37 weeks gestation	28	70.0	12	30.0	4	10.0	36	90.0	8	20.0	32	80.0	30.00	<0.001**	20.20	<0.001**
Consider need for antihypertensive treatment	29	72.5	11	27.5	3	7.5	37	92.5	8	20.0	32	80.0	35.20	<0.001**	22.17	<0.001**
Review laboratory results	17	42.5	23	57.5	1	2.5	39	97.5	4	10.0	36	90.0	18.35	<0.001**	10.91	<0.001**

*Significant (P<0.05) ** Highly Significant (P<0.001)

Table (3): Shows a highly statistically significant improvement immediately post-intervention compared to pre-intervention for all items of nurses practice regarding management of pre eclampsia (P<0.001), also, there is highly statistically significant improvement during follow-up (8 weeks) compared to pre-intervention regarding all items except for call obstetric team, ABC

(Airway, Breathing, Circulation), perform nasopharynx suction, ensure safe environment, prepare bed for fits and protect with padded side rails and continue serial blood results sheet, where there is significant improvement during follow-up (8 weeks) compared to pre-intervention (P <0.05).

Table (4): Correlation matrix between Studied Sample Total Knowledge, Practice and Self-Efficacy at Different Phases of Assessment (N= 40).

Variables		Pre-intervention			Immediate post intervention			Follow up (8 weeks) after intervention		
		Practice	Knowledge	Self-efficacy	Practice	Knowledge	Self-efficacy	Practice	Knowledge	Self-efficacy
Total practice	Pearson Correlation (r)	1	.277	.336*	1	.353*	.414**	1	.343*	.674**
	P value		.084	.034		.025	.000		.030	.000
Total knowledge	Pearson Correlation(r)	.277	1	.116	.353*	1	-.010	.343*	1	.427**
	P value	.084		.475	.025		.953	.030		.006
Total self – efficacy	Pearson Correlation(r)	.336*	.116	1	.414**	-.010	1	.674**	.427**	1
	P value	.034	.475		.000	.953		.000	.006	

Table (4): Shows a highly statistically significant positive correlation between practice and self-efficacy during post intervention and follow up (8 weeks). Also, there is highly statistically significant positive correlation between knowledge and self-efficacy during follow up (8 weeks) after intervention. Also, there is highly statistically significant positive correlation between self-efficacy and practice during post intervention and follow up (8 weeks) and with knowledge during follow up (8 weeks).

Discussion

Eclampsia is obstetric emergency and occurs in approximately 2–3% of severe cases of preeclampsia who not receive seizure prophylaxis. It is carrying high risk for maternal and fetal morbidity and mortality. Tonic-clonic seizures happen throughout antenatal, intrapartum or postpartum period as well. It is commonly preceded with preeclampsia, although its association is not clearly linear ¹⁰.

The current studies showed significant total knowledge improvement immediately post-intervention and after eight weeks follow up. Before intervention a few nurses had good knowledge, while half of nurses had poor knowledge, after the intervention more than three quarters of the sample exhibited good information, also after eight weeks follow up about two thirds of nurses had good knowledge. Similar findings were reported by Emam and Saber ¹¹ who found increased in level of nurses' knowledge after intervention. Before intervention less than one third had good knowledge, and after intervention three quarters of them had good knowledge. This represents the effectiveness of the intervention, content and the importance of the topic for emergency nurses. This urged working interested nurses to participate in the study to acquire more knowledge and practice.

The current study showed a significant improvement of nurses' practice regarding management of eclamptic fits immediately post-intervention and after eight weeks, where before intervention about one third of nurses had satisfactory practice while the two thirds had unsatisfactory practice. This may be due to paucity of cases and lack of experience of studied nurses.

This result is in agreement with Emam and Saber ¹¹ and found that before intervention, less than majority of nurses had poor and average practice while after intervention, majority of nurses had good practice.

Moreover, this result is supported by *Adoyi et al.* ¹² who found that providers' skills on eclampsia were insufficient because essential tools were not available such as sphygmomanometers and stethoscopes, urine dipsticks and drugs including magnesium sulfate (MgSO₄) and anti-hypertensive. After the intervention majority of studied sample had satisfactory practice. This improvement shows the effectiveness of simulation in improving nursing practice in emergency situations.

Self-efficacy concepts are depending on belief everyone has to evaluate his ability to perform a given task successfully which would strongly influenced on task approach, Persistence to accomplish the same as effort level ¹³. Highly statistically significant improvement of nurses' self-efficacy directly post-intervention and post eight weeks follow up in our study ($P < 0.001$).

Our results in agreement with *Christian and Krumwiede* ⁹, *Kimhiet et al.* ¹⁴ who reported the high significant relation were observed among self-efficacy scores before training and directly post training and 8 weeks following training.

Our results in accordance with *Larsen* ¹⁵, who noted those who received simulation-based lessons had more positive experience and higher rating self-efficacy compared to the group who received traditional lessons, also *Centrella-Nigro et al.* ¹⁶ found a self-competence scores differences for simulation cohort.

Dettinger et al. ¹⁷ reported that, participants valued simulation training; with statistically and practically improving in knowledge, self-efficacy, and team function.

On the same line, Hsu et al. ¹⁸ noted that, traditional classroom lectures and simulation-based communication training produce enhanced communication competency and self-efficacies, and increase simulation-based communication training could be better than former in learner satisfaction. So, introduction of simulation-based training to in-service nursing education could enhance nurses' communication performance in clinical practice.

Our result also in agreement with *Kimhiet et al.* ¹⁴ who revealed that simulation increase self-confidence equivalently if done pre or post clinical experience. Also *Roh et al.* ¹⁹ who found that simulation-based resuscitation skills combining with clinical practicum increase the enhancing mastery learning and self-efficacy.

According to *Vuk et al.*²⁰ reported the simulation training as interactive and effective method of teaching prior to implementation of electronic medical records in medical institution. Also, *Dunn et al.*²¹ found that, high-fidelity simulation could be valuable for increase nursing student's efficacy. These results are also supported by *Franklin and Lee*²² who found that, simulation is very effective method to increase self-efficacy for nurses comparing with traditional method.

The current study showed a significant total self-efficacy improvement immediately post-intervention and after eight weeks, where before intervention almost all of studied nurses had low and moderate self-efficacy regarding management of eclamptic fits. This could be due to lack of knowledge and experience of studied nurses. These results supported by *Evensen et al.*²³ who reported that increasing confidence persisted in most topic areas for at least 6 months either pre or post study.

Conclusion

Using simulation learning for management of eclamptic fits was effective and provided nurses with proper knowledge and practice and increased their level of self-efficacy. Moreover, highly statistically significant positive correlation between practice and self-efficacy were observed during after intervention and follow up. High positive correlation between knowledge and self-efficacy follow up after intervention. Meanwhile highly statistically significant positive correlation between self-efficacy and practice during post intervention and follow up and with knowledge during follow up. The above mentioned findings have mainly supported the study hypothesis.

Recommendations:

- **Simulation based training** regarding eclamptic fits is recommended for all nurses working at obstetrics and gynecology units.
- Workplace and skill lab need more essential equipments to deal with cases of preeclampsia, eclampsia fits and other high-risk complications.

Further study needs to be performed:

- It is important to conduct an extensive study on large sample size and at different settings to improve nurses' knowledge, practice and self-efficacy regarding management of preeclampsia and eclampsia fits.
- Study the comparison between the effectiveness

of simulation and traditional method on maternity nurses' self-efficacy.

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References

1. Morfoot C., and Stanley H., Simulation-based education for neonatal skills training and its impact on self-efficacy in post-registration nurses, EBSCO's databases, 2018., 14(2): 77.
2. Myer E.N.B., and Chen C.C.G., Obstetrics and Gynecology Simulation and Global Health Initiatives In: Deering S., Auguste T., Goffman D. (eds) Comprehensive Healthcare Simulation: Obstetrics and Gynecology, Springer, Cham: 2019., 189.
3. Pratt J.J., Alternative regimens of magnesium sulfate for treatment of preeclampsia and eclampsia: a systematic review of non-randomized studies, Acta Obstetrica et Gynecologica Scandinavica Journal, 2016., 95(2): 144-145.
4. Leeman L., and Dresang L.T., Hypertensive Disorders of Pregnancy, American Family Physician, 2016., 93(2):122-127.
5. Garner S.L., Killingsworth E., Bradshaw M., Raj L., Johnson S.R., Abijah S.P., Parimala S., and Victor S., The impact of simulation education on self-efficacy towards teaching for nurse educators, International Nursing Review, 2018.,5(4):587.
6. Tabatabaeian M., Kordi M., Dadgar S., Esmaeily H., and Khadivzadeh T., Comparing the effects of simulation-based training, blended, and lecture

- on the simulated performance of midwives in preeclampsia and eclampsia, *Journal of Education and Health Promotion*, 2018., 7(110).
7. Deering S., (Using simulation technology to reduce maternal morbidity), *Contemporary OB/Gyne*, 2018., Available at: <https://www.contemporaryobgyn.net/surgery/using-simulation-technology-improve-maternal-morbidity>.
 8. Gabal M.S., Abousaif H.A., Salah-Eldin1 W., and Abdelaziz A.M., Frequency of Hypertension Associated with Pregnancy among The Pregnant Women Attending Maternal and Child Care Centers in Belbeis City, *The Egyptian Journal of Community Medicine*, 2017., 35(3):83.
 9. Christian A., and Krumwiede N., Simulation Enhances Self-Efficacy in the Management of Preeclampsia and Eclampsia in Obstetrical Staff Nurses, *Clinical Simulation in Nursing*, 2013., 9(9): e369-e377.
 10. Cacciola T.P., and Martino M., Simulation in Obstetrics and Gynecology, *Comprehensive Healthcare Simulation: Surgery and Surgical Subspecialties*, 1st ed, Springer nature switzerland company, USA, 2019., p: 370.
 11. Emam E.A., and Saber N.M., Effect of Nursing Program on Improving Nurses' Knowledge and Skills Regarding Care of Eclamptic Women, *American Journal of Nursing Research*, 2018.,6(6): 430-436.
 12. Adoyi G., Ishaku S.N., Babatunde O.A., and Kirk K.R.Persisting challenges in the provision of quality obstetric care to women with pre-eclampsia and eclampsia in Nigeria: Assessment of health providers' preparedness and facility readiness: Prevention of preeclampsia, Pregnancy Hypertension: An International Journal of Women's Cardiovascular Health, ., 2016., 6(3):158.
 13. Goulão M.F., The Relationship between Self-Efficacy and Academic Achievement in Adults' Learners, *Athens Journal of Education*, 2014., 1(3): 237.
 14. Kimhiet E., Reishtein J.L., Cohen M., and Friger M., Impact of Simulation and Clinical Experience on Self-efficacy in Nursing Students: Intervention Study, *Nurse Educator*: 41(1), p: E1–E4. 2016., Available at: https://journals.lww.com/nurseeducatoronline/Abstract/2016/01000/Impact_of_Simulation_and_Clinical_Experience_on.18.aspx
 15. Larsen M., Simulation as an educational tool in acute nursing care, *Nursing Simulation Alive Conference, Research database*, 2017., Available at: <http://www.forskningsdatabasen.dk/en/catalog/2351660613>.
 16. Centrella-Nigro, A.M., Blackwell B., Coughlin A., and Voorhees K.A., The Effect of Human Patient Simulators on Knowledge and Self-Competence in Graduating Prelicensure Nursing Students, *Nursing Education Perspectives: (2016): 37(6): 337–339*.
 17. Dettinger J.C., Kamau S., Calkins K., Cohen S.R., Cranmer J., Kibore M., Gachuno O., and Walker D., Measuring movement towards improved emergency obstetric care in rural Kenya with implementation of the PRONTO simulation and team training program, *Maternal & Child Nutrition*, 2018., 14 (51): 4-8.
 18. Hsu L.L., Chang W.H., and Hsieh S.I., The Effects of Scenario-Based Simulation Course Training on Nurses' Communication Competence and Self-Efficacy: A Randomized Controlled Trial, *Journal of Professional Nursing*, 2015.,31(1), P: 37-49.
 19. Roh Y.S., Lim E.J., and Issenberg S.B., Effects of an integrated simulation-based resuscitation skills training with clinical practicum on mastery learning and self-efficacy in nursing students, *Collegian Journal*, 2016.,23(1):53.
 20. Vuk J., Anders M.E., Mercado C.C., Kennedy R.L., CasellaJ., and Steelmanc S.C., Impact of simulation training on self-efficacy of outpatient health care providers to use electronic health records, *International Journal of Medical Informatics*, 2015., 84(6): 423.
 21. Dunn K.E., Osborne C., and Link H.J., Research Briefs High-Fidelity Simulation and Nursing Student Self-Efficacy: Does Training Help the Little Engines Know They Can?, *Nursing Education Perspectives*, 2014., 35(6):403.
 22. Franklin A.E., and Lee C.S., Effectiveness of Simulation for Improvement in Self-Efficacy Among Novice Nurses: A Meta-Analysis, *Journal of Nursing Education*, 2014., 53(11):607.
 23. Evensen A.E., Panzer J.M., Jones S.S., Wright K.M., and Albelo A., Improving Confidence in Obstetric Skills with Basic and Advanced Life Support in Obstetrics Training in Ethiopia: A Pre/post Study, *Journal of Woman's Reproductive Health*, 2015., 1(1):24-35.

Combination of Wound Treatment and Massage for Healing Diabetic Foot Ulcers

Sunarmi¹, Adi Isworo¹, Sunarko¹

¹Senior Lecturer, Poltekkes Kemenkes Semarang

Abstract

Background: Diabetic ulceris also called diabetic foot ulcers, estimated that 25-50% of cases of diabetic ulcers are a common reason to be hospitalized, and 1 out of 7 patients with Diabetic Mellitus will be experienced diabetic ulcers throughout their lifetime. This study aimed to determine the effect of combination of wound treatment and massage for healing diabetic foot ulcers in Magelang, Central Java, Indonesia.

Method: Method of this research is a true experimental design. True experimental design, pre-and posttest with control group. There were two groups in the research, treatment group and control group. The treatment group received wound treatment and massage while the control group only got wound treatment. The total number of respondent was 42. A t-test was employed to determine if there is a significant difference between treatment and control group.

Results: It is resulted that in the first three weeks of the study, there was no differences of wound healing progress between treatment and control group. The significance difference was in the fourth week ($p = 0.013$, $t = 2.591$). The average mean in the treatment group was 8.81 while in the control group was 11.29.

Conclusions: The combination of wound treatment and massage is very effective for healing diabetic ulcer wounds. It is recommended to apply massage to areas of the extremity that are prone to neuropathy to prevent complications, especially diabetic ulcers.

Keywords: Wound treatment, massage therapy, DM, diabetic ulcer.

Introduction

Diabetes ulcer is a complication that often occurs in diabetes mellitus (DM), which has a complex impact and causes a real disability for sufferers.^{1,2} It is estimated that 25-50% of diabetic ulcers cases as a common reason for patients with DM to be hospitalized, and 1 out of 7 patients with DM will be experienced diabetic ulcers throughout their lifetime. More than 40-70% of cases of limb amputation were associated with DM due to

diabetic ulcers. It also has an impact on reducing the quality of life of sufferers, the health service system and the community.³ Patients with DM are prone to diabetic ulcers, but the healing phase is long, this is caused by many factors, including the thin layer of subcutaneous and skin layers in the legs, slowing blood flow to the peripheral, the amount of blood resistance due to micro-angiopathy and neuropathy.^{2,5} Treatment of diabetic foot ulcers includes debridement of the wound to remove necrotic tissue and impurities in the wound, management of infection with antibiotics, revascularization if indicated, and wound off-loading, and amputation. The presence of neuropathy results in obstruction of the conduction system and demyelinasi of the nervous system. Peripheral nerve disorders that affect all limbs of the patient's body, but which often affects in general is the lower extremities that can cause problems in the cutaneous system, namely the occurrence of diabetic ulcers.^{3,6}

Corresponding Author:

Sunarmi

Senior Lecturer, Poltekkes Kemenkes Semarang,
Jl. Perintis Kemerdekaan, Magelang, Central Java,
Indonesia

e-mail: sunarmiko@gmail.com

Wound treatment with a combination of massage therapy in diabetic ulcers can overcome the presence of ischemic and neuropathic diseases, so it can improve peripheral tissue perfusion by increasing blood circulation to the periphery, transporting oxygen and nutrients to the peripheral/distal area which has slowed wound healing in DM with diabetic ulcer.^{1,2,4}

Massage therapy is effective in the healing process of diabetic ulcer wounds, especially in wounds that have a delayed healing phase due to neuropathy and decreased perfusion impact of micro-angiopathy.⁷It can stimulate and facilitate the blood flow and oxygen supply to the wound area, so that the environment of the wound area gets enough oxygen and has an impact on wound circulation and stimulates the wound healing process, especially in the inflammatory phase to proliferation.^{1,4,8,9}

Method

Study Site: The study was conducted in some selected hospitals in Magelang, Central Java, Indonesia. The respondents were selected in the home care, surgical clinic of the hospitals.

Study Setting: This research used true experimental design, pre-test-post-test control group design. There were two groups in the research, treatment group and control group. The criteria to select subject as the control group if the respondent has ulcers that cannot be combined with a massage due to the location of the ulcers such as on the buttocks, head and thigh area. While the criteria for the treatment group if the respondent has ulcers on the upper part of the proximal area, in this case ulcers in the distal area of the upper or lower extremities. The treatment group received wound treatment and massage while the control group only received wound treatment.

Data collection procedure: To be selected as the subject of the study, authors used inclusion criteria, which were DM patients with diabetic foot ulcers; the condition of diabetic foot ulcers was in grade 1-3; patients with insulin and HbA1C level more than 5.7%. Respondents who met the inclusion criteria were divided into treatment and control group. The total number of respondents were 40 people.

The treatment and control group were assessed every week as long as four weeks. The adjustment of four weeks due to determine the effectiveness of combined

massage therapy in diabetic foot ulcers that have delayed wound healing, this occurs due to neuropathy and decreased perfusion impact of micro-angiopathy. The massage therapy by using electric water massage with continuous pressure. The time used for massage as long as 15 minutes, where the massage water will automatically stop after 15 minutes. The pressure used when conducting massage should be adjusted to the thickness of the patient’s skin. The massage procedure is conducting every three days, and the evaluation of the development of the wound condition is conducting every week.

Data and statistical analysis: A t-test was employed to determine if there is a significant difference between treatment and control group. The study used 95% confidence interval (CI), and significance was assessed at alpha 0.05. The difference of wound healing condition was assessed every week for four weeks.

Ethical consideration: The study was approved by the Health Research Ethics Committee *Poltekkes Kemenkes Semarang* (No: 248/EA/KEPK/2020). We conducted the study with agreement of the respondents. The aims, risks, and benefits of the study were explained to each participant, and they were asked to sign a consent form prior to enrolment in the study. All personal information of the respondents involved in the study have been kept confidential.

Results

In the first three weeks of the study, there was no differences of wound healing progress between treatment and control group. The significant differences in the two groups can be seen in the week four.

Table 1. The condition of wound healing (n= 40) every week for 4 weeks

Week	Group	Mean	SD
1	T (n= 20)	15.95	3.217
	C (n= 20)	17.62	3.413
2	T (n= 20)	14.14	3.245
	C (n= 20)	15.86	3.005
3	T (n= 20)	11.81	3.043
	C (n= 20)	13.71	3.289
4	T (n= 20)	8.81	2.839
	C (n= 20)	11.29	3.334

Table 2. The progress of wound healing between treatment group and control group

Week	df	Sig
1	40	0.111
	39.86	0.111
2	40	0.083
	39.77	0.083
3	40	0.058
	39.76	0.058
4	40	0.013
	39.01	0.013

Discussion

Massage therapy in this study was not indicated to the wounds in the inflammatory phase because the pressure of the massage can cause damage to new blood vessels, bleeding and damage to fibrin tissue, as well as damage to new tissue in the wound. The study resulted that the combination of wound treatment and massage therapy is effective in the healing process of diabetic foot ulcers.



Figure 1. The condition of diabetic foot ulcers of respondent after four weeks of treatment

In the fourth week of the healing progress, the wound enters the phase of proliferation, it is the re-epithelialization process, the formation of collagen synthesis and angiogenesis.¹⁰ Angiogenesis acts as a nutrient and oxygen carrier which is a component needed for the process of repairing injured skin tissue. In the area of injury, *phobroblasts* produce collagen and *glycosaminoglycans* and proteoglycans which are the main components of extra cellular matrices.^{8,9,11}

Massage therapy is effective in the healing process of diabetic ulcer wounds, especially in wounds that have a delayed healing phase, especially in diabetic ulcers due to neuropathy and decreased perfusion impact of micro-angiopathy.^{8,9} Massage therapy can stimulate and

facilitate blood flow and oxygen supply to the wound area, so that the environment of the wound area gets enough oxygen and has an impact on wound circulation and stimulates the wound healing process, especially in the inflammatory phase to proliferation.^{1,4,8,12}

Massage therapy can increase skin temperature in the treated body area. The increase of body temperature indicates the increase of blood flow to the treated area.^{1,12-14} The increase of blood flow causes an increase of oxygen and nutrients to the area of the body being intervened.¹² When massage is applied to the threatened area, the blood flow will increase to other organs. This is useful to improve muscle performance and wound healing process in the area of injury. With massage

can affect blood vessels with superficial blood vessel dilatation and increase average blood flow. When massage is applied to an area of the body, the blood flow will increase to other body organs.¹⁵

Conclusion

The combination of wound treatment and massage is very effective for healing diabetic ulcer wounds especially in wounds that have a delayed healing phase. It is recommended to apply massage to areas of the extremity that are prone to neuropathy to prevent complications, especially diabetic ulcers. For nurses and patients in massage therapy with water massage/electric massage is expected to pay attention to the pressure in the system according to the thickness of the patient's skin so as not to hurt if high pressure.

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References

1. Tsourdi E, Barthel A, Rietzsch H, Reichel A, Bornstein SR. Current Aspects in the Pathophysiology and Treatment of Chronic Wounds in Diabetes Mellitus. *BioMed Res Int Pathog.* 2013;2013:1–6.
2. Singh N, Armstrong DG, Lipsky BA. Preventing Foot Ulcers in Patients With Diabetes. *Clin Rev.* 2005;293(2):217–28.
3. Mendes AL, Junior VH, Miot HA. Diabetes mellitus and the skin. *An Bras Dermatol.* 2017;92(1):8–20.
4. Hajtalebi H, Iurigh HK, Hajtalebi HR. Case Report Treatment of Diabetic Foot Ulcer in a 58-year-old Turkman Patient based on Iranian Traditional Medicine. *Trad Intrgr Med.* 2016;1(4):151–9.
5. Jeffcoate WJ, Vileikyte L, Boyko EJ, Armstrong DG, Boulton AJM. Current Challenges and Opportunities in the Prevention and Management of Diabetic Foot Ulcers. *Diabetes Care.* 2018;41(April):645–52.
6. Ji L, Bai J, Sun J, Wang Z. ScienceDirect Nursing care for diabetic toe ulcers: A case series report and literature review. *Int J Nurs Sci.* 2016;3:1–5.
7. Isworo A, Suharsono, Sitepu FY. The relationship between psychoeducation and the decrease in family burden of diabetes mellitus patients, Magelang, Indonesia. *Indian J Public Heal Res Dev.* 2019;10(8):1940–4.
8. Cohen M. *The Effectiveness of Massage Therapy.* 2014.
9. Chiro-Med Rehab Centre. How can massage therapy improve your circulation? [Internet]. 2020 [cited 2020 Jun 30]. Available from: <https://www.chiro-med.ca/article/how-can-massage-therapy-improve-your-circulation/>
10. Sitepu FY, Depari E, Aditama W, Halim R, Isworo A, Hot B, et al. A Survey of the Knowledge of Surveillance Officers and Outbreak Investigation Team toward COVID-19 in North Sumatera Province, Indonesia. *Open Access Maced J Med Sci.* 2020;8(T1):55–60.
11. Aumiller WD, Dollahite HA. Pathogenesis and Management of Diabetic Foot Ulcers. *JAAPA.* 2015;28(5):28–34.
12. Soto PA, Eberman LE, Demchak TJ, Peebles C. Comparison of Blood Flow Changes with Soft Tissue Mobilization and Massage Therapy. *J Altern Complement Med.* 2014;20(12).
13. Cristina A, Gonzalez DO. Wound healing - A literature review. *An Bras Dermatol.* 2016;91(5):614–20.
14. Okonkwo UA, DiPietro LA. Diabetes and Wound Angiogenesis. *Int J Mol Sci.* 2017;18(7).
15. Silva NCM da, Chaves E de CL, Carvalho EC de, Carvalho LC, Iunes DH. Foot reflexology in feet impairment of people with type 2 diabetes mellitus: randomized trial 1. *Rev Latino-Am Enferm.* 2015;23(4):603–10.

Effectiveness of an Interprofessional Education Module on Care of Autistic Children in Enhancing the Interprofessional Competencies among Students of Healthcare Professions: A Study Protocol

Sunitha Solomon-Calvin¹, Ciraj A.M.², Ravishankar N.³, Shashidhara Y.N.⁴, Anice George⁴

¹Ph.D. Research Scholar, Manipal College of Nursing, Manipal Academy of Higher Education, Manipal, Udupi District, Karnataka 576104, India, ²Professor, Melaka Manipal Medical College, Manipal Academy of Higher Education, Manipal, Udupi District, Karnataka 576104, India, ³Assistant Professor, Prasanna School of Public Health, Manipal Academy of Higher Education, Manipal, Udupi District, Karnataka 576104, India, ⁴Professor, Manipal College of Nursing, Manipal Academy of Higher Education, Manipal, Udupi District, Karnataka 576104

Abstract

Background: Autism Spectrum Disorders are neurodevelopmental disorders that are being identified in children in current days due to the emerging technological and healthcare advances. Most often, children require specialized care from various healthcare practitioners by referral systems which requires parents/caregivers to take children from one place to another. Interprofessional Practice is a collaborative approach in professional care where healthcare providers work with people from within their own profession, with people outside their profession and with patients and their families. The process becomes laborious when practitioners do not appreciate the concept of Interprofessional Education. Being the future workforce, students from health professions should learn together to have better understanding of each other's roles and responsibilities and learn to have effective team communication. A collaborative approach is crucial in autism, to enable quality care for well-being and assist to provide early and comprehensive evaluation and appropriate interventions.

The objective of the study is to develop an Interprofessional Education Module on care of autistic children for Students of Healthcare professions and evaluate its effectiveness in enhancing the Interprofessional Competencies among them.

Method: Quantitative pre-test-post-test approach. Phase 1 - development of the Module and Assessment Tool; Phase 2 - testing the Tool among 40 students from selected disciplines. Module and Tool will be prepared based on review of literature, semi-structured interviews, focus group discussion and needs assessment. Reflective summaries will document the Interprofessional Education experience of the students.

Discussion: There are no comparable method of Interprofessional Education for care of children with autism, therefore, appraisal by experts will be considered as a critical step in validating the module and tool. Descriptive and Inferential Statistics will be used for analysis.

Keywords: Autism Spectrum Disorders, Communication, Healthcare Professions, Interprofessional Competencies, Interprofessional Education, Interprofessional Practice, Students, Teamwork.

Corresponding Author:

Ms. Sunitha Solomon-Calvin

Ph.D. Research Scholar, Manipal College of Nursing,
Manipal Academy of Higher Education, Manipal,
Udupi District, Karnataka 576104, India
e-mail: sunitha.calvin@learner.manipal.edu

Introduction

Children are the building blocks of every country's present and will grow up to become the future of its development and existence. Parents/family members/caregivers try their best to provide every possible

facility to the children and ensure that the best possible opportunities required to attain their highest potential in life are available to them. However, communities have considerable differences in expressing their responsibility in the health of children and the availability of resources to meet their special needs. Of late, there has been an added urge to concentrate attention on concerns that have an effect on children and to improve their existing health status. Children are being appreciated not only for who they are today but also for the roles they will have in the future in establishing healthy families, powering the workforce, and yielding success in the work of the nation. Evidence has corroborated that the state of health established during childhood, tunes the stage for accomplishment of wholesome health during their adulthood. This helps create noteworthy moral, social, and economic imperatives to make sure that the children are healthy. "Healthy children are more likely to become healthy adults"¹.

Dramatic advances have occurred in healthcare over the past years causing reduction of death among children under a year, reduction in death and illness due to infectious diseases and accidents, increase in accessibility to healthcare, and reduction in pollutants and pollution in the environment. Conversely, WHO states that congenital anomalies, injuries, and non-communicable diseases are becoming apparent as the areas of main concern. Advancement in the care of communicable diseases, improvements in reproductive, maternal and child health aspects, conjoined with the current demographic changes, have initiated a shift in the mortality and morbidity liability to noncommunicable diseases². One of the conditions which does not gain adequate recognition in the healthcare due to social stigma and lack of knowledge is behavioural and mental health conditions. Even more so, it is a serious issue in children, often ridiculed for their so-called abnormalities. One specific form of such a condition is Autism or Autistic Spectrum Disorders (ASD).

Studies show that prevalence of ASD has been 1:68 children in the US. Other studies worldwide have been reporting an increase in the number being diagnosed over time. Over the last 10 years there is estimated increase of 2,000% in cases of ASD. ASD is "a spectrum that includes individuals with profound mental retardation and little or no speech or communication compared to more verbal, functionally able children;

a neurodevelopmental syndrome defined by deficits in social reciprocity and communication, and by unusual restricted, repetitive behaviours³." Autism is usually manifested within the first few years of life as a slight difference or variation in the child's behaviour or actions to an intense evidence of the abnormality.

India is recorded as the second most populated country in the world, amounting to about 17.74% of the total population. Of this, almost 1/3rd (29.7%) are under the age of 15 years. Prevalence studies in India have been done to identify the actual prevalence of ASD and have shown 1/1000 children between the age of 1-10 years being diagnosed³. Therefore, proper, and timely assessment and identification and appropriate care would be an essential component for providing the basic necessities for maintenance of health for these children. An important factor in the care of autistic children is that they are not physically sick but have more of the behavioural symptoms. Hospitalization may not be a viable option for their care and parents opt to care for such special children in their homes or in care centres. The major issue arising in such instances is that they are required to obtain care and consultations from various Healthcare professionals for their optimal health status which is not feasible for the parents/caregivers.

The rejoinder for such problems around the world has been found in the expanding system of Interprofessional Education (IPE), Interprofessional Collaboration (IPC) and Interprofessional Practice (IPP). IPE is recognized to be one major approach to trim down on professional compartmentalisation and enhance collaborative practice. It teaches students who are taking up health professions about the various roles of different members in the healthcare professions. Each have tasks to be performed in order to ensure a successful and productive collaborative practice. Many studies have been designed and conducted to delve into the deep end of awareness, knowledge, and perception the students already possess regarding IPE^{4,5,6}. Although reviews showed that awareness of IPE was average among the students, majority had good knowledge and a positive perception^{7,8,9,10,11,12,13,14}. Literature also had recommended the need to improve their awareness and knowledge about IPE by making use of combined seminars for the various healthcare professional novices and also by implementing IPE into their present curricula of training^{15,16,17,18,19,20,21,22,23,24}.

Literature Survey:

The literature survey will be based on the following headings:

- I. Interprofessional Education
- II. Interprofessional Education Modules
- III. Autism and Care of Autistic Children
- IV. Interprofessional Competencies
- V. Assessment and Tools for Interprofessional Competency

Research Gaps Identified: With the diagnosis and management of ASD moving to the forefront among the developmental disorders, there is a growing need for more systematic and planned care. Children with ASD have health issues that are tedious and require a wide range of professionals caring for them. India being one of the developing countries, is lagging behind in inculcating practices into its healthcare education and delivery system that will adeptly solve these issues. With ASD being increasingly identified, the care of children requires an interprofessional approach⁸.

Healthcare professionals in developed countries have identified the importance of IPE/IPP in providing comprehensive healthcare to clients, taking into consideration age, gender, disease, and management process. They have pioneered in establishing and practicing the IP Competencies in various care settings^{14,22,23,24}. Inculcating IPP in care of children with ASD provides team-based healthcare to the children in a single setting and reduces healthcare costs. For this, the students of Healthcare professions have to accept and learn these changes during their training period, to step away from the traditional and hierarchical method practiced all throughout the history of Indian Healthcare. Preparation of a standard curriculum will be apt to enhance the learning of the students, assessing its utility with tools structured for the purpose, according to the culturally identified components.

From the literature review, the following gaps have been identified:

- a) Absence of Structured IPE Program in the curricula of Institutions for Health Professions Education in India.
- b) Regional differences in healthcare delivery practices in care of children with autism owing to variations among population and differences in attitudes and

perceptions of Students of Healthcare professions.

- c) No assessment scales customized for assessment of team-based IP collaborative care competencies in care of Autistic Children.

Importance of Proposed Research: The Centre for Disease Control (CDC) currently recognises autism as the second largest permanent developmental disability seen in children, which is increasingly evident among the developmental disabilities.³ Although ASD is most commonly bracketed with social, behavioural and communication impairments in the development, children also endure neurological and gastrointestinal health issues, sleep disturbances, issues with medication compliance, and correlated mental health issues. In order to address all these needs, care should be provided to the children across various disciplines, such as “psychology, social work, occupational therapy, physical therapy, education, nursing, dietetics, psychiatry, and medicine, to name a few”. Research has documented the need for multidisciplinary management for ASD in children and the methodology is also recommended by the American Academy of Paediatrics (AAP). The “A.L.A.R.M.” guidelines (“Autism is prevalent, Listen to parents, Act early, Refer, and Monitor, an approach developed by the American Academy of Paediatrics Autism Task Force”), states that the care needs to be referred as “Early Intervention or local school program, where the child is referred to an autism specialist, or team of specialists, for a definitive diagnosis, to audiology to rule out hearing impairment and to local community resources for help and family support.”⁸

Due to the increasing intricacies in the care of children with autism, there is a subsequent increase in the number of children being diagnosed and the number of professions that cater to their needs are becoming more pronounced. This calls for Interprofessional Collaboration (IPC) by means of a well-established multidisciplinary approach. According to WHO, IPC is “having different professions, coming together to work towards a common goal for patients, families, caregivers, and communities to deliver the highest quality of care.” When care is provided using a well-established multidisciplinary approach, effective collaboration is composed of the following fundamental bases, viz. “all team members want to work together towards a common goal; all participants are valued; team members embrace the unique perspectives of all other team members; team is based on a strong sense of purpose; and each team member requires trust and a

sense of shared responsibility.”²⁵ This will enhance the structure of provision of care and will bring about the expected health outcomes in the children.

Studies among children with developmental and intellectual health concerns reveal that those who are able to identify their problems and actually accept their condition, receive treatment in outpatient setups. Some of the systems of care have, for the most part been unsuccessful in producing substantial measurable and favourable clinical outcomes^{1,3,10}. The various strategies suggested in the studies which are targeted to improve care in child development and intellectual health treatments are: improving access of families to health services in schools and healthcare facilities; increasing use of Evidence Based Practices (EBPs); and establishing and maintaining service setups responsible for validating the expected health outcomes¹². The task of producing such a multidisciplinary workforce in order to operate the strategies, requires educating and encouraging providers to develop the ability to train and cultivate the specific competencies required. These providers will have to provide care exhibiting these competencies within the scope of available agencies that are inherently bounded with the day-to-day lives of the children and families.

Developmental-behavioural paediatrics is currently being recognized as a subspecialty of paediatrics and is well-established in many developed countries. The training programmes provided aim to increase the number of providers who engage in IPP and establish themselves at providing specialised care²¹. This, however, remains a new and emergent subspecialty in India. Although some of the subspecialties had been established in the late sixties, the paradigm of care was purely clinical and service based. The prime aim was to diagnose and treat children who showed manifestations of neurological and developmental disorders. The paradigm was predominantly “medical” with one physician provider, who placed referrals leading to fragmented care, with no proper follow-up, and no proper communication from and to the higher specialities¹⁴. The necessity of an IPP team was soon realized and became an independent practice entity for appraisal and management of children who were diagnosed with specific developmental-behavioural incapacities. This also increased awareness and the need to support children with developmental disorders in the schools and other academic and care settings were propagated.

It has been noted that India does not have a national IPE curriculum and ways to assess the education and practice in relation care of autistic children²¹. There is no curriculum for students of various healthcare professions to gain education and practice together, learning from and about each other to provide care for autistic children¹⁵. While there are some IP competency assessment instruments in other countries, not one is adequately constructed for and validated in multiple professional settings for Students of different Healthcare professions across multiple cultures^{2,21}. In spite of extensive research being conducted, a comprehensive perspective still seems to be lacking. Therefore, the researcher has considered it necessary to develop an IPE module on care of autistic children for Students of Healthcare professions, especially in relation to the Indian context. In order to test the efficiency of the module, an Interprofessional Competency Assessment Tool (IPCAT) will be prepared. Although there are four IP competency domains, for the current study, the researcher proposes to concentrate on Communication and Teamwork as important competencies in Care of children with ASD²⁶.

Objectives of the Study:

- a) To develop an IPE Module on care of autistic children for Students of Healthcare professions
- b) To evaluate the effectiveness of the IPE Module on care of autistic children in enhancing the IP Competencies among students of healthcare professions.

Method/Design

Conceptual Framework: The Conceptual Framework for “Effectiveness of an IPE module on care of autistic children in enhancing the IP competencies among Students of Healthcare Professions” is prepared based on National IP Competency Framework¹³ and a Conceptual Model of Interdisciplinary Education for Collaborative patient centred care.¹²

Research Design: The study will be done in a quantitative approach, conducted in two phases.

Phase I – Development of the Module and IP Competency Assessment Tool (IPCAT)

The Module and Tool will be prepared and content validity done by experts. Reliability of the tool will be assessed by test-retest method.

Phase II – Testing the Module: It will be a pre-test-post-test design and the Module will be implemented among students of Nursing, Physiotherapy, Occupational Therapy and Audiology and Speech Language Pathology and the pre-test-post-test results will be analysed to evaluate the effectiveness of the Module.

A stringent module implementation plan will be followed over a period of 2 weeks.

Pilot study will be conducted in selected setting with 10 students to check the feasibility of the study. Any difficulties arising in the preparation and administration of the IPE module and tool will be modified for use in the main study.

The recruitment of participants will be done by purposive sampling method based on the inclusion and exclusion criteria from the selected Health Professions Institutions. The proposed sample size is 40, divided into teams of 4, based on similar types of studies done.

Data will be compiled using Microsoft excel. Statistical analysis will be done with EZR software where, “ $p < 0.05$ ” will be considered statistically significant. The data will be compiled to assess the effectiveness of the module to be used for assessing the IP competencies of the group and values of the pre-test and post-test will be analysed using paired ‘t’-test to determine the statistical significance. Thematic analysis will be done for the Reflective Summary. Themes will be identified to categorize specific responses and comments to assess the effectiveness of the IPE Module.

Discussion

Expected Outcomes:

- An IPE Module on Care of Autistic Children for Students of Healthcare professions.
- An IP Competency Assessment Tool (IPCAT) on Care of Autistic Children for Students of Healthcare professions – Communication and Teamwork
- Enhancement of IP competencies as measured by the instruments prepared

List of Abbreviations:

ASD	Autism Spectrum Disorders
IPC	Interprofessional Collaboration
IPCP	Interprofessional Collaboration and Practice
IPE	Interprofessional Education

IPL Interprofessional Learning

IPP Interprofessional Practice

Declarations:

Ethics Approval: Obtained from Kasturba Medical College and Kasturba Hospital Institutional Ethics Committee (Registration No.: ECR/146/Inst/KA/2013/RR-19)

IEC (KMC & KH - ECR/146/Inst/KA/2013/RR-19): **746/2019**

CTRI Trial Registration No.: **CTRI/2020/03/023838**

Conflict of Interest: Nil

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References

1. Delaney KR, Karnik NS. Building a Child Mental Health Workforce for the 21st Century: Closing the Training Gap. *J Prof Nurs* [Internet]. 2019 Mar 1 [cited 2020 Jul 6];35(2):133–7. Available from: <https://doi.org/10.1016/j.profnurs.2018.07.002>
2. Bassi A, John O, Praveen D, Maulik PK, Panda R, Jha V. Current status and future directions of mhealth interventions for health system strengthening in India: Systematic review. Vol. 6, *JMIR mHealth and uHealth*. JMIR Publications; 2018.
3. Raina SK, Kashyap V, Bhardwaj AK, Kumar D, Chander V. Prevalence of autism spectrum disorders among children (1-10 years of age) - Findings of a mid-term report from Northwest India. *J Postgrad Med* [Internet]. 2015 Oct 1 [cited 2020 Jul 6];61(4):243–6. Available from: <http://www.jpgmonline.com/text.asp?2015/61/4/243/166512>
4. Reeves S, Fletcher S, Barr H, Birch I, Boet S, Davies N, et al. A BEME systematic review of the effects of interprofessional education: BEME Guide No. 39 [Internet]. Vol. 38, *Medical Teacher*. 2016. p. 656–68. Available from: <https://doi.org/10.3109/0142159X.2016.1173663>
5. Oates M, Davidson M. A critical appraisal of instruments to measure outcomes of interprofessional education. *Med Educ* [Internet]. 2015 Apr 1 [cited 2020 Jul 6];49(4):386–98. Available from: <http://doi.wiley.com/10.1111/medu.12681>

6. Interprofessional Education Collaborative Expert Panel. Core Competencies for Interprofessional Collaborative Practice: Report of an Expert Panel [Internet]. Washington D.C.: Interprofessional Education Collaborative. 2011 [cited 2020 Jul 6]. Available from: <http://www.ncbi.nlm.nih.gov/pubmed/22030650>
7. Zabar S, Adams J, Kurland S, Shaker-Brown A, Porter B, Horlick M, et al. Charting a Key Competency Domain: Understanding Resident Physician Interprofessional Collaboration (IPC) Skills. *J Gen Intern Med.* 2016 Aug 1;31(8):846–53.
8. Strunk J, Leisen M, Schubert C. Using a multidisciplinary approach with children diagnosed with autism spectrum disorder. *J Interprofessional Educ Pract* [Internet]. 2017;8:60–8. Available from: <http://dx.doi.org/10.1016/j.xjep.2017.03.009>
9. Symonds I, Cullen L, Fraser D. Evaluation of formative interprofessional team objective structured clinical examination (ITOSCE): A method of shared learning in maternity education. *Med Teach* [Internet]. 2003 Jan [cited 2020 Jul 6];25(1):38–41. Available from: <https://www.tandfonline.com/doi/abs/10.1080/0142159021000061404>
10. Cheak-Zamora NC, Farmer JE. The Impact of the Medical Home on Access to Care for Children with Autism Spectrum Disorders. *J Autism Dev Disord.* 2015;45(3):636–44.
11. Morison SL, Stewart MC. Developing interprofessional assessment. *Learn Heal Soc Care* [Internet]. 2005 Dec 1 [cited 2020 Jul 6];4(4):192–202. Available from: <http://doi.wiley.com/10.1111/j.1473-6861.2005.00103.x>
12. Oandasan I, D'Amour D, Zwarenstein M, Barker K, Purden MR, Beaulieu M-D, et al. Interdisciplinary education for collaborative, patient-centred practice [Internet]. Health Canada; 2004. Available from: http://www.ferasi.umontreal.ca/eng/07_info/IEPCP_Final_Report.pdf
13. Hepp SL, Suter E, Jackson K, Deutschlander S, Makwarimba E, Jennings J, et al. Using an interprofessional competency framework to examine collaborative practice. *J Interprof Care* [Internet]. 2015 Mar 4 [cited 2020 Jul 6];29(2):131–7. Available from: <http://www.tandfonline.com/doi/full/10.3109/13561820.2014.955910>
14. Kusnoor A V., Stelljes LA. Interprofessional learning through shadowing: Insights and lessons learned. *Med Teach* [Internet]. 2016 Dec 1 [cited 2020 Jul 6];38(12):1278–84. Available from: <http://pmc/articles/PMC5214521/?report=abstract>
15. Madaus SM, Lim LS. Teaching Pain Management in Interprofessional Medical Education: A Review of Three Portal of Geriatric Online Education Modules. *J Am Geriatr Soc* [Internet]. 2016 Oct 1 [cited 2020 Jul 6];64(10):2122–5. Available from: <http://doi.wiley.com/10.1111/jgs.14309>
16. O’dea J. Implementation of an Interprofessional Education (IPE) module for pediatrics residents: Development of the CanMEDS collaborator role for complex medical patients. *Medical Education Scholarship Forum Proceedings.* 2015.
17. Fejzic J, Barker M. Implementing simulated learning modules to improve students’ pharmacy practice skills and professionalism. *Pharm Pract (Granada)* [Internet]. 2015 [cited 2020 Jul 6];13(3):583–583. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4582743/>
18. Chung HO, Medina D, Fox-Robichaud A. Interprofessional sepsis education module: A pilot study. *Can J Emerg Med* [Internet]. 2016 [cited 2020 Jul 6];18(2):143–5. Available from: <https://www.cambridge.org/core/journals/canadian-journal-of-emergency-medicine/article/interprofessional-sepsis-education-module-a-pilot-study/4C0C576B7183A5DBA77E4707B22D412E>
19. Dreier-Wolfgramm A, Homeyer S, Oppermann RF, Hoffmann W. A model of interprofessional problem-based learning for medical and nursing students: Implementation, evaluation and implications for future implementation. *GMS J Med Educ* [Internet]. 2018 [cited 2020 Jul 6];35(1). Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5827197/>
20. Levy MPH SE, Frasso MPH R, Colantonio SB, Reed HB, Stein MSW G, Barg MEd FK, et al. Shared Decision Making and Treatment Decisions for Young Children With Autism Spectrum Disorder. *Acad Pediatr* [Internet]. 2016 [cited 2020 Jul 6]; Available from: <https://www.researchgate.net/publication/305721359>
21. Hegde S, Gajre MP, Shah H, Soares NS. Interprofessional education and practice in an Indian setting. *J Taibah Univ Med Sci.* 2017 Jun 1;12(3):265–7.

22. Lawrence JC, Knol LL, Clem J, de la O R, Henson CS, Streiffer RH. Integration of Interprofessional Education (IPE) Core Competencies Into Health Care Education: IPE Meets Culinary Medicine. *J Nutr Educ Behav* [Internet]. 2019 Apr 1 [cited 2020 Jul 6];51(4):510–2. Available from: <http://www.jneb.org/article/S1499404619300272/fulltext>
23. King J, Beanlands S, Fiset V, Chartrand L, Clarke S, Findlay T, et al. Using interprofessional simulation to improve collaborative competences for nursing, physiotherapy, and respiratory therapy students. *J Interprof Care* [Internet]. 2016 Sep 2 [cited 2020 Jul 6];30(5):599–605. Available from: <https://www.tandfonline.com/action/journalInformation?journalCode=ijic20>
24. Shaw-Battista J, Young-Lin N, Bearman S, Dau K, Vargas J. Interprofessional Obstetric Ultrasound Education: Successful Development of Online Learning Modules; Case-Based Seminars; and Skills Labs for Registered and Advanced Practice Nurses, Midwives, Physicians, and Trainees. *J Midwifery Women’s Heal* [Internet]. 2015 Dec 1 [cited 2020 Jul 6];60(6):727–34. Available from: <http://doi.wiley.com/10.1111/jmwh.12395>
25. World Health Organization. Framework for Action on Interprofessional Education & Collaborative Practice Health Professions Networks [Internet]. World Health Organization. 2010. Available from: http://www.who.int/hrh/nursing_midwifery/en/
26. Sevin AM, Brown N V., Brown N V., McAuley JW. Assessing interprofessional education collaborative competencies in service-learning course [Internet]. Vol. 80, *American Journal of Pharmaceutical Education*. 2016. Available from: <http://www.ajpe.org>

Case Series of Testicular Tuberculosis in Calabar, South- South Nigeria

Ugbem Theophilus Ipeh¹, Okoi, Nta Obono², Ushie, David Edem¹, Ebughe, Godwin Abeng¹

¹Lecturer, Department of Pathology, University of Calabar and Teaching Hospital, Calabar. Nigeria,

²Lecturer, Department of Family Medicine, University of Calabar Teaching Hospital, Calabar. Nigeria

Abstract

Introduction: Bilateral testicular tuberculosis should be considered as an important differential of testicular swelling and scrotal ulcer in a country like Nigeria with high burden of tuberculosis infection.

Case Reports: Here we present three cases of negroid male ranging in age from 39 years to 70 years who had orchidectomy on account of testicular malignancy that turn out to be genital tuberculosis which was diagnosed histologically.

Conclusion: Private medical practitioner in low income countries and in region of high tuberculosis burden should always have a high index of suspicions for tuberculosis in patients presenting with scrotal ulcers or testicular swelling that fails to respond to antibiotics therapy. Adequate evaluation of patients with testicular swelling and ulcer by means of abdominal and scrotal ultrasound, bacteriological studies and PCR is critical to diagnostic accuracy, optimal treatment and possibility of avoiding surgery in those with testicular tuberculosis and guiding against litigation.

Keywords: *Bilateral Tuberculosis, Scrotal Ulcer, Orchiectomy, Histopathology.*

Introduction

Testicular tuberculosis (TB) is a rare form of genitourinary tuberculosis.¹ Genitourinary tuberculosis represents a form of extra-pulmonary tuberculosis that occurs in the kidneys, ureters, seminal vesicles, prostate, testis, vas deferens, and epididymis.² WHO reported 10.4 million new tuberculosis cases and 0.25 million deaths were attributed to TB globally in 2015.³ According to the world health organization, Nigeria is one of the countries with a high burden of tuberculosis worldwide.³ In 2016, the prevalence rate of TB among HIV-negative people was 27% in Nigeria.³ Incidence rate was 158 per 10000 people, while the total number of TB mortality was 39,933 deaths in 2016.⁴ Disseminated tuberculosis is frequently being reported in Calabar and being frequently reported in sites such as the cervical lymph node.⁵ Tuberculosis of the testis may present as

painful or painless testicular swelling with or without scrotal ulceration or discharging sinus.⁶ The incidence of male genital tuberculosis is not high, but diagnosis is difficult.⁷ Sometimes it is impossible to differentiate TB epididymo-orchitis from testicular malignancy because genital TB has no pathognomonic signs.⁷

Isolated epididymo-orchitis can also mimic testicular cancer.⁶ Patient presenting with a scrotal ulcer in an endemic region like Nigeria should be investigated for tuberculosis as a possible differential diagnosis of scrotal ulcer, thereby avoiding over diagnosis, preventing avoidable surgery and litigation. Isolated testicular tuberculosis although rare should be consider as a differential diagnosis especially in atypical age group of patients presenting with testicular swelling in high prevalence areas like Nigeria.^{4,8} The craze for private practitioners to make quick money, most often result in poor clinical argument, investigation of patient and possible surgical treatment. We present a case of a 39 years old male who had bilateral orchidectomy in a private clinic for suspected testicular carcinoma.

Case Study:

Case Report 1: A 39 year old negroid male presented with bilateral swelling of both testicles. The overlying skin was ulcerated. Ultrasound scan show irregularly enlarged testicles with hypoechoic growths within and spreading into the adjacent scrotal wall. Microvasculardoppler flow was markedly increased. Hepatitis B and C negative as well as serology. Packed cell volume was 38% and Urinalysis was unremarkable. A diagnosis of Bilateral testicular malignancy was entertained and the patients' offered Bilateral Orchidectomy.

Macroscopy: Specimen consists of right and left testicular masses. The larger testicular mass measured 6.5cm x3.5cm x1.5cm in dimension and the attached spermatic cord measured 1.5cm in length and 0.3cm across. The covering tunic were thickened and there was an ulcer at the lower pole with necrotic walls and 0.5cm deep. The ulcer cut across the tunic into the parenchyma of the testis. Cut surface was a greyish white to creamy colour appearance. The smaller mass measures 5.5cm x2.5cm x 0.9cm with the attached spermatic cord measuring 1.3cm in length. The covering tunics were thickened and rough. The cut surface of the smaller mass was similar to that of the larger mass. It was greyish white in appearance with creamy colour areas.

Microscopy: Section of testicular tissues showing intense mixed inflammatory infiltrates with granuloma formation within the paratesticular areas. There was extensive fibrosis and gaint cells consisting both the langhan and foreign body types. Residual atrophic seminiferous tubules with thickened basement membranes containing sparsely populated spermatogonia cells noted. Elsewhere seen were of caseous necrosis. The histopathological diagnosis was Granulomatous inflammation most probably tuberculosis.

Case Report 2: A 67 year old negroid known Carcinoma of the prostate male who presented with bilateral swelling of both testicles. Patient had features of ureamia with deranged serum electrolyte and creatine. A diagnosis of Bilateral testicular malignancy

was entertained and the patients' offered Bilateral Orchidectomy.

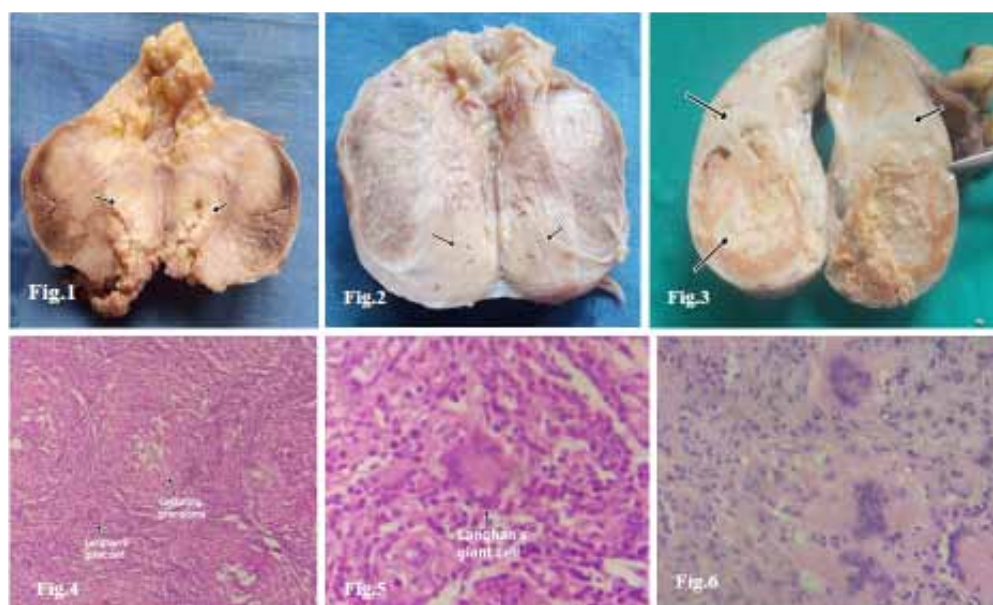
Macroscopy: Specimen consists of right and left testicular masses. The larger testicular mass measured 14.5cm x 4.5cm x 3cm in dimension and the attached spermatic cord measured 2.5cm in length and 0.4cm across. The covering tunic was thickened. The smaller mass measured 10.5cm x5.5cm x 3.5cm with the attached spermatic cord measuring 1.8cm in length. The covering tunics were thickened and rough. The cut surface of the right testes showed areas of caseous necrosis.

Microscopy: Section of testicular tissues shows atrophic seminiferous tubules with marked inflammatory infiltrates consisting of lymphocytes, epitheloid-like cells, fibroblasts and few plasma cells. There were areas of numerous gaint cells of both the langhan and foreign body.

Case Report 3: A 70years old negroid male, presented with a painless testicular mass of 4 years duration. There was no clinical history of weight loss, cough, breathlessness stated. No investigation was carried out. A clinical diagnosis of bilateral testicular malignancy was made and patient was offered left orchidectomy.

Macroscopy: Specimen consists of a left orchidectomy mass weighing 200g. It measured 9cm x 5cm x 2.5cm in dimension. The covering tunica albuginea was thicken, fibrotic and greyish white in color. The cut surfaces showed multiple areas of caseous necrosis at the upper pole and within the parenchyma of the testis. Residual normal orange colour parenchyma tissue noted.

Microscopy: Section of testicular tissues shows collections of mixed inflammatory infiltrates mainly mononuclear cells consisting of lymphocytes, epitheloid like cell and plasma cells with fibroblast. At the periphery there were gaint cells of both the langhan and foreign body cells. Prominent amorphous a cellular areas reminiscence of caseous necrosis noted. Residual atrophic seminiferous tubules were present.



FIGURES (1-6): Photographs showing the cut surfaces of the testis (Fig.1-3) with prominent areas of caseous necrosis with residual golden yellow parenchyma. Photomicrographs of the testis shows caseating granulomas consisting of epithelioid cells and giant cells of both the langhan's and foreign body types (Fig.4-6).

Discussion

Genital tuberculosis of the testis although rare should be consider as an important differential diagnosis of testicular swelling and scrotal ulcer in poor resource country like Nigeria with underfunded health care system and majority of people living in poverty within overcrowded and overpopulated settlements.⁴ However, isolated testicular tuberculosis poses a diagnostic challenge even in regions that are known to be endemic for TB.⁹ The dilemma is further made worse by diagnostic challenges.¹⁰ Genital tuberculosis is associated with TB involvement of kidneys or lower urinary tract.¹¹ Khan et al, 2018 in a case report of primary cutaneous ulcerative tuberculosis of the scrotum concluded that Tuberculosis of the scrotum should be considered in the differential diagnosis of scrotal ulcers. Since proper diagnosis and adequate treatment will offer a cure to such patients.^{12,13}

Medical practitioner practicing in endemic region like Nigeria should have a high index of suspicion in managing patients presenting to them with scrotal ulcer or testicular swelling thereby preventing over diagnosis and offering such a patient orchidectomy not warranted. Inadequate clinical investigation of patient for common granulomatous lesions and the craze for cutting corners and cost saving would always lead to misdiagnosis and occasionally litigation. The index patient would have

avoided the surgeon knife and bilateral orchidectomy if the managing physician as consider tuberculosis of the scrotum as a differential diagnosis since the patient initial presenting complaints was that of a non-healing ulcer with associated pain and a testicular mass. Shugaba et al, 2012 in a case report in Jos, Nigeria also affirmed that although testicular tuberculosis is a very rare disease, the clinician should consider tuberculosis of the testis as a possible differential of a scrotal mass.¹

This will increase the possibility of early diagnosis, as well as proper and early management. The patient was poorly investigated since the physician did not consider tuberculosis in his differential and depend mainly on ultrasound. Many physicians depend solely on ultrasonography for diagnosis and base their judgment on that, these depends on the knowledge of the sonographer as well as the equipment. Chudasama, 2017 affirmed that in a patient presenting with scrotal swelling, the USG detection of epididymal abnormalities, skin thickening, and hydrocele, in addition to heterogeneously enlarged testis, and suggests that this swelling is caused by an infection rather than a testicular tumor.¹¹ Late features like discharging scrotal sinus tracts and abscesses are very specific for tuberculosis. Denuet al, 2012 also emphasized that patients presenting with isolated testicular swelling should be thoroughly investigated

for TB especially in TB endemic region. This will obviate the need for unnecessary surgery and its possible complications such as damage to surrounding genitourinary organs, subfertility or infertility from radical orchidectomy.¹⁴

Conclusion

Private medical practitioners in low income countries and in region of high tuberculosis burden should always have a high index of suspicion for tuberculosis in patients presenting with scrotal ulcers or testicular swelling that fails to respond to antibiotics therapy. Detail clinical history, examination and adequate investigation such as imaging studies, serological and bacteriological studies should be requested and tissues for histopathological diagnosis is paramount to patient management.

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Ethical Clearance: This was obtained from University of Calabar Teaching Hospital Research Ethic Committee and the cases were done in accordance with the Declaration of Helsinki. No harm was done, written and verbal informed consents were obtained from the head of Pathology Department, University of Calabar Teaching Hospital.

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References

1. Merchant, S., Bharati, A. & Merchant, N. Tuberculosis of the genitourinary system-urinary tract tuberculosis: renal tuberculosis: part I. *Indian J Radiol Imaging*, 2013, 23: 46–63.
2. Zajackowski, T. Genitourinary tuberculosis: historical and basic science review: past and present. *Cent European J Urol*, 2011, 65: 182–187.
3. World Health Organization (WHO). Global tuberculosis report 2015. Available at: <http://apps.who.int/iris/bitstream/10665/191102/1/9789241565059>
4. Ojo, B. A., Ogwuche, E. A., Duduyemi, B. M., Okani, C., Umobong, E. O., Jumbo, G. T. A. Testicular tuberculosis in an HIV positive patient mimicking malignancy. *African Journal of Urology*, 2014, 20, 28-30.
5. Victor, I., Nwagbara, V. I., Asuquo, M. E., Ebughe, G., Agbor, C., Akpan, S., Ugbem, T., Asuquo, I. M. Tuberculous lymphadenitis of the neck: Case series. *International Journal of Medicine*, 2013, 1(1), 4-8
6. Badmos, K. B. Tuberculousepididymo-orchitis mimicking a testicular tumour: a case report. *African Health Sciences*, 2012, 12(3), 395 – 397.
7. Yonguc, T., Bozkurt, I. H. Male Genital Tuberculosis. *J Mycobac Dis*, 2014, 4:169. doi:10.4172/2155-9880.1000169
8. Ogbo, F. A., Ogeleka, P., Okoro, A., Olusanya, B. O., Ifegwu, K. I., Awosemo, A. O., Eastwood, J. & Page, A. Tuberculosis disease burden and attributable risk factors in Nigeria, 1990-2016. *Tropical Medicine and Health*, 2018, 46,34.
9. Das, A., Batabyal, S., Bhattacharjee, S., & Sengupta, A. A rare case of isolated testicular tuberculosis and review of literature. *J Family Med Prim Care*, 2016, 5:468-70
10. Lamichaney, R., Das, D. & Sherpa, M. Koch's disease presenting as an isolated testicular mass: an unusual occurrence. *Journal of Clinical and Diagnostic Research*, 2014, 8(9): 13-14.
11. Chudasama, N., Sidhu, R., Shah, N. Classical case of tuberculosis Epididymo-Orchitis and how to rule out differentials on sonography. *West Afr J Radiol*, 2016;23:32-35
12. Khan, A., Singaraddi, R., Shetty, D., et al. Primary cutaneous 'ulcerative' tuberculosis of the scrotum: a rare occurrence. *BMJ Case Rep* 2018;11:e227177. doi:10.1136/bcr-2018227177
13. Abraham, S., Anariba, D. E. I., Dua, K., Mir, M. & Ankireddypalli, A. A case of testicular tuberculosis mimicking malignancy in a healthy young man. *Therapeutic Advances in Infectious Disease*. 2016, 3(3-4), 110–113.
14. Denué, B. A., Zarami, B. A., Alkali, M. B. Radical orchidectomy for isolated tuberculosis of the testis: Call foe restrain on surgeon's Knife. *Arch Med Surg*, 2018, 3:40-2.
15. Shugaba, A. I., Rabi, A. M., Uzokwe, C. & Matthew, R. M. Tuberculosis of the Testis: A case Report *Clinical Medicine Insights. Case Reports* 2012, 5;169–172 doi: 10.4137/CCRep.S9451.

Nursing Students' Preferences in Test-taking, E-Books, and Learning Styles: A Longitudinal Study

Lou Ann Gloekler, Debra Lucas

¹Clinical Associate Professor, C-PNP, MSN, BSN, D'Youville, ²Librarian, MLS, D'Youville

Abstract

Aim: This study was conducted to determine the preferences of testing and learning styles of undergraduate nursing students within a baccalaureate school of nursing.

Background: Historically, nursing education has been in a face- to face (F2F) lecture format. One of the most pronounced trends in higher education over the last decade has been a strong growth in distance education through online course work ¹.

Method: A survey was given to 685 undergraduate sophomore level nursing students within a baccalaureate undergraduate school of nursing over eight semesters. This same survey was given again to these sophomore undergraduate nursing students during their senior year to determine if results waivered. There were 228 seniors surveyed over four semesters.

Students were asked to indicate their age (17 to 27 years, 27 to 37 years, > 37 years)

Students were queried about their preferences among the following categories:

1. Test taking preference: computer exams, or paper and pencil exams
2. Book preference: traditional hard copy textbook, or E-book
3. Learning style preference: online learning, or attending classroom lecture, or both

Results: Overwhelmingly, sophomore and senior level undergraduate nursing students surveyed, selected their preferences in test taking, book usage, and instruction styles, to support traditional learning methodologies period.

Conclusion: The results from this study emphasize the need for nurse educators to listen attentively to their students and not assume that advanced technology is the ultimate learning method to be utilized.

Keywords: *Student preferences, computer exams, e-book, hybrid online learning, classroom lecture, asynchronous, synchronous, blended learning, F2F, face-to-face, learning outcomes.*

Introduction

Although nursing education has historically been in a face-to-face format (F2F), a pronounced trend in higher education encompasses a strong growth in distance education and online learning. Teaching and learning formats have evolved largely due to changing technologies and student demographics. According to Smart et al.², there was a paradigm shift in technology as far back as 2000, and that upcoming the technology would include “distance education, computers,

scantrons, AMS learning systems, CD-RM, DVD, [and] learning management systems.”^(p19)

The use of the internet became more popular². They also maintain that in 2010, the education became a mobile environment with hybrid courses and asynchronous and synchronous course platforms.

Online and blended-learning formats have become increasingly popular, especially in higher education³. In blended learning formats, instructors will utilize

learning and teaching methods with an emphasis on best-practice learning outcomes. Blended learning is a hybrid approach to delivering instruction through online and traditional F2F learning formats, the one enhancing the other. In a blended course, instruction may occur F2F, online, or both.

Studies illustrate a variety of technological differences in learning styles. Student's exposure to technology differs depending on the primary and secondary educational level. Educators need to be attentive to their student's learning style preferences and not assume that one type of learning style works for everyone.

Because nursing educators have traditionally approached blended learning from a learning outcomes measurement, researchers have been battling with the dilemma of comparing paper-based and computer-based-testing, understanding preferences for e-books and text-book usage, and preferences in online learning programs for more than two decades. Although research abounds regarding the learning outcomes of blended learning, sparse data is available about students' learning style preferences.

Literature Review: As the numbers of national and international online programs increase, so will the numbers of online nursing programs. These online classes offer one or more of the following: asynchronous, synchronous, hybrid, or F2F. One advantage of these online programs from the student's preference, is that the courses offer flexibility in the times and places where they learn, providing a better way to balance home/work/school obligations. Other students experienced the disadvantages of being socially isolated from other classmates and faculty and becoming lost in technical glitches. These students are also susceptible to situations where the instructor uses a teaching method not conducive to all learners. Students have also expressed dismay with these technologies if they have a visual or auditory disability.

Published research from within the nursing profession gathers data on learning outcomes and measures. Data on student learning preferences is less abundant. Limited data exists regarding student perceptions, so that we can create programs conducive to what they need to be successful. In particular, this research study and literature review focuses on three main instructional aspects: online vs. paper testing,

e-book or print preferences, and most preferred teaching format. Additional information on the need to educate both faculty and students is discussed.

Testing: While computer-based testing can be beneficial from an educator perspective, the literature regarding this testing mode from a student performance perspective is controversial. Studies analyze test modes and the effects of computer versus paper-based test mediums, for example. The literature did not always find a favorable result for computer-based tests.⁴ According to Doggett⁵ students preferred exams with multiple attempts and disliked exams with forced completions. Online testing also faces technology issues. Stowell and Bennett⁶ said potential disadvantages of online testing include hardware or software failures, proper functionality of all technology, and temptations to cheat when unsupervised or in an unknown environment.

E-books: "E-books are a contemporary resource that can be used to facilitate both learning and teaching. As with any new technology, here is an expected learning curve and users just develop some level of proficiency before e-books are enjoyable to use. Student identified barrier included, among others, lack of orientation, too much scrolling, perceived eye strain, and trying to break habit with tradition."^{6(pp84-85)} A study done by Blissit³ found that nursing students enrolled in an introductory pathophysiology course overwhelmingly preferred print textbooks to digital textbooks. Students complained of eyestrain, frequent headaches from looking at a computer screen, and the distraction of the internet.

According to a study of pharmacy and nursing students' express anxiety over online classes and struggle with e-books⁷. "These student expressions of concern provide opportunities for library instruction interventions. A workshop on the use of e-books could help to alleviate student anxiety about using e-books"⁸. Lack of knowledge seemed an obstacle. Institutions need to support the use of e-books. Folb et al.⁹ also said that it is important to display the eBook collection prominently on the library website, but to also provide instruction. Instruction and exposure will lead more patrons to this collection.

"Nursing students described factors that hindered e-learning computer skills and perceived ability. Positive factors for e-learning were flexibility in time management and access¹⁰. Goodman and Fayle⁸ said that focus groups expressed conflicting preferences of

e-books over print. They are easier to search within to find keywords and concepts. Nursing students “preferred print as a medium that makes study easier, with appealing layouts for diagrams, charts, and ease of highlighting text.” (p54)

Folb et al.⁹ found that reference and pharmaceutical drug books were preferred most often over e-books and handbooks. However, those preferring print would consider using an e-book even more than as those using e-books will use print.

Learning Styles: Students have varying levels of learning styles and their exposure to technology differs depending on the primary and secondary education experiences, which sometimes relates also to the generation in which they were born. Nursing educators can’t assume that one type of learning style works for everyone and therefore need to be more attentive in their assessment of student’s learning styles.

According to Hampton et al.¹¹, Gen Z students, also known as iGen, reported that “lecture with audience response clickers” was the preferred teaching method (94%) while traditional lectures were preferred 63% of the time.”(p162) Walker et al.¹², found the preferred teaching methods between traditional nursing students and nursing students who are 25 years and older, did not have a significant difference. Students indicated they did not like Web-based methods. Both student groups said their preferred teaching method was lecture-based. Smart et al.² said the institutions of higher education must acknowledge that students have a varied range of computer skill and that courses must be designed with a “broad range of students adaptability, flexibility, and proficiency with educational technology.”¹³ Pettigrew et al.¹⁴ said student ratings of online teaching formats with PowerPoint and in class-video ranked the highest. “Accelerated students [those who work fewer hours, study more and have higher career aspirations] gave higher ratings to online chats and discussions and problem-based learning. Older baccalaureate students gave higher ratings to guest lecturers whereas younger baccalaureate students gave higher ratings to simulations and skill laboratory demonstrations with practice.”(p232)

Pettigrew et al.¹⁴ went on to say that when all students are divided by age, younger students preferred lecture with PowerPoint and the use of in-class videos. Again, Hampton et al.¹⁵ found that most students preferred an engaging method of incorporating videos

and PowerPoint presentations converted with voice over

The research results from a Western New York state community college illustrated that voluntary technology and student orientations should be offered a few weeks prior to the beginning of the semester. This provides students an opportunity to gauge their comfort levels with technology and gave them a chance to drop the course if not prepared for the technological platforms.¹⁶ Given that most college students receive their primary and secondary education in the F2F setting, online course work may represent an adaptation challenge for many.¹⁷

Despite some faculty perceptions of students’ technical skills, students’ responses showed, Rubenstein and Schubert¹⁸ reported findings on the use of learning in the classroom with iPads. Overall, 73% of the faculty want students to have an orientation to using these iPads. More than half of the students found training beneficial. Students and faculty agree that technology training is among a top priority¹⁸. Smart, et al.² said that nursing faculty are now expected to be proficient in nursing content and office computer software and online instructional platforms. As a result, “faculty need to be proficient in technologies that are used by student and supported by their institutions.”(p22)

Methodology

A nursing professor and librarian, both from a college in Western New York, conducted a longitudinal study to determine student preferences on testing and learning style methods. Sophomore level nursing students completed a volunteer questionnaire during the Fall 2016, Spring 2017, Fall 2017, Spring 2018, Fall 2018, Spring 2019, Fall 2019, Spring 2020 semesters to determine preferences on testing and learning style methods. Four of these sophomore student cohorts (Fall 2016, Spring 2017, Fall 2017, and Spring 2018) were asked to complete the same survey during their senior level year (4 semesters; Fall 2018, Spring 2019, Fall 2019, Spring 2020) to determine if their results changed following more exposure to online testing and learning methodologies as they progressed through their nursing curriculum.

The volunteer questionnaire given to the students asked them to select their age, their preference from three learning style categories, and to provide comments about their learning style preferences. The categories addressed on the questionnaire included:

1. Prefer taking exams by computer or paper and pencil
2. Prefer electronic books or hard copy traditional books
3. Prefer online learning, or attending classroom lecture, or both
4. Comments

Students could elect not to complete the form.

685 sophomore level students completed the questionnaire and 228 senior level students completed this same questionnaire during their senior year.

Information was entered into a database for analysis.

An IRB approval was obtained for the initial pilot study of 100 sophomore level students during their fall 2016 semester. A second IRB approval was obtained for this to become a longitudinal study in following subsequent sophomore students and to follow up with these sophomore level students during their senior level semester.

Results

Age:

Age Breakdown of 685 Sophomore level students who completed the survey:

17-27 Years → 576 students (84%); 27-37 Years → 81 students (12%); > 37 Years → 28 students (4%)

Age Breakdown of 228 Senior level students who completed the F/U survey:

17-27 → 180 students (79%); 27-37 → 38 students (17%); > 37 Years → 10 students (4%)

Exam Preference

Sophomore Level:

Prefer Computer Exams → 90 (13%)

Prefer Paper/Pencil Exams → 587 (86%)

No Preference in Computer or Paper/Pencil Exams → 8 (1%)

Senior Level:

Prefer Computer Exams → 37 (16%)

Prefer Paper/Pencil Exams → 191 (84%)

No Preference in Computer or Paper/Pencil Exams → 0 (insignificant)

Book Preference

Sophomore Level:

Prefer Electronic Books → 147 (21%)

Prefer Hard Copy Books → 527 (77%)

No Preference in Electronic or Hard Copy Books → 11 (2%)

Senior Level:

Prefer Electronic Books → 36 (16%)

Prefer Hard Copy Books → 190 (83%)

No Preference in Electronic or Hard Copy Books → 2 (1%)

Lecture Format Preference:

Sophomore Level:

Prefer Online Only → 32 (5%)

Prefer Attending Classroom Only → 387 (56%)

Prefer Online and Attending Class → 266 (39%)

Senior Level:

Prefer Online Only → 15 (7%)

Prefer Attending Classroom Only → 126 (55%)

Prefer online and Attending Class → 87 (38%)

Age Breakdown of 685 Sophomore level students who completed the survey		
Age Group	Sophomore Level Students	Percentage of Total
17-27 Years	576	84%
27-37 Years	81	12%
> 37 Years	28	4%
Total:	685	

Age Breakdown of 228 Senior level students who completed the F/U survey		
Age Group	Senior Level Students	Percentage of Total
17-27 Years	180	79%
27-37 Years	38	17%
> 37 Years	10	4%
Total:	228	

Exam Preference		
	Sophomore Level Students	Senior Level Students
Prefer Computer Exams	90	37
Prefer Paper/Pencil Exams	587	191
No Preference in Computer or Paper/Pencil Exams	8	0
Total:	685	228

Book Preference		
	Sophomore Level Students	Senior Level Students
Prefer Electronic Books	147	36
Prefer Hard Copy Books	527	190
No Preference in Electronic or Hard Copy Books	11	2
Total:	685	228

Lecture Format Preference		
	Sophomore Level Students	Senior Level Students
Prefer Online Only	32	15
Prefer Attending Classroom Only	387	126
Prefer Online and Attending Class	266	87
Total:	685	228

Students were forthright in offering their comments on test taking and learning style preferences.

Comments shared from Sophomore level students included:

➤ “Less stressful when taking exam with paper and pencil”

➤ “Like writing out thoughts on paper exams and can’t do this on computer exams”

➤ “Prefer paper/pencil exams in class because I can underline & circle key words”

➤ “Both are useful; like E-book but prefer hard copy.”

- “Prefer hard copy books to e-books, as student will always have the hard copy for reference. Computer screens are hard on eyes”.
- “Hard copy texts are easier to read and retain information”.
- “E-books overwhelming in beginning, yet nice for convenience, as I don’t have to carry heavy books”.
- “Like online, but like attending class to reinforce online content”
- “Like face-to-face conversations & to speak directly with professor’s when confused”
- “Online learning hard to focus & prefer face to face with teacher”
- “Attending class lecture is easier to ask questions & helps with understanding”
- “Don’t think it’s a good method to have 1st time nursing students take hybrid or online nursing courses.”
- “Taking exams with paper and pencil, and using hard copy books was all I had ever used, so being thrown into all this technology is difficult”
- “Like online practice exams and tutorials”
- “Prefer taking exams on computer, but not with all computer programs”
- “The biggest issue with the online portions is navigation and knowing exactly what should be done. If there was more structure there, it would be more useful.”
- “Prefer learning more in class and have less anxiety by doing paper exams. Hard copy books help retain more information and can physically highlight and write notes in book.
- “Online textbooks not user friendly. Highlighting on hard copy easier to do rather than highlighting in an e-book”
- “Frustrating when technology isn’t working. Don’t have this problem with hard copy books”
- “Taking an older student into consideration, sometimes technology is difficult & challenging”
- “Paper & pencil allows me to cross out, underline, & eliminate”
- “I like paper & pencil exams, but I feel computer exams prepare us for NCLEX”
- “Please bring back paper and pencil exams. Harder to read questions on computer, especially for people with dyslexia and vision problems.”
- “Hard copy books are a must for me”
- “Hard copy books easier to navigate”
- “Prefer Hard copy textbooks that can be rented, as they are cheaper. Otherwise, online texts are cheaper.”
- “I continue to learn better & absorb material when I have face to face interaction”
- “Attending lecture allows for better explanation, & opportunities to ask questions”
- “In certain situations, it is dependent on how well instructor teaches in the classroom. If teacher does well at lecturing in the classroom, would prefer classroom”
- “Depends on class. A hybrid class is hard for some nursing classes because it’s so heavy in content. If hybrid, the teacher must offer support”

Conclusion

- The overwhelming majority of sophomore students (86%) selected their preference to be paper and pencil exams, rather than computer exams (13%), and the overwhelming majority of senior students, having increased exposure to computer exams since first taking this survey, selected their preference to be paper and pencil exams (84%), rather than computer exams (16%). Sophomore students selected their preference of hard copy textbooks (77%), rather than e-books (21%), and Senior level students selected their preference of hard copy books (83%) rather than preferring e-books (16%). Sophomore students selected their preference of attending class (56%), rather than BOTH online and attending class (39%), or Hybrid only (5%) and interestingly, senior level students after having increased online teaching formats, selected their preference of attending class (55%), rather than BOTH online and attending class (38%). 7% of seniors selected their preference as online only.

Comments shared from Senior level students included:

- “Online testing causes anxiety.”

- Participants answering the survey were enrolled in both on-campus courses and co-requisite Hybrid-online courses, encompassing online assignments, e-book usage, and computer exam testing at the sophomore and senior levels. Several students reported at both the sophomore and senior level that although they had previous exposure to technology, and had taken Hybrid-online courses, they still preferred traditional methods of learning.
- Students repeatedly expressed unfavorable comments on taking computer exams, using E-Books, and participating in online learning.
- Although the literature indicates that there are significant advances in online technological learning modalities and the use of technology is the preferred method of learning, the results from this longitudinal study did not concur. Findings from this study significantly reveal that traditional learning modalities are the preferred learning style, as evidenced from 8 sophomore level nursing student cohorts between the ages of 17 to 27 years (84%), 27 to 37 years (12%), and > 37 years (4%) and 4 senior level nursing student cohorts between the ages of 17 to 27 years (79%), 27 to 37 years (17%), and > 37 years (4%).

Implications:

- When designing a nursing curriculum, there is a need for nursing educators to listen and be aware of prospective students preferred learning style methods, and NOT assume that technological learning styles are always the best solution for everyone.
- A slower, more gradual transition towards advanced technological learning methodologies may need to be implemented when students enter the program.
- Offering choices for both technological and traditional teaching modalities within a curriculum may provide an optimal venue for learning.
- There is a need for ongoing research to evaluate undergraduate nursing students preferred learning styles as they enter and exit their program of study. Eight sophomore student cohorts had answered this survey. Only four of these eight cohorts have completed the follow up survey in their final undergraduate year at this college to determine if test taking and learning style preferences changed following further exposure to computer exams, e-books, and online learning methodologies.

- In light of the recent COVID pandemic, students have certainly experienced a surge of online learning formats. In due course, it's noteworthy to ascertain how students' learning preferences and also how nursing educator's implementation and delivering of online teaching modalities evolve.
- Advanced technical support needs to be recognized, especially with the advancing technological platforms of the 21st century.
- In addition to surveying undergraduate nursing students, other schools of discipline or professions could be queried to further determine if results would demonstrate similar findings to this study.

Ethical Clearance: Institutional Review Board of D'Youville, NIH, and CITI training

Source of Funding: Self (authors)

Conflict of Interest: Nil

References

1. Allen IE, Seaman J. Class Differences: Online Education in the United States, 2010 [Internet]. Sloan Consortium; 2010 [cited 2020 Oct 28]. Available from: <https://eric.ed.gov/?id=ED529952>
2. Smart D, Ross K, Carollo S, Williams-Gilbert W. Contextualizing instructional technology to the demands of nursing education. *CIN Comput Inform Nurs.* 2020 Jan;38(1):18–27.
3. Blissitt AM. Blended learning versus traditional lecture in introductory nursing pathophysiology courses. *J Nurs Educ.* 2016 Mar 31;55(4):227–30.
4. Ita ME, Kecskemety KM, Ashley KE, Morin BC. Comparing student performance on computer-based vs. paper-based tests in a first-year engineering course. *ASEE Comput Educ CoED J.* 2015;6(1):2.
5. Doggett AM. Engineering technology management graduate student online learning preferences. In Atlanta, GA; 2016.
6. Stowell JR, Bennett D. Effects of online testing on student exam performance and test anxiety. *J Educ Comput Res.* 2010 Mar 1;42(2):161–71.
7. Gueval J, Tarnow K, Kumm S. Implementing e-books: Faculty and student experiences. *Teach Learn Nurs.* 2015 Oct 1;10(4):181–5.
8. Goodman XY, Fayle S. Assessing mastery learning

- nursing students' preferences for e-book and print books: A case study. *Codex J La Chapter ACRL*. 2019;5(3):44–58.
9. Folb BL, Wessel CB, Czechowski LJ. Clinical and academic use of electronic and print books: the Health Sciences Library System e-book study at the University of Pittsburgh. *J Med Libr Assoc JMLA*. 2011 Jul;99(3):218–28.
 10. McVeigh H. Factors influencing the utilisation of e-learning in post-registration nursing students. *Nurse Educ Today*. 2009 Jan 1;29(1):91–9.
 11. Hampton D, Welsh D, Wiggins AT. Learning preferences and engagement level of generation z nursing students. *Nurse Educ*. 2020 Jun;45(3):160–164.
 12. Walker JT, Martin TM, Haynie L, Norwood A, White J, Grant L. Preferences for teaching methods in a baccalaureate nursing program: How second-degree and traditional students differ. *Nurs Educ Perspect* [Internet]. 2007;28(5). Available from: https://journals.lww.com/neponline/Fulltext/2007/09000/PREFERENCES_for_Teaching_Methods_in_a.10.aspx
 13. Gambo JM, Bahreman NT, Watties-Daniels D, Neal M, Swoboda SM. Can mobile technology enhance learning and change educational practice? *CIN Comput Inform Nurs*. 2017 Aug;35(8):375–380.
 14. Pettigrew AC, Dienger MJ, O'Brien King M. Nursing students today: Who are they and what are their learning preferences? *J Prof Nurs*. 2011 Jul 1;27(4):227–36.
 15. Hampton D, Pearce PF, Moser DK. Preferred methods of learning for nursing students in an on-line degree program. *J Prof Nurs*. 2017 Jan 1;33(1):27–37.
 16. Fetzner M. What do unsuccessful online students want us to know? *J Asynchronous Learn Netw*. 2013 Jan;17(1):13–27.
 17. Xu D, Jaggars S. Adaptability to online learning: Differences across types of students and academic subject areas. 2013 [cited 2020 Oct 28]; Available from: <https://doi.org/10.7916/D82N59NB>
 18. Rubenstein CD, Schubert CF. Student and faculty perceptions of iPad integration in a prelicensure program. *nurse educ* [Internet]. 2017;42(2). Available from: https://journals.lww.com/nurseeducatoronline/Fulltext/2017/03000/Student_and_Faculty_Perceptions_of_iPad.10.aspx

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