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Editorial View

It is a great pleasure to publish 13th volume of Journal of Nursing Education of Nepal (JONEN) from Maharajgunj Nursing Campus. This is the double blind peer reviewed journal covering the articles related to Nursing Education, Nursing Practice and Nursing Profession. JONEN is published annually by Maharajgunj Nursing Campus, Institute of Medicine, Tribhuvan University.

The aim of this Journal is to provide opportunity to enhance the practice of writing scientific paper from health professionals and exhibits new knowledge among the readers contributing for social relevancy. While every effort is made by the editorial team to make this journal a standard one by preventing error for publication.

I would like to acknowledge all the authors for their scientific contribution and reviewers and editorial team for their untiring efforts and dedication in bringing this volume in this form.

Prof. Muna Rana Thapa
Campus Chief
Chief Editor
JONEN, Vol 13

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Original Article

Knowledge and Attitude Regarding Risk Factors of Cardiovascular Diseases among Adolescent Students of a School in Kathmandu Metropolitan City

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ABSTRACT

Introduction: Cardiovascular diseases (CVDs) are the leading cause of death worldwide. Awareness and a positive attitude toward risk factors of cardiovascular diseases in adolescence is necessary. Unable to prevent risk factors among adolescents may result in burden of cardiovascular disease-related problems. This study aimed to find out the knowledge and attitude regarding risk factors of cardiovascular diseases.

Methods: A cross sectional research design was used. A total 166 adolescent students of 11th grade studying in South Western Higher Secondary School were included with the non-probability purposive sampling technique. The study was carried out during 5th -13th March 2019. Data was collected by a self-administered structured questionnaire. Descriptive statistics was used for data analysis.

Results: The study showed that the age of the respondents ranged from 16-19 years with a mean age in years (M = 16.78± SD = 0.80*)*. More than half (57.8%) of the respondents had a fair level of knowledge on risk factors of CVDs followed by good (22.3%) and poor (19.9%) level of knowledge. Only 34.3% of the respondents had a positive attitude whereas a nominal number of respondents (12.7%) had a negative attitude toward risk factors of CVDs.

Conclusion: Knowledge on risk factors of CVDs among adolescents is low. Less than one-third of the adolescents have a positive attitude whereas less than one fourth have negative attitude toward risk factors of CVDs. It is necessary to plan and implement awareness programs for raising knowledge, fostering a positive attitude toward risk factors of CVDs, and forming healthy habits.

Keywords: Adolescent, attitude, cardiovascular diseases risk factors, knowledge

INTRODUCTION

Cardiovascular diseases (CVDs) such as coronary heart disease and stroke are the leading cause of death globally.[1, 2] Adolescence is an important phase of development of future lifestyle behaviours.[2, 3] Around 90% of disease burden due to CVDs are attributed to tobacco use, alcohol use, unhealthy diet, insufficient physical activity, hypertension, and obesity. This disease burden can be prevented by adopting a healthy lifestyle. In Nepal, research findings showed that less than 50% of adolescents adopted an unhealthy lifestyle such as physical inactivity, unhealthy diet, harmful use of alcohol and tobacco use etc. [4,11-14] Inability to prevent CVD risk factors among adolescents may result in a future adult CVDs epidemic in developing countries.[1, 4-11]

A cross-sectional study conducted among 783 adolescents aged 15-19 in higher secondary schools of Lekhnath Metropolitan City, only 11% had a good level of knowledge and 71.9% had a cardiovascular risk-seeking attitude.[11] Life style related risk factors are increasing among adolescents in developing countries. Risk factors such as unhealthy dietary habit, physical inactivity etc. are developed during adolescence period continue to adulthood have a negative impact on health and associated with CVDs later in life. Knowledge and attitude on risk actors of CVDs among adolescents may be a matter of serious concern. In Nepal, there was dearth of information on knowledge and attitude on risk factors of CVDs among adolescents. Therefore, this study aimed to find out knowledge and attitude regarding risk factors of CVDs among adolescents.

METHODS

A cross- sectional study was conducted to find out the knowledge and attitude regarding risk factors of cardiovascular diseases among 16-19 years old adolescent students studying in South Western Higher Secondary School, located Kathmandu Metropolitan City ward no 3, Basundhara during 5th -13th March 2019. After calculating the sample size, required one hundred and sixty-six samples were selected using purposive sampling from grade 11 who were willing to participate in the study were included. Ethical approval was taken from the Institutional Review Committee of Institute of Medicine, Maharajgunj, Kathmandu (IRC Approval No.310/075/076,Dec10, 2018). Prior data co

llection approval from school administration was obtained. Informed written consent and assent consent was obtained. All the tools were developed by the researcher based on review of literature. Total eleven statements were used to identify the knowledge on risk factors of CVDs, which was further categorized based on Bloom's taxonomy.[11] If respondents responded more than 75% of statements correctly, it is categorized as a good level of knowledge (>8 correct responses), followed by fair level at 50-75% (6-8 correct responses) and poor level at less than 50% (<6 correct responses).

Similarly, 10 items scale on attitude on risk factors of CVDs with 3-point Likert responses (i.e., 3 = Agree, 2 = Undecided, and 1 = Disagree) was used. The level of attitude on risk factors of CVDs was categorized based on Yadav and Wagle (2012).[12] If respondents responded >7 positive responses (more than 70%) is categorized as positive attitude, followed by neutral attitude at 5-7 positive responses (50-70%) and negative attitude at <5 positive responses (less than 50%).

The questionnaire was pretested among 17 adolescent students in same school and the data obtained from pretest were excluded from the study. The data were collected using self-administered, structured questionnaire for socio-demographic information and for knowledge on risk factors of CVDs. However, Likert scale was used for measuring attitude regarding risk factors of cardiovascular diseases. Data entry and analysis were carried out using SPSS version 16. Descriptive statistics was used for data analysis.

RESULTS

The study findings revealed that the age of the respondents ranged from 16-19 years with mean±SD 16.78±0.80. The highest percentage (98.2 %) of respondents were living at home. The majority of the respondents were Brahmin and Chhetri (56.0 %), Hindu (78.9%), and had sufficient family income for 12 months and surplus (47.0%). The majority (53%) of respondents received health information from social media as shown in Table 1.The majority of respondents had fair (57.8%), good (22.3 %) and poor (19.9%) level of knowledge on risk factors of CVDs (Table 2).The majority of respondents had knowledge on tobacco use (76.5%), excessive alcohol intake (78.9%), physical inactivity (69.3%), fatty food consumption (61.4%), dyslipidemia (60.2%), high blood pressure (77.1%) and stress (69.3%) as CVDs risk factors. However, 57.8%, 56%, and 51.8% respondents did not have knowledge on high salt intake, diabetes and obesity as CVDs risk factors respectively as shown in Table 3.

Regarding descriptive analysis on the attitude related to risk factors of CVDs (Table 4), 30.1% of respondents agreed that high chance of getting CVDs was related to past and / present health related behaviors. Likewise, 83.8% of respondents agreed that the majority of physically inactive people get CVDs. Similarly, 74.1% of respondents agreed that obesity increases chances of CVDs. Furthermore, 76.5% of respondents agreed that low fruits and vegetables increase chances of CVDs. About 81.4% of respondents agreed that fatty food will increase chances of CVDs. Similarly, 72.3% of respondents agreed that irregular medical checkups will increase chances of CVDs. In addition, 56% of respondents agreed that carbonated drinks cause CVDs. Likewise, the majority of respondents agreed that fast food will increase the chances of CVDs (66.3%); smoking cause CVDs (64.5%); and consumption of excessive alcohol cause CVDs (50.0%). The majority of respondents had neutral (53%) attitude followed by positive (34.3%) and negative attitude towards grading on risk factors of CVDs (Table 5).

Table 1. Socio-demographic Characteristics of the Respondents (n=166)

VAriables	Number	Percentage
Age in Years		
Middle Adolescents (16-17)	69	41.6
Late Adolescents (18-21)	97	58.4
Sex		
Male	86	51.8
Female	80	48.2
Place of Residence		
Home	163	98.2
Hostel	3	1.8
Ethnicity		
Brahmin/ Chhetri	93	56.0
Janajati	72	43.4
Dalit	1	0.6
Religion		
Hinduism	131	78.9
Buddhist	29	17.5
Christianity	6	3.6
Stream		
Science	95	57.2
Management	71	42.8
Family Income (Sufficient for)		
6 months	56	33.7
>6-12 months	32	19.3
>12 months and surplus	78	47.0
Source of Health Information		
Social Media	88	53.0
Television	32	19.3
Teachers/ Family Members/ Friends	15	9.0
Health Personnel	14	8.4
Curriculum Books	13	7.8
Radio	4	2.4

Table 2. Level of Knowledge on Risk Factors of CVDs (n=166)

Level of knowledge	Frequency	Percentage
Poor	33	19.9
Fair	96	57.8
Good	37	22.3

Table 3. Knowledge on risk factors of CVDs of the respondents (n=166)

Risk Factors	Yes	No
	No. (%)	No. (%)
Tobacco user	127(76.5)	39(23.5)
Excessive alcohol intake	131(78.9)	35(21.1)
Physical inactivity	115(69.3)	51(30.7)
Fatty food consumption	102(61.4)	64(38.6)
High salt intake	70(42.2)	96(57.8)
Daily intake low green vegetables and fruits	41(24.7)	125(75.3)
Diabetes	73(44.0)	93(56.0)
Dyslipidemia	100(60.2)	66(39.8)
High Blood pressure	128(77.1)	38(22.9)
Obesity	80(48.2)	86(51.8)
Stress	115(69.3)	51(30.7)

Table 4: Attitude on risk factors of CVDs of the Respondents (n=166)

Statements	Agree	Undecided	Disagree
	No. (%)	No. (%)	No. (%)
High chance of getting CVDs because of past and / or present health related behaviors	50(30.1)	38(22.9)	78(47.0)
Low fruits and vegetables increase the chances of CVDs	127(76.5)	26(15.7)	13(7.8)
Fatty food will increase the chances of CVDs	135(81.4)	15(9.0)	16(9.6)
Irregular medical checkups will increase chances of CVDs	120(72.3)	30(18.1)	16(9.6)
Carbonated drinks cause CVDs	93(56.0)	55(33.1)	18(10.8)
Fast food will increase the chances of CVDs	110(66.3)	33(19.9)	23(13.8)
Smoking causes CVDs	107(64.5)	35(21.1)	24(14.4)
Consumption of excessive alcohol is to invite CVDs	83(50.0)	51(30.7)	32(19.3)

Table 5. Attitude grading on risk factors of CVDs of the respondents (n=166)

Attitude Grading	Frequency	Percentage
Negative: Less than 5 positive responses (<50%)	21	12.7
Neutral: 5-7 positive responses (50-70%)	88	53.0
Positive: More than 7 positive responses (>70%)	57	34.3

DISCUSSION

This study shows that the majority (53%) of respondents' source of information was social media. Similar results were reported by Adhikari et al.[11] that audio-visual aids were the major source (40.5%) of health information.

This study shows that 57.8% of the respondents had fair, 22.3 % good and 19.9% poor knowledge regarding the risk factors of cardiovascular diseases. The findings of the study were similar with previous study conducted in Nepal by Yadav & Wagle.[12]

In response to knowledge on risk factors of CVDs, this study shows about 76.5% tobacco use, 61.4% fatty food consumption, 69.3% physically inactive and 77.1% high blood pressure. The findings of the study were near similar with previous study conducted in Nepal by Adhikari et al.[11] However, a significant percentage of the respondents don't have the correct information about other CVDs risk factors such as about 57.8% salt intake, 56% diabetes, and 51.8% obesity. The findings of the study were nearly similar with previous study done by Adhikari et al.[11]

In response to attitude on risk factors of CVDs, this study shows that about 83.8% physical inactive, 74.1% obesity, 81.4% high fatty food, 64.5% smoking, 50% consumption of excessive alcohol. The findings of the study were congruent with previous studies conducted in Nepal and Yangon by Yadav & Wagle[12] and Kyi et al.[15] This study shows that the majority (76.5%) of the respondents' low fruits and vegetables intake. This result is different from the study conducted by Adhikari et al.[11] This variation in results may be due to different in sample size and setting with previous study.

Likewise, this study shows that the majority (53%) of the respondents had neutral followed by positive (34.3 %) and negative attitude (12.7%) on risk factors of CVDs. Nearly similar results were reported by Yadav & Wagle[12] that 47.9% neutral followed by positive (31.9%), and negative (20%) attitude on risk factors of CVDs.

CONCLUSION

It is concluded that the knowledge and attitude regarding risk factors of CVDs among the adolescent students are low. It is necessary for planning and implementing awareness program that can raise knowledge and develop positive attitude towards CVDs risk factors so that healthy habits can be formed.

LIMITATIONS

The study was conducted at only one higher secondary school in Kathmandu among small sample size. Therefore, the findings of the study might not be generalized.

Conflict of Interest: None

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Original Article

Knowledge of Diabetes among Diabetic Patients Attending at Tertiary Level Hospital

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ABSTRACT

Background: The prevalence of Diabetes Mellitus is growing at an alarming rate across the globe. Obtaining knowledge regarding diabetes is the initial step in formulating a prevention program for diabetes which can assist in the early detection of the disease and reduce complications. Hence, the objective of this study was to assess the level of knowledge regarding aspects of diabetes among diabetic patients.

Methods: The study was conducted using a descriptive cross-sectional research design at Tribhuvan University Teaching Hospital (TUTH). A purposive sampling technique was adopted. Data was collected in 3 months from December 2017 to March 2018 by using a structured questionnaire through interview method among 422 respondents fulfilling the inclusion criteria attending in medical OPD. Analysis was done by descriptive and inferential statistics.

Results: The study findings revealed that nearly half of the respondents (43.4%) had moderately adequate knowledge, 36.5% of respondents had adequate and 20.1% had inadequate knowledge on diabetes mellitus. The overall knowledge score was 65.37±SD17.58. Knowledge scores in different aspects of diabetes revealed that respondents had adequate knowledge on diet (79.3%), medicine (78.4%), complications with diabetes mellitus (75.8%) and moderately adequate knowledge was found on the meaning of diabetes (62.5%), exercise (67%), diabetic foot care (52.6%), blood glucose monitoring (53.3%) and follow up visit (75.8%). Diabetic patient's age (0.026), sex (0.012), education (<0.001), occupation (<0.001), area of residence (0.005) and attended in diabetic counseling (<0.001) were significantly associated with level of knowledge.

Conclusion: It is concluded that less than half of the diabetes patients have adequate knowledge on diabetes mellitus and it is associated with age, sex, education, occupation, area of residence and attended diabetic counseling.

Keywords: Diabetic patient, glycemic control, knowledge

INTRODUCTION

Diabetes is one of the most prevalent non-communicable disease-causing global challenges to the health and well–being of individuals, families and societies. International Diabetes Federation (IDF).[1]highlights that globally, 537 million adults (20-79 years) are living with diabetes and in the South East Asia (SEA) Region, it comprised of 90 million (1 in 11 adults) people. By 2030, this will rise to 643 million worldwide and 113 million in SEA. Every 1 in 2 adults with diabetes are undiagnosed. Nepal is one of the 6 countries of the IDF SEA region where1.1 million cases of diabetes were present in 2021 and its prevalence in adult was 6.3% (20-79yrs). Every 5 seconds a person die with diabetes and is responsible for 6.7 million deaths worldwide in 2021.[2]The burden of diabetes is considerably high especially in developing countries. More than 80 % of diabetes deaths occur in low and middle-income

countries.[3] By 2030, diabetes will be the 7th leading cause of death.[4]

Glycemic control is considered as the main therapeutic goal for prevention of organ damage and other complications of diabetes. Kalyango, Owino and Nambuya[5] mentioned that non-compliance, poverty, lack of knowledge and poor follow ups are the main factors affecting in poor glycemic control.[6] Compliance to dietary modifications, medications, regular follow-up, foot care and physical activity [7] as well as frequent self- monitoring of blood glucose (SMBG) are essential for optimal glycemic control as well as minimizing long-term complications.[8] Most of the type-2 diabetic patients have unsatisfactory knowledge and inadequate compliance regarding its management.[9],[10] stated that only 23.8% had good knowledge regarding diabetes, while 19.2% had poor knowledge regarding the disease and self- care.

Patients' education on diabetes is an integral component of diabetic care and it creates the basis for self-management.[6] Studies have shown that increasing knowledge regarding disease and its complications has significant benefits with regard to patient compliance to treatment and decreasing complications associated with the disease. In context of Nepal, treatment and management of diabetes is a major challenge and diabetes cases are highly prevalent due to lack of public awareness and knowledge regarding diabetes.[11]Mohammadi et al. [12]mentioned that despite the advancement of treatment modalities and research in disease, the patient's level of knowledge remains low affecting the glycemic control. So, in order to increase patient's compliance, controlling the glycemic level and preventing & decreasing the complications associated with the disease, assessment of patient's knowledge in different aspects including foot care, blood glucose monitoring is very crucial among diabetic patients.

METHODS

A descriptive cross sectional research design was adopted to assess the level of knowledge and to measure the association of level of knowledge with selected variables among diabetes patient. Non-probability purposive sampling technique was adopted. Data was collected among 422 respondents diagnosed as type II DM, on treatment for 3 month and more and attending at Medical OPD of TUTH. Ethical approval was obtained from Institutional Review Committee of Institute of Medicine, Tribhuvan University. After taking administrative written permission from the TUTH, written consent was obtained from each respondent prior to data collection. Voluntary participation and withdrawal from the study at any time without giving reason was considered. Confidentiality was maintained by using the code no. in each form and assuring the respondents that the given information to be used only for study purpose without disclosing their identity.

Data was collected from 25thDecember 2017 to 23rd March 2018. Each patient was interviewed face-to-face in Nepali language by using structured questionnaire which consisted of two parts; Part I: Demographic characteristics, Part II: Patient's knowledge on diabetes. Knowledge was assessed in different aspects i.e., diabetes mellitus, diet, exercise, medicine, diabetic foot care, blood sugar monitoring, follow up and diabetes complications, which includes total 32 items developed by researcher themselves after reviewing the extensive literature reviewed. The responses were scored and each correct response was awarded one (1) score while every incorrect response was awarded Zero (0) score. In multiple response questions, one score was given for each correct response. Based on the total score, the level of knowledge of the respondents was categorized as: adequate knowledge (>75%), moderately adequate knowledge (50%-75%) and inadequate knowledge (<50%).[12] The validity of the instrument was established by consulting with Head of Department of Internal Medicine and Unit Chief of Medicine Department of TUTH, senior dietician, subject experts and reviewing the related literature. Pretesting was done in 10% of sample (43 respondents) receiving diabetes treatment attending at medical OPD of TUTH. Necessary modification was done based on the findings of the pre-testing. The collected data was entered into SPSS version 16 and analysis was done by using descriptive (frequency, percentage, mean and SD) and inferential statistics (chi square test). A p value of <0.05 was assumed to be statistically significant.

RESULTS

Table 1: Socio-demographic Characteristics of the Respondents (n=422)

Variables	Number	Percentage
Age in years		
≤ 40	59	14.0
41-60	227	53.8
>60	136	32.2
Mean age± SD: 54.8±12.36		
Age of Diagnosis (in years)		
≤ 30	26	6.2
31 – 40	86	20.4
41 – 50	134	31.8
>50	176	41.7
Mean age at diagnosis 48.36±11.55		
Sex		
Male	196	46.4
Female	226	53.6
Marital Status		
Married	228	54.0
Unmarried	194	46.0
Ethnicity		
Brahmin/Chhetri	218	51.7
Adivasi Janajati	169	40.0
Terai/Madhesi	16	3.8
Dalit	14	3.3
Others	5	1.2
BMI		
< 18.50 (Underweight)	9	2.1
18.50 - 24.99 (Normal)	256	60.7
25.00 - 29.99 (Over weight)	122	28.9
>30.00 (Obese)	35	8.3

Table 1 reveals more than half of the respondents (53.8%) were between the age of 41-60 years and nearly one third of the respondent (32.2%) were more than 60 years. The mean age was 54.8±12.36. Forty one percent respondents were diagnosed at the age of more than 50years and average diagnosed age was 48.36±11.55. More than half of the respondents (53.6%) were female, 54% were married, and 51.7% were Brahmin / Chhetri. Regarding BMI, 60.7% had normal BMI followed by 28.9% was overweight.

Table 2: Respondents' Socio- demographic Characteristics (n=422)

Variables	Number	Percentage
Area of Residence		
Urban	359	85.1
Rural	63	14.9
Can't read and write	98	23.2
Primary level	131	31.1
Secondary level	105	24.9
Higher secondary level and above	88	20.9
Occupation		
Service	68	16.1
Business	87	20.6
Agriculture	64	15.2
Homemaker	130	30.8
Retired	47	11.1
Unemployed	26	6.2
Family history of diabetes	181	42.9

Table 2 shows that the majority of the respondents (85.1%) were from urban area, 24.9% respondent had secondary level education whereas 23.2% respondents were illiterate. Nearly one third of the respondents (30.8%) were homemaker and 16.1% were involved in service. Among them, 42.9% had family history of diabetes mellitus.

Table 3: Respondents' Disease related Characteristics (n=422)

Variables	Number	Percentage
Duration of DM Diagnosis (in years)		
< 1	49	11.6
1-5	157	37.2
5-10	107	25.4
>10	109	25.8
By symptoms	233	55.2
By chance	189	44.8
Every 3 monthly	195	46.2
Every 6 monthly	33	7.8
Yearly	20	4.7
As per advice	97	23.0
As per need	77	18.2
Current treatment modalities*		
Oral medicine	385	91.2
Insulin	65	15.4
Diet control	361	85.5
Exercise	247	58.5
Weight control	114	27.0

**Multiple Responses*

Table 3 reveals that 25.8% of respondents had been diagnosed as diabetes in >10 years and only 11.6% of respondents had <1 year duration of DM diagnosis, 55.2% discovered DM by symptoms, 26.5% had a previous history of hospitalization due to DM. Nearly half of the respondents (46.2%) visit the health care center every 3 months and 18.2% did visit as per need. Most of the respondents (91.2%) were taking

oral medicine as a treatment modality followed by 85.5% were in diet control and 58.5% of respondents were involved in exercise, and 64.2% had attended diabetic counseling.**Table 4: Respondents' Level of Knowledge on Diabetes Mellitus** (n=422)

Level of Knowledge	Number	Percentage
Adequate (>75%)	154	36.4
Moderately Adequate (50-75%)	183	43.4
Inadequate (<50%)	85	20.1
Overall, Knowledge Mean ± SD 65.37 ±17.58		

Table 4 reveals the respondents' level of knowledge on diabetes mellitus. Out of 422 respondents, nearly half of the respondents (43.4%) had moderately adequate knowledge, 36.5% respondents had adequate and 20.1% had inadequate knowledge on diabetes mellitus. The overall mean knowledge score was 65.37 with SD17.58.

Table 5: Respondents' Knowledge Score in Different Aspects of Diabetes Mellitus (n=422)

Items	Minimum	Maximum	Mean	SD
Meaning of Diabetes Mellitus	0.0	100.0	62.59	24.17
Diet	20.0	100.0	79.31	21.10
Exercise	10.0	100.0	67.06	24.65
Medicine	0.0	100.0	78.49	21.61
Diabetic foot care	6.2	93.7	52.60	25.90
Blood glucose monitoring	23.0	92.3	53.37	15.84
Follow up	20.0	100.0	70.56	22.92
Complications	0.0	100.0	75.81	24.04
Overall, Knowledge	11.2	97.7	65.37	17.57

Table 5 shows that adequate scores were found on diet (79.3%), medicine (78.4%), complications with diabetes mellitus (75.8%) and moderately adequate knowledge score was found on meaning of diabetes (62.5%), exercise (67%), diabetic foot care (52.6%), blood glucose monitoring (53.3%) and follow up visit (70.5%) among respondents**.**

Table 6: Association between Levels of Knowledge with Selected Variables (n=422)

Variables	Level of Knowledge			χ^2 Value	p-value
	Adequate	Moderately Adequate	Inadequate		
Age in completed years					
≤ 40	28(47.5)	25(42.4)	6(10.2)	11.063.	0.026*
41 – 60	89(39.2)	93(41)	45(19.8)		
> 61	37(27.2)	65(47.8)	34(25)		
Sex					
Male	86(43.9)	77(39.3)	33(16.8)	8.859	0.012*
Female	68(30.1)	106(49.6)	52(23)		
Education level					

Illiterate	16 (16.3)	46(46.9	36(36.7)	85.602	<0.001*
Primary level	29(22.1)	67(51.1)	35(26.8)		
Secondary level	49(46.7)	46(43.8)	10(9.5)		
Higher secondary level and above	60(68.2)	24(27.3)	4(4.5)		
Occupation					
Service	35(51.5)	25(36.8)	8(11.8)	43.635	<0.001*
Business	37(42.5)	37(42.5)	13(14.9)		
Agriculture	14(21.9)	22(34.4)	28(43.8)		
Homemaker	35(26.9)	67(51.5)	28(21.5)		
Retired	22(46.8)	22(46.8)	3(6.4)		
Unemployed	11(42.3)	10(38.5)	5(19.2)		
Urban	138(38.4)	158(44.0)	63(17.5)	10.760	0.005*
Rural	16(25.4)	25(39.7)	22(34.9)		
Attended diabetic counseling					
Yes	41(27.2)	118(43.5)	40(14.8)	16.519	<0.001*
No	8(5.3)	65(43.0)	45(29.8)		

*p value significance in <0.05

Table 6 reveals the association between levels of knowledge with selected variables. There was the significant association between age, sex, education, occupation, area of residence and attended diabetic counseling with level of knowledge of respondents as p *value* is <0.05.

DISCUSSION

The findings of the study reveal the respondents' level of knowledge on diabetes mellitus in which nearly half of the respondents (43.4%) had moderately adequate knowledge and 36.5% respondents had adequate and 20.1% had inadequate knowledge on diabetes mellitus. The overall average knowledge score was 65.37 with SD17.58. In terms of moderately adequate and inadequate knowledge, similar findings were reported by Mohammed et al.[12] which shows that 45.6% participants had good, 37.7% moderate and 16.7% poor knowledge on diabetes in Bangladesh. In consistent with this, Chavanet al.[10] stated that only 23.8% had good knowledge regarding diabetes, while 19.2% participants had poor knowledge indicating that most of the patients were suffering with diabetes for many years had lack of knowledge regarding the disease and self-care. The study conducted by Deepali [13]showed that only 55.5% of patients had adequate knowledge about the disease which is nearly similar to this study and moreover, patients having more knowledge better adhered to the treatment. Regarding knowledge on diabetes, those diabetic patients who had adequate and moderate knowledge level have 2.351 times & 1.243 times respectively more likely to have good compliance than who had inadequate knowledge.[14] Knowledge on Diabetic Mellitus has been linked to attaining better medication adherence and glycemic control.[15]

This study revealed the respondent's knowledge score in different aspects i.e. respondents had adequate knowledge on diet (79.3%), medicine (78.4%), complications with diabetes mellitus (75.8%) and moderate knowledge were found on meaning of diabetes (62.5%), exercise (67%), diabetic foot care (52.6%), blood glucose monitoring (53.3%) and follow up visit (75.8%). Badruddin [2] mentioned that people having diabetes often have inadequate knowledge about its nature, risk factors, associated complications, and this lack of awareness

may affect attitudes and practices towards diabetes self-care. The majority of respondents (92.2%) had poor knowledge of the benefits of exercise, weight loss and a healthy diet.[16]

This study highlighted that there was the significant association between age, sex, education, occupation, area of residence and attended diabetic counseling with level of knowledge as *p value* is <0.05. Shrestha[17] and updhaya[18] found that diabetes knowledge in diabetes patients was poor and associated with age, marital status, education level, occupation, and patients with family history of diabetes.

CONCLUSION

The study concludes that less than half of diabetes patients have adequate knowledge on diabetes mellitus and its management. The level of knowledge of patients with DM tends to be associated with their age, sex, education, occupation, area of residence and attended diabetic counseling. Therefore, it is recommended to consider age, sex, education status, occupation, area of residence and attending diabetic counseling in educating the ents with DM to increase the level of knowledge regarding diabetes and its management.

Conflict of interest: None

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Original Article

Knowledge and Attitude on Atraumatic Care to Hospitalized Children among Nurses of a Tertiary Level Hospital in Eastern Nepal

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ABSTRACT

Background: The experience of hospitalization is usually distressing and even traumatic, especially for children. Being hospitalized and receiving care affects the child's response to their illness. Action aimed at solving children's problems by nurses must be based on atraumatic care principles. The objective of the study was to assess the knowledge and attitude of nurses regarding atraumatic care to hospitalized children.

Methods: A descriptive cross-sectional study was conducted among 106 nurses in the tertiary hospital in Eastern Nepal. All the nurses working in the study setting were recruited in the study. A pre-tested semi-structured questionnaire was used to collect the data from the respondents. Obtained data were analyzed in SPSS version 20 by using both descriptive and inferential statistics.

Results: The majority (68.70%) of respondents had adequate knowledge towards atraumatic care among hospitalized children. Similarly, more than half (52.80%) of the respondents showed favorable attitudes in the implementation of atraumatic care. The respondents' knowledge and attitude were not significantly associated with selected sociodemographic variables. However, there was a significant positive correlation between nurse's knowledge and attitude towards the implementation of atraumatic care.

Conclusion: Despite the finding that more than two third of the nurses had adequate knowledge of the implementation of atraumatic care, the favorable attitude towards its application among hospitalized children seems poor. Henceforth, with the finding that a positive correlation exists between knowledge and the attitude of nurses towards the implementation of atraumatic care, a favorable attitude of the nurses could be enhanced by increasing knowledge regarding implementation of atraumatic care.

Keywords: Atraumatic care, attitude, knowledge, nurses

INTRODUCTION

Hospitalization, in general, is a stressful experience for children causing a great deal of psychological distress which may cause changes in child's development and lasting consequences like anxiety that need to be identified and treated as early as possible.[1, 2, 3] The variables which can influence the extent of negative reaction should be investigated so that children and families can be benefited by alerting the nurses to those children who are most at risk and, as well, enhance the effectiveness of preparatory interventions.[4] Children differ in their capacities to manage the stress of hospitalization. The arrangements made for children before hospitalization has been demonstrated to be exceptionally successful in decreasing stress during admission.[5] A successful approach has been evidenced to support mental, physical, social, and emotional well-being as well as reduce hospital anxiety and the ability to adapt by art therapy and by coping and play in different ways.[6, 7, 8] Cautious and balanced array of pharmacological and

non-pharmacological procedures with specialized aptitudes, competence and interpersonal relations are required for painful interventions in pediatric patients and also there is need to remove the prevailing inconsistency between what nurses believe about pain assessment and management.[9, 10, 11]

Admission to the hospital means being separated from one's family and known surroundings, experiencing a change in daily routine, and going through a series of unpleasant experiences opposite to the need of the child's development. The nurses are constantly in touch with the child, providing care should focus on atraumatic care.[12] Modify child-oriented hospital environments like audiovisual with a portable digital versatile disc (DVD), wall hanging cartoons, cartoons-patterned pillowcases, vest with colorful cartoon characters, etc. can increase the fun, feeling safe and comfortable thus reducing the stress of hospitalization.[13,14,15] Hospitalized children when undergoing a traumatizing event, which if overlooked could psychologically harm and hamper their development which in turn increases the stress in parents and deteriorating their satisfaction with the health care services and atraumatic care is the one that minimizes those detrimental effects. [16, 17]

With a paucity of studies identifying nurse's level of knowledge and attitude towards the implementation of atraumatic care among hospitalized children in Nepal, this study aimed to identify the level of knowledge and attitude of nurses in the implementation of atraumatic care among hospitalized children in a tertiary level hospital in Eastern Nepal as well as to find the association between different variables considered under the study.

METHODS

This was a cross-sectional study carried out among nurses working in pediatric units and MCH wards of B.P. Koirala Institute of Health Sciences (BPKIHS), Dharan. The study was conducted during 5th January to 7th February 2020 in the pediatric unit and maternal and child health ward of B.P. Koirala Institute of Health Sciences (BPKIHS), Dharan. The study population consisted of all the nurses (both nurses and ANMs) working in pediatric units (pediatric ward I, pediatric ward II, pediatric emergency, nursery, neonatal intensive care unit, neonatal ward) and maternal and child health wards of BPKIHS. Consecutive sampling method was used to select a total 106 nurses that include PCL and above level nurses and ANMs who were available and given informed written consent to participate in the study during the data collection period. Ethical approval to conduct the study was obtained from the Institutional Review Committee (IRC) of B.P. Koirala Institute of Health Sciences, Dharan, Nepal (IRC Code number IRC/1558/019). A semi-structured questionnaire was used to collect the data. The questionnaire consisted of three parts. The first part assessed socio-demographic profile of the respondents. The second part of the questionnaire consisted of 20 multiple choice questions, assessing the knowledge of nurses regarding atraumatic care. The score was assigned as 1 for each correct response, with an overall score ranging from 0 to 20, classified into two categories, the score of more than 14 was considered as adequate knowledge and less than 14 was considered as inadequate knowledge [17]. Several other similar studies with slight modifications were considered for this classification. The third part of the questionnaire comprised of twenty items and was used to assess the attitude of nurses towards the implementation of giving atraumatic care among hospitalized children. It covers 20 (12 positive and 8 negative) statements, arranged with a Likert scale of 1-5, with the options of Strongly agree (SA), Agree (A), Neutral (N), Disagrees (D), and Strongly disagree (SD). Following marks were assigned for positive statements as SA=5, A=4, N=3, D=2, and SD=1, and a reverse marking approach was applied for negative statements. The total score was the sum of the scores of the items i.e. 100 and was classified into favorable and unfavorable. A cut-off score with a theoretical mean of 75 was considered and a score of at least 75 was marked as a favorable attitude while less than 75 was considered an unfavorable attitude.[27] The questionnaire was pretested among 10 nurses and the analysis of the pretest data indicated that both parts of the questionnaire (knowledge and attitude) be reliable with an acceptable value of Cronbach alpha 0.80 and 0.92 respectively.

Permission for data collection was obtained from the head of the department of pediatric and adolescent medicine and the head of nursing of BPKIHS. Data were collected by the principal investigator herself through distributing the questionnaire. The purpose

of data collection was explained first to respondents to increase awareness about the study. In addition, participants were informed that they have the full right to refuse to participate in the study. They were informed regarding their voluntary participation in the study. Informed written consent was obtained from each participant before starting the study. They were also ensured about maintaining the confidentiality of the information they provided and the information collected was used only for the research purpose.

Data were entered in Microsoft Excel 2010 and were imported to the SPSS -20 version for the analysis. Descriptive statistics was used to describe the socio-demographic variables. Then, Chi-square and Fisher exact test were used to analyze the association of the level of knowledge and attitude with age, education level, designation, currently working clinical area, total nursing experiences after completion of the study, duration of work in the pediatric unit, and maternal and child health ward (MCH), and history of training received regarding atraumatic care.

RESULTS

Demographic characteristics are represented in (Table 1). Of the 106 respondents; more than half (51.90%) was more than twenty-five years age group. There were (72.60%) of respondents with educational qualifications below the bachelor's level. Furthermore, the maximum respondents (82.10%) were staff nurse. More than half (55.70%) of the respondents were from pediatric and MCH wards. More than half (54.70%) had less than five years' experience in a hospital after completion of their study and more than half (51.90%) of the respondents had served at the pediatric unit and MCH ward for less than three years. Only 25.50% had undertaken training on atraumatic care.

The findings showed that about two-third (68.90%) of the respondents had adequate knowledge, and about one-third (31.10%) had inadequate knowledge (Table 2). Similarly, more than half (52.80%) had a favorable attitude, and the remaining, 47.20% had unfavorable attitude towards implementing atraumatic care.

The level of knowledge regarding atraumatic care was not significantly associated with age, education level, designation, currently working clinical area, total nursing experiences, duration of work, and training on atraumatic care ($p>0.05$)(Table 3).

The level of attitude towards atraumatic care was not significantly associated with age, education level, designation, currently working clinical area, total nursing experiences after completion of the study, duration of work in the pediatric unit and maternal and child health ward, and history of training received regarding atraumatic care ($p>0.05$) (Table 4).

Table 1: Sociodemographic Characteristics of Respondents (n=106)

Variables	Number	Percentage
Age		
≤25 years	51	48.1
>25 years	55	51.9
Education level		
ANM	6	5.7
PCL	71	67.0
Bachelor and above	29	27.3
Designation		
ANM	7	6.6
Staff Nurse	87	82.1
Senior staff nurse and nursing officer	12	11.3
Currently working clinical area		
Pediatric ICU and pediatric ER	47	44.3
Pediatric and MCH ward	59	55.7
Total nursing experiences after completion of study		
<5 years	58	54.7
≥5 years	48	45.3
Duration of work in the pediatric unit and MCH ward		
<3 years	51	48.1
≥3 years	55	51.9
History of training received on atraumatic care		
No	79	74.5
Yes	27	25.5

Table 2: Respondents' Level of Knowledge and Attitude towards Atraumatic care (n = 106)

Variables	Number (%)	Mean ± SD
Knowledge level		
Adequate	73 (68.9)	14.90 ± 3.90
Inadequate	33 (31.1)	
Attitude level		
Favorable	56 (52.8)	74.74 ± 7.5
Unfavorable	50 (47.2)	

Table 3: Association of Respondents' Knowledge with Socio-demographic Variables (n = 106)

Variable	Knowledge		Chi-square value	p-value
	Adequate No. (%)	Inadequate No. (%)		
Age				
≤25 years	33 (64.7)	18 (35.3)	0.794	0.373*
>25 years	40 (72.7)	15 (27.3)		
Education level				
ANM and PCL	51 (66.2)	26 (33.8)	0.911	0.340*
Bachelor and above	22 (75.9)	7 (24.1)		
Designation				
Staff nurse and ANM	62 (66.0)	32 (34.0)	3.281	0.099**
Senior staff nurse and nursing officer	11 (91.8)	1 (8.3)		
Currently working area				
Pediatric ICU and pediatric ER	36 (76.6)	11 (23.4)	2.352	0.125*
Pediatric and MCH ward	37 (62.7)	22 (37.3)		
Total nursing experiences				
<5 years	38 (65.5)	20 (34.5)	0.671	0.413*
≥5 years	35 (73.0)	13 (27.0)		
Duration of work in pediatric unit and MCH ward				
< 3 years	33 (64.7)	18 (35.3)	0.794	0.373*
≥3 years	40 (72.7)	15 (27.3)		
Training received on atraumatic care				
Yes	21 (77.8)	6 (22.2)	1.341	0.247*
No	52 (65.8)	27 (34.2)		

* Pearson Chi-square test, ** Fisher's exact test

Table 4: Association of Respondents' Attitudes with Socio-demographic Variables (n = 106)

Variable	Attitude		Chi-square value	p-value
	Favorable No. (%)	Unfavorable No. (%)		
Age				
≤25 years	26 (51.0)	25 (49.0)	0.135	0.713*
>25 years	30 (54.6)	25 (45.4)		
Education level				
ANM and PCL	42 (54.5)	35 (45.5)	0.332	0.564*
Bachelor and above	14 (48.3)	15 (51.7)		
Designation				
Staff nurse and ANM	47 (50.0)	47 (50.0)	2.669	0.131**
Senior staff nurse and nursing officer	9 (75.0)	3 (25.0)		
Currently working area				
Pediatric ICU and pediatric ER	29 (61.7)	18 (38.3)	2.667	0.102*
Pediatric and MCH ward	27 (45.8)	32 (54.2)		
Total nursing experiences				
<5 years	29 (50.0)	29 (50.0)	0.412	0.521*
≥5 years	27 (56.3)	21 (43.8)		
Duration of work in pediatric unit and MCH ward				
< 3 years	23 (45.1)	28 (54.9)	2.358	0.125*
≥3 years	33 (60.0)	22 (40.0)		
Training received on atraumatic care				
Yes	39 (49.4)	40 (50.6)	1.493	0.222*
No	17 (63.0)	10 (37.0)		

* Pearson Chi-square test, ** Fisher's exact test

DISCUSSION

The overall findings of the study revealed that 68.90% of respondents have adequate knowledge regarding the implementation of atraumatic care. Similarly, 52.8% of respondents were found to have a favorable attitude towards the implementation of atraumatic care.

The current study revealed that around two third of the respondents had adequate knowledge regarding the implementation of atraumatic care which is consistent with the similar study by Rahmah who found that 67.7% (n=31) of the respondents had enough knowledge,[19] Meanwhile, in a similar study, Mediani et al. found that 40% (n=72) of respondents had good knowledge of atraumatic care [17] The study by Surastiningsih found that 57% (n=107) of respondents had poor knowledge about atraumatic care. [18] In another study by Pantulu showed almost 1/3rd (n=29) of the respondents had a good knowledge regarding atraumatic care [20]. However, due to insufficiencies in knowledge regarding atraumatic care, physical and psychological distress in children remains inadequately managed, which leads to unnecessary suffering in the vulnerable population.

The current study revealed that around 52.8 % of the respondents had a favorable attitude towards the implementation of atraumatic care. Meanwhile, in a similar study carried out in a general hospital by Mediani et al. showed that the majority 89% (n=72) of the respondents showed supportive attitude towards the implementation of atraumatic care which is higher than the current study.[17] Consistent with Mediani et al., the study by Dianto in similar settings also showed higher prevalence (87.1%, n=31) of supportive attitude towards implementation of traumatic care with respect to the current study.[21]

These differences in the level knowledge and attitude in similar settings may be due to several factors like syllabus incorporated during the course of the study and trainings provided or not during the professional life. Besides, the methods used to classify the level of knowledge and attitude, the difference in sample size, different instruments used and the difference in the outcome rating they used in different studies also could vary the results obtained.

This study showed that higher proportion of respondents belonging to above 25 years age group had adequate knowledge regarding the implementation of atraumatic care as compared to respondents with younger age. In the studies by Hatcher et.al and Fitzgerald et.al have mentioned that with increasing age, a person will have a longer duration of nursing experience, knowledgeable and also have physical and personality maturity that is closely related to decision making [22, 23]. Previous research by Apriani et al. found that a low education level had inadequate knowledge on atraumatic care, which ultimately affects the quality of service given by a nurse [23]. Unlike the knowledge level, the attitude was not found to be favorable in the respondents with higher education levels. Nurses working in the critical wards, which include pediatric intensive care unit and pediatric emergency, a less number of participants had inadequate knowledge and unfavorable attitude towards the implementation of atraumatic care as compared to the nurses working in general wards, which includes pediatric and MCH wards. In a study by Bagherian et al. within the critical care environment, various factors such as patient's critical condition, high technology, a mix of skills, and medical professions influence the potential for caring, which are different from other nursing environments.[24]

When viewed from work experiences, the majority of respondents had adequate knowledge and favorable attitudes about atraumatic care, who has worked less than five years after completion of their study, which is supported with the study by Surastiningsih. [18] A similar study by Mediani et al. showed that over half had experience of working in the hospital for more than ten years [17].Consistent with earlier literature, by Pantulu, knowledge on atraumatic care was seen highest in the nurses having experiences of less than five years.[20] Meanwhile, in the study by Apriani et al. revealed that nurse work experience also influences the implementation of atraumatic care [23]. One of the facts is that the nurses who have just graduated have new knowledge to apply it in given nursing care.[25] Higher proportion of respondents who had worked in child care wards for more than three years had adequate knowledge and attitude on implementing atraumatic care. This is consistent with the findings of Dianto et.al who found that the higher the experience, more the knowledge they gain and better the attitude of nurses towards themselves, patient rights, patient needs and ability to interpret certain information and perform required nursing procedures. [21]

To be optimal in providing atraumatic care to the child a nurse should have training regarding the implementation of atraumatic care. However, few respondents were found to obtain training on atraumatic care. This percentage is negligible in a study by Mediani [17]. Surastiningsih showed that a greater proportion of participants who had no history of training or seminar in atraumatic care had less knowledge. [18] In contrast, Ulfa et al. found a majority of respondents had gained training experiences on atraumatic care that had lowered the stress level of parents.[16]

A highly significant positive correlation was found between the knowledge and attitude scores of the respondents regarding atraumatic care and their attitudes. Similarly, the study done by Fiktoria showed a moderate correlation between nurse's knowledge and attitude regarding the application of atraumatic care [26]. The higher the knowledge more favorable is the attitude regarding the implementation of atraumatic care.

CONCLUSIONS

Despite the nurses had adequate knowledge of the implementation of atraumatic care, the favorable attitude towards its application among hospitalized children was lesser. Henceforth, a favorable attitude of the nurses should be enhanced by increasing knowledge of implementation of atraumatic care among them.

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Original Article

Awareness Regarding Acute Respiratory Tract Infection among Mothers of Under Five Children in a Tribhuvan University Teaching Hospital, Kathmandu

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ABSTRACT

Background: Acute respiratory tract infection is the second leading cause of childhood morbidity and mortality among under-five years children and its prevalence is still high in Nepal. Awareness among parents regarding acute respiratory infection is important. The objective of the study was to find out awareness regarding acute respiratory tract infection among mothers of under-five children in maternal and child health clinic.

Methods: A descriptive cross-sectional study was carried out at maternal and child health clinic of Tribhuvan University Teaching Hospital. Total 106 sample were selected by using non-probability purposive sampling technique. A face-to-face interview using semi- structured questionnaire was used to collect data. Collected data was analyzed by using descriptive and inferential statistics.

Results: This study found that two third (62.3%) of respondents had an adequate level of awareness and more than one third (37.7%) had moderately adequate level of awareness of acute respiratory tract infections. More than two-thirds (75.5%) of respondents answered virus/bacteria as the main cause. Noisy breathing, difficulty breathing, cough, fever, runny nose, sore throat. ear discharge/ear pain was signs and symptoms. Almost one third (32.1%) of respondents knew cyanosis is a danger sign. The significant association was found between age (at p=0.026) and family size (at p=0.002) with level of awareness on acute respiratory tract infections.

Conclusion: The study concluded that nearly two-thirds of mothers have an adequate level of awareness regarding acute respiratory tract infections. This study might be useful to carry out different health promotion-related activities and intervention by concerned stakeholder.

Keywords: Awareness, Acute Respiratory Tract Infection, Mothers of Under five children

INTRODUCTION

Acute respiratory tract infection (ARTI) was the most frequent cause of childhood morbidity in Nepal. It was the second leading cause of childhood morbidity and mortality in the world.[1] Prevalence of ARTI was 2% among under five-year children in 2016 in Nepal.[2] A recent studyfound that 28% of children (1-5 years) were suffering from ARTI out of total children admitted to Nepalgunj Medical College.[3] The total ARTI- related deaths at health facilities were reported to be 176, which is more compared to 155 in 2072/73 and 168 in 2070/71.[4]

A study conducted in India to assess the knowledge, attitude and practice about ARTI among mothers found that 68.9% of respondents have a poor knowledge level on ARTI.[5] A study conducted to assess the risk factors of ARTI in Nepal found that poor socioeconomic status, sex, educational status of mother, crowding, ARTI in family members, rural environment, under-nutrition were found to be significant risk factors.[6] Similarly, study conducted in Bangladesh found that the prevalence of ARTI symptoms appeared to be higher among malnourished children. Furthermore, maternal age, maternal and paternal education, and parental occupation were

significantly associated with ARTI.[7]A cross-sectional study conducted in Dar-es-Salaam, India found that 92.5% of children experienced convulsions followed by difficulty breathing in 90%, breastfeeding or eating difficulties in 88.0%, unconsciousness in 89.8%, and drowsiness in 88% as fatal symptoms of ARTI.[8]

A study conducted in South India to assess the prevalence of ARTI and their determinants in under five children found that prevalence of ARTI was 27% with ARTI risk occurrence in illiterate mothers (37.8%), those having primary schooling (21.5%) and those with more than 12 years of schooling(8.9%).[9]The study conducted to assess knowledge, attitudes, and practices about ARTI among mothersat Civil Hospital Mithi of Tharparkar Desert of Pakistan by Kumar Rajesh showed that 28% had no knowledge about ARTI.[10] A study conducted to assess the knowledge and practice of management of ARTI among mothers of under five years children in Chitwan district found that 48% of the respondents have knowledge on signs of seriousness of ARTI. Similarly, 7% mothers provided modern medicines by themselves, 90% provided supportive treatment at home, 56% of mothers seek health care from nearby health post and 26% from private nursing home.[11]

In the Nepalese scenario, mother is regarded as a caretaker of their children so mother can easily find about the altered health status of their children. Although the incidence of ARTI isin increasing trend and is the serious problem of Nepal, very few studies were done to evaluatethe awareness level of mothers regarding acute respiratory tract infections. So the study was conducted to assess the awareness level of mothers regarding ARTI, to identify its association with different independent variables.

METHODS

A descriptive cross-sectional research design was used. The research was conducted in the Maternal and Child Health Clinic of Tribhuvan University Teaching Hospital (TUTH). The study population weremothers of under-five years children and those who attended in Maternal and Child Health Clinic for any cases of the childhood disorders. Mothers willing to participate in the study were included. Non-probability purposive sampling technique was used to select sample. Questionnaire was prepared by the author consulting with subjectexperts, advisors, and literature in Nepali Version. The questionnaire consists of 2 parts. Part 1 consists of socio-demographic information, part 2 consists of questions related to awareness on acute respiratory infection among mothers having under five children. The questionnaire was pretested among 10% of the respondents. Face to face interview was carried out among 106 respondents from July 6 to July 21, 2019 in Maternal and Child Health Clinic of TUTH. Ethical approval was obtained from the Institutional Review Board, IOM (IRC reference number 493 (611|) 075/76). Permission was obtained from TUTH before data collection. Informed consent was taken prior to data collection. Collected data was kept confidential. The collected data was organized, edited, coded, and entered in SPSS. The data was tabulated and analyzed according to the nature of variables using descriptive statistics which include frequency, percentage, mean, median and standard deviation and inferential statistics including chi-square and Fischer's exact test.

RESULTS

Table 1 shows that more than half (57.5%) of respondents were from the age group 25-35 years with mean age 27.87 (SD= ± 4.496) years. 92.5% of the respondents were Hindu. Two-third were housewives and from a nuclear family. More than two-thirds (79.2%) of respondents were from the urban areas.

Table 1: Socio-demographic Characteristics of Respondents (n=106)

Characteristics	Number	Percentage
Age of Respondent (years)		
15-25	34	32.1
25-35	61	57.5
35-45	11	10.4
Mean age± SD = 27.87± 4.496 years		
Religion		
Hinduism	98	92.5
Non-Hinduism	8	7.5
Ethnicity		
Brahmin/Chhetri	60	56.6
Others*	46	43.4
Level of Education		
Primary	9	8.5
Lower secondary	13	12.3
Secondary	47	44.3
Graduate and above	37	34.9
Occupation		
Housewife	70	66.0
Others[b]	36	44.0
Types of family		
Nuclear	66	62.3
Joint	29	27.3
Extended	11	10.4
Size of a family member		
≤4	61	57.5
5-8	38	35.8
≥9	7	6.6
Place of residence		
Urban	84	79.2
Rural	22	20.8

* Janajati, Dalit, Madhesi, Muslim, [b]=services, agriculture, business, labour

Table 2 shows that everyone have heard about ARTI and responded smoking by family members is associated with the ARTI of the child. 98% of respondents explained environmental pollution followed by 93.4%, 86.8%, 82.1%, 62.3%, 54.7% and 37.7% of them said attached kitchen with bedroom, overcrowding, family history of ARTI, lack of immunization, poorly breastfeeding and poor socio-economic status as the risk factor of ARTI.

Table 3 shows that 97.2% of the respondents said noisy breathing as a sign and symptom of ARTI. 85.8% of the respondents were aware that severe chest in-drawing as a danger signs whereas nearly one-third (32.1%) of them were aware of cyanosis as a danger sign of ARTI.

Table 2: Awareness of Meaning, Risk Factors, and Cause of ARTI among Respondents (n=106)

Variables	Number	Percentage
Meaning of ARTI*		
Infections of any parts of the respiratory tract Pneumonia,	76	71.7
bronchitis	18	17.0
Common cold, cough, tonsillitis	12	11.3
The age group most likely to get ARTI		
Under-five children	55	51.9
Risk factors of ARTI*		
Smoking by family members	106	100
Environmental pollution Attached kitchen	104	98.1
with bedroom	99	93.4
Overcrowding	92	86.8
Family History of ARTI	87	82.1
Lack of Immunization Poorly	66	62.3
breastfeed	58	54.7
Poor socio-economic status	40	37.7
Types of fuel mostly increase incidence		
Firewood, animal dung	99	93.4
The main cause of ARTI		
Virus/Bacteria	80	75.5

*Multiple Response, #Correct Answer

Table 3: Awareness on Mode of Transmission, Signs and Symptoms and Danger Signsof ARTI (n=106)

Variables	Number	Percentage
Mode of transmission		
Air/droplets	66	62.3
Signs and symptoms *		
Noisy breathing Difficulty	103	97.2
breathingCough	101	85.3
Fever	99	93.4
Runny nose	89	84.0
Sore throat	88	83.0
Ear discharge/Ear pain	82	77.4
Danger signs of ARTI *		
Severe chest in-drawingLethargy	15	14.2
Not able to drink	91	85.8
Convulsion	88	83.0
Cyanosis	84	79.2
	74	69.8
	34	32.1

*Multiple Response, #Correct Answer

Table 4: Awareness on Prevention, Home Management and Complications of ARTI (n=106)

Variables	Number	Percentage
Prevention of ARTI*		
Protecting children from colds	106	100
Avoiding exposure of children to dust	105	99.1
Smoking away from the child	105	99.1
Having a clean environment in the house	103	97.2
Exclusive breastfeeding	100	94.3
Taking the child to the hospital for immunization	92	86.8
Not taking the child to the cooking area	88	83.0
Home management*		
Keeping the child warm Cleaning	104	98.1
the nasal passages	101	95.3
Steam inhalation	98	92.5
Providing Tulsi water/neem patta water/ginger withwater	93	87.7
Provide more fluid	82	77.4
Complications	78	73.6
Respiratory failure #Heart	26	24.5
problem	2	1.9
Kidney failure		

*Multiple Response, #Correct Answer

Table 5: Level of Awareness Regarding Acute Respiratory Tract Infection amongRespondents (=106)

Level of Awareness	Number	Percentage
Adequate (>75%)	66	62.3
Moderately adequate (50-75%)	40	37.7
Inadequate (<50%)	–	–
Total	106	100

Table 6: Association between Level of Awareness and selected variables (n=106)

Variables	Level of Awareness		Chi-square value	P-value
	Moderately adequate No. (%)	Adequate No. (%)		
Age of respondent				
≤25 years	18 (52.9)	16(47.1)	4.926	**0.026***
>25 years	22 (30.6)	50(69.4)		
Religion				
Hindu	38 (38.8)	60(61.2)		0.707#
Non-Hindu	2(25.0)	6(75.0)		
Ethnicity				
Brahmin/Chhetri	23(28.3)	37(61.7)	0.021	0.885
Others[a]	17(37.0)	29(63.0)		
Level of Education				
Secondary level and below	27(39.1)	42(60.9)	0.126	0.686
Graduate and above	13(35.1)	24(64.9)		
Occupation				
Housewives	29(41.4)	41(58.6)	1.196	0.274
Others[b]	11(30.6)	25(69.4)		
Size of family				
Less than 5	35(47.3)	39(52.7)	9.538	**0.002***
More than and equal to 5	5(15.6)	27(84.4)		
Place of residence				
Urban	34(40.5)	50(59.5)	1.294	0.255*
Rural	6(27.3)	16(72.7)		

*[a]Janajati, Dalit, Madhesi, Muslim, [b]services, agriculture, business, labour, P-value in boldletters *Statistically significant at P-value<0.05, # Fisher Exact test*

Table 4 represents that 106 respondents were aware on protecting a child from cold prevents ARTI. Almost all of respondents (99.1%) said both avoiding exposure of a child to dust and smoking away from child prevents ARTI. More than two third (73.6%) of respondents answered correctly the complication of acute respiratory tract infections is respiratory failure. Table 5 shows that 62.3% of the respondents had an adequate level of awareness on ARTI with37.7% of the respondents had a moderate awareness level on ARTI. Table 6 explains that there is significant association between age (p=0.026) and family size (p=0.002) with level of awareness on ARTI.

DISCUSSION

A study conducted by Alluqmani et al[12] found that 52% of the respondents were aware on ARTI which is slightly lower (71.7%) than our study. A study conducted in Saudi Arabia by Alluqmani et al. [12], in Bhaktapur by Gyawali, Pahari, Maharjan, & Khadka,[13] and in Bangalore by Ramegowda, Prakruthi, & Rajanna,[14] found that 19.8%, 14.6%, and 40% said microorganisms as the main cause of ARTI respectively which was lower than (75.5%) our study.

A study conducted by Javed, Sidique, &Kanju found difficulty in eating, convulsions, lethargy, and chest in-drawing occurs in ARTI which is similar to the study conducted by Athumani. Similarly, study conducted by Challa &Krushuri,[16] found that 0.3%, 1.2%, and 1.2% of respondents'were aware of chest in-drawing, convulsions, and lethargy as a danger signs of ARTI which are contradicted to present study.A study conducted by Ramegowda, Prakruthi, &Rajanna, (2018)[14] found that exclusive breastfeeding, protection from colds, and avoidance of passive smoking can prevent ARTI which is similar to our study. Similarly, in a study conducted in by Challa& Krushuri[16] respondents answered vaccinations against disease is useful to prevent ARI which is similar toour study.

A study conducted by Mutalik & Raje[5] found good and average knowledge level on ARI to be 24.3% and 6.8% respectively which is lower than our study i.e. 62.3% of respondents had an adequate level of awareness and 37.7% had a moderate awareness level.

Significant association between the age of mothers and awareness level (p-value=0.026) was found in our study. This finding is similar to the study conducted by Javed, Sidique, &Kanju[15] in Pakistan (p-value= <0.001). However, Socio-demographic characteristics like religion, literacy rates, and occupation were not significantly associated with awareness level in our study and the study conducted by Javed, Sidique, &Kanju[15].

LIMITATION

The findings lacks generalizability as the purposive sampling technique was used .Data was collected at only one of the tertiary level hospital of Nepal.

CONCLUSION

Nearly two-thirds of mothers are adequately aware of acute respiratory tract infection and there is a significant association between mothers'age and size of the family with level of awareness.

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Original Article

Status of Pass-out B.Sc. Nursing Graduates from BP Koirala Institute of Health Sciences Dharan Nepal

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ABSTRACT

Introduction: Job satisfaction is a critical issue for any institute and administration. The objectives of the studywere to find out the status of pass-out B.Sc. Nursing graduates.

Methods: Descriptive cross-sectional study design was adopted among the pass-out B.Sc. nursing graduates of BPKIHS from 1996-2015 batches after obtaining ethical clearance from IRC,BPKIHS. Using convenient sampling technique total 107 subjects were included in the study. Pre-tested questionnaire was used to collect data by using Google Drive Online Form. The data was analyzed using SPSS Version-16. Nearly half (45.8%) of the subjects were 31-35 years, married (59.52%), and completed M.Sc. Nursing degree (33.48%). It was found that most of the subjects were satisfied with job. There is significant association between age group with professional status (p=0.001), income (p=0.002), job-satisfaction (p=0.014); similarly, with workplace (Nepal and abroad) and professional status (p=0.001), income (p=0.025), and job- satisfaction (p=0.001) are significantly associated.

Conclusion: Based on the findings it is concluded that most of the pass-out graduates were satisfied with their job. Work places of subjects were significantly associated with nursing status,income, service provided, nursing image and job-satisfaction.

Keywords: Status, Pass-out, Nursing, Students, Nepal

INTRODUCTION

College of Nursing, BP Koirala Institute of Health Sciences (BPKIHS) is a pioneer Nursing Campus in Nepal. In 1996 first time in Nepal Four Years Generic Bachelor Nursing Programme (B. Sc. Nursing) was started with intake of 20 students at BPKIHS; at Present there are 40 annualintakes. According to the study conducted by Tzeng[1], the level of job satisfaction among the Nurses was positively correlated with client satisfaction. Similarly, Watanabe[2] stated that job satisfaction and intention to turnover among care workers have been suggested as important factors determining the quality of services. A study conducted by Gleason[3] stated that job satisfaction is a strong and significant predictor of worker's intention to leave the job. Similarly, another study conducted by Gaur[4] stated that those who are not satisfied with their job are more likely to think about quitting their jobs. Even if they do not actually take the action, just having such thoughts may have a negative impact on the quality-of-care service.

METHODS

A descriptive cross sectional research design was used to conduct this study among pass-out B.Sc. Nursing graduates from BPKIHS from 1996 to 2015 batch working in Nepal and abroad. The research was conducted among all the 351 pass-out B.Sc. Nursing graduates from BPKIHS from 1996 to 2015 batch living in Nepal and abroad and involved in nursing profession. Convenient sampling technique was used to collect the data after obtaining ethical clearance from Institutional Review Committee BP Koirala Institute of Health Sciences.

Considering the prevalence rate of 75%, based on the study conducted on "Professional satisfaction among the B.Sc. Nursing graduates of an institute" by Mehta[11] published on JNMA;2012, 52(187):122-6 considering 0.05 level of significance. The calculated sample size was 107. List of all pass-out B.Sc. Nursing graduates (N=351) was obtained from Academic Section and corresponding address

collected from college of nursing, available friends and relatives. Convenient sampling technique was used to collect the data.

Pre-tested Google Drive Online questionnaire is this the standard tool or the researcher's modified questionnaire was used for data collection. Likert scale was used for rating the satisfaction in different areas. Positive items were rated as strongly disagree to strongly agree. Reverse scoring was given for negative items i.e. strongly disagree to strongly agree. Different items were included to assess the professional satisfaction in each area. Content and face validity of the tool was established by the opinions of the experts from the field of nursing education, management, biostatistics, psychologist and the concerned others. The collected data was analyzed using descriptive as well as inferential statistics i.e. Chi-squire test.

RESULTS:

Socio-demographic Characteristics: Most of the subject's age were less than 35 years (75.82%), and married (59.52%). The main reasons for choosing nursing profession were: failure in MBBS entrance (59.5%), easy access to job (44.1%), serving to sick people (30.6%), better chance to go abroad (27%) and financial problems (20.7%). The details are in table 1.

Job satisfaction among the subjects: Regarding the reasons of job satisfaction, it was found that subjects were fully satisfied with job-security (44.1%), allowances (42.1%), and opportunity for promotion (25.2%). It was found that majority (69.2%) of the subjects reported to serve the working institute for ≤5 years, 28% for 10-15 years, and 15.9% for more than 15 years. Regarding the satisfaction with service provided 47.7% reported fully and partially satisfied equally and only 4.7% were not satisfied at all. Regarding feeling about the image of nursing profession 15.9% reported very good, 30.8% good, 31.8% all right, 12.1% bad, 4.7% very bad and 4.7% reported looked down upon. Regarding feeling of satisfaction to be a nurse 33.6% werefully satisfied where as 54.2% were partially satisfied and 12.1% were not satisfied. It was found that overall 19.6% were fully satisfied with job, whereas 42.1% were satisfied; 28% were just satisfied, 7.5% were dissatisfied and 2.8% were not satisfied at all. The details are in table 2-3.

Association between socio-demographic variables with outcome variable: The age group (<30, ≥30) were significantly associated with professional status, income, nursing image, being nurse and job status at 0.05 level of significance. Similarly, work place (Nepal and Abroad) were significantly associated with nursing status, professional status, income, service provided, nursing image, being nurse and job satisfaction at 0.05 level of significance.

Suggestions to college : The suggestions given by the pass out graduates were: Plan career development counseling or workshop for final year students 21 (19.53%), revision of curriculum including advance technology 13 (12%), improve Supervision in clinical areas 11 (10.23%), create more positions for job at BPKIHS 7 (6.51%), Impart quality education in both theory and clinical 5 (4.65%), Teachers must be updated with recent concepts 4 (3.72%), Online system of payments for certificates (3.72%), start Nurse Practioner course 4 (3.72%) and improve fundamental of nursing practice in clinical 3 (2.79%).

Effect of Covid-19 Pandemic in personal and professional life: Among the pass-out graduates 16 (14.88%) reported that the effect of the Pandemic was a lot; whereas, 72 (66.96%) reported some effect, 9(8.37%) reported the effect was a little bit and only 10 (9.3%) reported there was no any effect.

Table 1: Socio-Demographic Characteristics of Respondents (n= 107)

Characteristics	Category	Number	Percentage
Age Group (Years)	≤25	18	16.5
	26-30	14	13.1
	31-35	49	45.8
	>35	26	24.18
Designation (Current Post)	Staff Nurse	24	22.4
	Registered Nurse	16	14.88
	Nursing Instructor	8	7.5
	Lecture/ Assistant Professor	10	9.3
	Nursing Officer	7	6.51
	Director/Matron/ supervisor etc.	42	39.06
Marital Status	Married	64	59.52
	Unmarried	43	39.99
Occupation ofHusband (if Married) (n=64)	Doctor	13	12.09
	Engineer	5	4.65
	Lecture	5	4.65
	Others: business/ students	41	36.9
Permanent Address: District	Morang	24	22.4
	Kathmandu	14	13.1
	Sunsari	9	8.4
	Others	27	25.11
	Abroad	33	30.69
Current Address:City	Kathmandu	20	18.7
	Biratnagar	10	9.3
	Others	44	40.92
	Abroad	33	30.69
Total experience in nursing field (yrs)	<5	48	44.64
	5-10	42	39.06
	>10	17	15.81
Are you interested for further education	Yes, interested	95	88.8
	Ongoing	8	7.5
	No	4	3.7
Latest degree obtained	B.Sc. Nursing	42	39.06
	M.Sc. Nursing	36	33.48
	MPH	6	5.58
	PhD	4	3.72
	Master in Psychology	8	7.44
	Master in other subject	11	10.23

Table 2: Motivating Factors and Reasons for Choosing Nursing Profession among the Respondents (n=107)

Characteristics	Category	Frequency	Percentage
Motivating factors to join this currently working Institute	Big organization	63	58.8
	Safe place	45	40.5
	As I have no Job Else where	22	19.8
Ultimate aim of career	Stick to nursing service	51	47.5
	Plan to go aboard / foreign	25	23.4
	Switch to other profession / Job	12	10.8
	Not yet decided	19	17.7
Reason for you Choosing nursing profession	Failure in MBBS entrance	66	59.5
	For easy access to job/job security	49	44.1
	To serve sick people	34	30.6
	Better chance to go abroad	30	27.0
	Due to financial problems	23	20.7
Status of a Nurse in society	Very high	5	4.7
	High	26	24.3
	All right / average	46	43.0
	Low	21	19.6
	Very low	9	8.4
Reasons for migration toabroad, if in abroad (n=33)	Career advancement	51	47.7
	Other family members settled in abroad	30	28.0
	Due to marriage	3	2.8
	To earn more money	2	1.9
	Situation of the country	21	19.6
Professional Workload	Too much	31	28.8
	All right	55	51.1
	Not enough	21	19.5
Average monthly income (Rs)	<25000	17	15.8
	25000-50000	44	40.9
	50000-75000	11	10.23
	>75000	35	32.5

DISCUSSION

Socio-demographic Characteristics: Most of the subjects were less than 35 years (75.82%), and married (59.52%). The main reasons for choosing nursing profession were: failure in MBBS entrance (59.5%), easy access to job (44.1%), serving to sick people (30.6%), better chance to goabroad (27%) and financial problems (20.7%). The study conducted by Singh[11] reported that among the B.Sc. nursing students 93% had plan to go abroad and choice of country was USA (41.3%), which is similar to this study. Study conducted by Gunawan[13], reported that there are many nurses do not get the right place to work, and unemployment may push graduates to emigrate to another country (15.8%) or leave the nursing profession which is similar to findings of this study. The study conducted by Paudel[14] on status of nurses in Nepal found that, nursing posts are vacant in comparison to the capacity of the hospital.

Job-satisfaction among the subjects: Regarding job-satisfaction components it was found that they were fully satisfied with job-security (44.1%), allowances (42.1%), opportunity for promotion (25.2%). It was found that overall 19.6% were fully satisfied with job, whereas 42.1% were satisfied; 28% were just satisfied, 7.5% were dissatisfied and 2.8% were not satisfied at all. The study conducted by Burton[6] reported that educational opportunity, intellectual motivation and opportunity to develop new skills, high rank on the list of job satisfaction, which is similar tothe result of this study. Similarly, Yamashita[7] also reported the same findings. Similarly, Murrels[10] reported that the impact of time on job satisfaction in early career is highly dependent up on specific jobs, even within the same profession; which is similar to this study. Study conducted by Mehta[11] reported that highest satisfaction was with status (75%), lowest with working condition (54%), growth and development (72%), achievement and recognition (70%), autonomy (69%), job security (54%) and opportunity (52%); these finding are similar to the finding of this study.

Association between socio-demographic variables with outcome variable: The age group (<30, ≥30) were significantly associated with professional status, income, nursing image, being nurse and job status at 0.05 level of significance. Similarly, work place (Nepal and Abroad) were significantly associated with nursing status, professional status, income, service provided, nursing image, being nurse and job satisfaction at 0.05 level of significance. The study conducted by Tzeng[1] reported that the level of job satisfaction among care workers is positively correlated with client satisfaction; which is similar to this study. Similarly, Gleason[3] and Gaur[4] also reported the similar findings.

CONCLUSION

Based on the findings of study it can conclude that most of the pass-out graduates were satisfied with their job. Work places (Nepal and Abroad) of subjects are significantly associated with nursing status, income, service provided, nursing image and job-satisfaction.

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Original Article

Symptoms Experience among People Living with Human Immunodeficiency Virus in a Clinic

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ABSTRACT

Introduction: Symptoms assessment is the foremost and first step of health care management. People living with Human Immunodeficiency Virus (HIV) experience various physical and psychological symptoms throughout the disease. Adherence to antiretroviral therapy (ART) and an individual's quality of life is adversely affected by poorly managed severe symptoms. This study aimed to assess the prevalence of symptoms among people living with HIV who attended an Antiretroviral Therapy (ART) clinic.

Methods: A descriptive cross-sectional study was carried out among consecutively selected 208 people with HIV who attended an ART clinic. Memorial Symptoms Assessment Scale (MSAS) was used to assess the symptoms. Data were collected through the interview method. Descriptive (Mean, SD), independent t-test, and one-way ANOVA were used for data analysis.

Results: Among 208 respondents, the most prevalent symptoms in people with HIV receiving ART were numbness and tingling sensation in hands and feet (37.5%), followed by lack of energy (33.7%), pain (29.8%) and weight loss (25.5%). Likewise, the most distressing symptoms were: numbness and tingling sensation in hands and feet (20.2%), lack of energy (19.8%), pain (18.3%), and feeling sad (4.3%). Total symptoms score and physical symptoms occurrence were significantly different according to age, CD4 count, duration of taking ART, and presence of comorbidities.

Conclusions: People living with HIV are experiencing various physical and psychological symptoms despite receiving antiretroviral therapy. These distressing symptoms need to be acknowledged and managed holistically.

Keywords: ART center, Distressing symptoms, Experience, People living with HIV

INTRODUCTION

Globally, 36.2 million people were living with HIV at the end of 2018. An estimated 0.8% [0.6-0.9%] of adults aged 15–49 years worldwide are living with HIV, and 23.3 million are receiving Antiretroviral Therapy (ART).[1] In Nepal, about 30,000 adult people living with HIV. Among them, 56% are on antiretroviral therapy.[2]

Symptoms are defined as perceived health-related experiences described by their intensity, frequency, and duration, interference with daily activities, which vary with time.[3-4] People with HIV receiving ART still experiencing various distressing symptoms because of side effects, progression of opportunistic infections and comorbidities.[5-6]These distressing symptoms are higher in patients with comorbidities and multi-morbidities such as liver disease, viral hepatitis, and metabolic and cardiovascular diseases. [7] The most prevalent symptoms were pain, feeling sad, feeling drowsy, worrying, lack of energy, difficulty sleeping, numbness, weight loss, and fatigue.[8-10] and more than 30% of people with HIV in the USA had an average of 7 or more symptoms at the same time. Better physical function was associated with fewer symptoms ($p = 0.047$).[11] The World Health Organization (WHO) stressed that effective symptom management is critical to HIV clinical care.[1] However, the study evidenced the inadequate

consideration for symptom assessment and management, as healthcare providers identify three times fewer HIV-related symptoms than reported by patients.[6] Symptoms management is an essential component and focuses have been alleviating the burden of distressing symptoms, thereby increasing treatment adherence, decreasing risk behavior and improving patients' quality of life[13]. Therefore, this study aimed to assess the prevalence of distressing symptoms in the previous seven- days period among people living with HIV attending ART clinic.

METHODS

The study was conducted among people living with HIV who were coming for a monthly follow-up visit at the ART center of Narayani Hospital, Birgunj, Parsa. A consecutive sampling method was used to recruit 208 respondents. People living with HIV receiving ART, aged above 18 years, and willing to participate were included in the study, except for pregnant and postnatal mothers. The enumerator collected data for four weeks (Jan 9 to Feb 5, 2017). Bachelor nurses were involved in data collection after orientation about the study and data collection process. Data were collected by in-person interviews using a structured schedule of two parts. The first part consisted of sociodemographic information and clinical variables, including stages of the disease, comorbidities, current CD4 count, viral load, and duration of receiving ART. In contrast, the second part consisted of the standardized instrument. Memorial Symptoms Assessment Scale (MSAS) validated multidimensional instruments to assess the symptom burden of people living with HIV, cancer patients, and patients with advanced illnesses were used.[14-15]

The original version of MSAS evaluates multiple dimensions for 32 symptoms (intensity, frequency, and distress), and a short form (MSAS-SF) evaluates the frequency and distress of symptoms in the past seven days.[14] MSAS-SF has three subscale indices of physical symptom distress (MSAS-PHY) that includes 12 prevalent physical symptoms (lack of energy, pain, lack of appetite, feeling drowsy, constipation, dry mouth, nausea, vomiting, change in taste, weight loss, feeling bloated, and dizziness), psychological symptom distress (MSAS-PSY) includes six prevalent psychologic symptoms (worrying, feeling sad, feeling nervous, difficulty sleeping, feeling irritable, and difficulty concentrating) and global distress index (MSAS-GDI) includes four psychologic symptoms (feeling sad, worrying, feeling irritable, and feeling nervous) and six physical symptoms(lack of energy, pain, lack of appetite, feeling drowsy, constipation, dry mouth), Distress for physical symptoms were rated as "not at all to very much." Psychological symptoms were rated as "rarely to almost constantly" andscore range of 0-4. Based on the prior studies, symptoms rated as "quite a bit" and "very much" was considered as high distressing physical symptoms, and " frequently" and "almost constantly" was considered as high distressing psychological symptoms.[16,4]The 32 individual symptom scores were averaged to produce a total MSAS score.

Data were collected after obtaining ethical approval from the Institute of Medicine's Institutional Review Committee (IRC) [Reference no.160 (6-11-E)2/073/074] and hospital authorities. All the respondents explained the study's objective; written consent was taken for voluntary participation in the study. Information about the stage of disease, CD4 count, duration of taking ART, and duration of illness were collected from the treatment record file. Data were analyzed using IBM Statistical Package for the Social Sciences (SPSS) version 20. Descriptive and inferential statistics (one-way ANOVA, independent t-test) were used for data analysis with an acceptable significance level of <0.05.

RESULTS

Half of the respondents (51%) were between the age of 30 and 39, with a mean age of 35.89±8.62. More than half of the respondents (62.5%) were male, 77.9% were married, 86.5% were Hindu, and almost all (96.2%) were employed. Regarding stages of illness, 51.9% were in the second stage, and only 7.7%were in the fourth stage. Furthermore, the majority (69.2%) have taken ART for less than five years. Regarding the current CD4 count, the mean CD4 count was 422.4, and 39% had a CD4 count of less than 350, which was the cut-off value at the time of starting ART. Only 14.4% had associated comorbidities; among them, 43.4% had pulmonary tuberculosis, followed by hypertension and diabetes mellitus (Table 1).

Among 32 symptoms, the most commonly occurring symptom was numbness and tingling sensation in hands and feet (37.5%), followed by lack of energy (33.7%) and pain (Table 2).Numbness and tingling sensation in hands and feet (20.2%), lack of energy (19.8%), and pain (18.3%) were the common distressing physical symptoms experienced by respondents. Similarly, feeling nervous (11.0%), feeling sad (4.3%), and having difficulty sleeping (2.4%) were the distressing psychological symptoms for them (Table 3).

While calculating the difference between demographic characteristics, clinical variables with distress sub-scale (PHYS, PSY, and GDI), and total symptom score, the study showed a significant difference between the age of respondents (p=0.042), current CD4 count (p=0.046) and presence of comorbidities (p=0.000) with total symptoms score. Respondents who had comorbidities experienced more symptoms rather than those who had no comorbidities (Table 4)

Similarly, there was a significant difference between physical symptoms with the duration of taking ART (p=0.02), current CD4 count (p=0.006), and presence of comorbidities (p=0.001) (Table 5)

Table 1: Sociodemographic and Clinical Variables of the Respondents (n=208)

Variables	Number	Percentage
Age (in Years)		
20-29	40	19.2
30-39	106	51.0
40-49	47	22.6
50-59	11	5.3
>60	4	1.9
Mean age and SD 35.89 ±8.6		
Sex		
Male	130	62.5
Female	76	36.5
Transgender	2	1.0
Marital Status		
Married	162	77.9
Unmarried and widow	46	22.1
Religion		
Hindu	180	86.5
Islam	14	6.7
Buddhism	11	5.3
Others	3	1.4
EthnicGroup		
Madhesi	102	49.3
Brahmin/ Chhetri	50	24.0
Dalit	19	9.1
Janajati	12	5.7
Muslim	14	6.7
Others	11	5.2
Clinical variables		
Stage of Illness		
1	25	12.0
2	108	51.9
3	59	28.4
4	16	7.7

Recent CD4 Count		
< 350	81	39.0
>350	127	61.0
Presence of Comorbidities		
No	178	85.6
Yes	30	14.4
Duration of ART		
<1 year	24	11.5
1-5 years	120	57.7
>5 years	64	30.8

Table. 2 Symptoms Experienced by Respondents (n=208)

Symptoms	Number	Percentage
Numbness and Tingling Sensation in Hands/feet	78	37.5
Lack of Energy	70	33.7
Pain	62	29.8
Dry mouth	58	27.9
Weight loss	53	25.5
Cough	51	24.5
Lack of Appetite	51	24.5
Diarrhea	44	21.2
Worrying	43	20.7
Feeling sad	43	20.7
Sweating	42	20.2
Nausea	35	16.9
Don't look like Myself	34	16.3
Change in food taste	34	16.3
Feeling nervous	34	16.3
Feeling irritable	34	16.3
Difficulty in sleeping	30	14.4
Difficulty Concentrating	27	13.7
Feeling blotted	26	12.5
Shortness breath	21	10.1
Mouth Sore	20	9.6
Constipation	20	9.6
Vomiting	19	9.1
Dizziness	18	8.7
Hair loss	18	8.7
Itching	15	7.2
Change in skin	13	6.3
Problem with sexual interest or Activity	6	2.9
Swelling of arms or legs	5	2.4
Problems with urination	5	2.4

Based on Memorial Symptoms Assessment Scale (MSAS)

Table 3. Most Frequently Distressing Physical Symptoms During Past Seven days (n=208)

Physical Symptoms	Distress Level					
	Not at all/ a little bit		Somewhat		Quite a bit/ Very much	
	N	%	N	%	N	%
Numbness and tingling sensation in hands/feet	3	1.4	33	15.9	42	20.2
Lack of energy	7	3.2	22	10.7	41	19.8
Pain	3	2.4	19	9.1	36	18.3
Lack of Appetite	3	1.4	27	13.0	21	10.1
Cough	8	3.8	25	12.0	18	8.7
Dry Mouth	7	5.3	35	6.7	16	7.7
Weight loss	14	6.7	28	13.5	15	7.2
Diarrhoea	12	5.8	21	10.1	12	5.8
Change in the way food taste	2	1.0	22	10.6	11	5.3
Nausea	11	5.3	14	6.7	10	4.8

Table 4. Most Distressing Psychological Symptoms During Past Seven days (n=208)

Psychological Symptoms	Rarely		Occasionally		Frequently/Almost constantly	
	Number	Percentage	Number	Percentage	Number	Percentage
Feeling Nervous	1	0.5	8	3.8	23	11.1
Feeling sad	12	5.8	22	10.6	9	4.3
Worrying	11	5.3	23	11.1	9	4.3
Feeling irritable	6	2.9	22	10.6	7	3.4
Difficulty sleeping	13	6.3	12	5.8	5	2.4
Difficulty in concentrating	3	1.4	21	10.2	3	1.4

Table 5. Difference Between Demographic Characteristics, Clinical Variables, and Total Symptoms Score (n=208)

Variables	No	Total Symptoms Score Mean(SD)	p-value
Age (In years)			0.042*,**
<35 years	125	10.0(6.5)	
>35 years	83	12.1(7.8)	
Gender			
Male	130	10.7(7.0)	0.536*
Female	76	11.3(7.4)	
Transgender	2	6.0(2.8)	
Treatment Duration			
<5 year	144	11.4(8.0)	0.085*
>5 year	64	9.6(4.1)	
Present CD4 count			
< 350	81	12.1(8.6)	0.046**
> 350	127	10.1(5.8)	
Stage of Disease			
1	25	10.7(6.3)	0.103
2	108	9.8(6.2)	
3	59	12.3(8.6)	
4	16	12.9(6.9)	
CComorbidities			
Yes	30	15.2(9.2)	<0.001**
No	178	10.1(6.4)	

** Independent t-test, **p-value significant at <0.05*

Table 6. Difference Between Demographic Characteristics, Clinical Variables and Distress Subscales (n=208)

Variables	No	Distress Subscales		
		MSAS-PHY	MSAS-PSY	GDI
		Mean (SD)	Mean (SD)	Mean (SD)
Age(In years)				
<35 years	125	12.5(9.9)	9.8(5.6)	8.8(7.2)
>35 years	83	14.1(11.4)	12.0(6.6)	11.1(8.8)
		0.111	0.010*	0.0423*
Gender				
Male	130	12.4(10.0)	10.9(6.1)	9.4(7.9)
Female	76	15.3(11.3)	10.4(6.3)	10.4(8.0)
Transgender	2	7.0(1.4)	9.0(4.2)	6.50(3.5)
p*- value*		0.114	0.819	0.566
Treatment Duration				
<5 year	144	14.5(11.6)	11.2(6.4)	10.4(8.7)
>5 year	64	10.9(7.2)	9.62(5.3)	8.1(5.6)
***p*-value**		0.023*	0.080	0.050
Present CD4 count				
< 350	81	15.9(12.4)	11.2(6.2)	10.9(8.4)
> 350	127	11.8(8.9)	10.4(6.0)	8.9(7.5)
p*-value*		0.006	0.361	0.076
Stage of Disease				
1	25	15.1(11.7)	8.9(4.9)	9.2(8.4)
2	108	12.24(9.0)	10.8(6.1)	8.8(7.6)
3	59	1.6(12.52)	11.4(6.9)	10.8(8.3)
4	16	18.3(10.0)	10.0(4.7)	12.2(7.5)
***p*-value**		0.136	0.364	0.259
Presence of Comorbidities				
Yes	30	19.2(12.8)	10.3(6.3)	13.4(9.6)
No	178	12.5(9.8)	10.8(6.1)	9.1(7.4)
***p*-value**		0.001*	0.693	0.006*

*p-value significant at <0.05

DISCUSSION

Symptoms assessment is the major component and first step of health care management. Severe and troublesome symptoms affect adherence to ART and the quality of life of people living with HIV/AIDs.[10] The present study shows that 51.9% were in the second stage, only 7.7% were in the fourth stage, and two third of the respondents had been taking ART for less than five years. This finding correlates with the study done in Namibia[13] which showed that the average time duration on ART was 3-4 years.

People living with HIV may experience a variety of multiple symptoms simultaneously.[17] In the present study, the most prevalent symptoms reported by respondents were numbness and tingling sensation in hands and feet (37.5%), lack of energy(33.7%), pain (29.8%), dry mouth (27.9%), weight loss (25.5%), diarrhea (21.2%), worrying (20.7%), feeling sad (20.7%), sweating (20.2%) and nausea (16.9%) which is consistent with a study conducted by Merlin et al.,[8] reported that the most common symptoms were pain (61.9%) lack of energy (57.1), numbness and tingling sensation in hands and feet (46.2%), sweating (43.0%) and dry mouth (32.7%) diarrhea (31.4%). Similarly, a study by Brand [14] and Harding et al.[4] identified similar symptoms to the present study. In various studies [9,11, 14], psychological symptoms were reported as the most prevalent, whereas in the present study, physical symptoms were more

prevalent. The possible reason for underreporting of psychological symptoms might be the social and religious beliefs around the consequences of psychological and mental disorders in Nepal .[18]

The symptoms responsible for distress were highly variable. Among the reported symptom, the percentage describing it as highly distressing was most significant for numbness. Tingling sensation in hands/feet (20.2%), lack of energy (19.8%), pain (18.3%), and lack of appetite (10.1%) were the most distressing physical symptoms, whereas feeling nervous (11.0%), feeling sad (4.3%), worrying (4.3%) and feeling irritable (3.4%) were related to the psychological symptoms. A study conducted by Brand [14] in Namibia also found that pain (47.7%), worrying (41.2%), feeling sad (33.3%), feeling irritable (20.9%), and difficulty sleeping (29.6%) were the most distressing symptoms. Likewise, a study conducted by Dhingra et al. [19] found the percentage for highly distressing was greatest for worrying (54.8%), weight loss (52.1%), feeling sad (51.5%), pain (44.0%), lack of appetite (41.9%), dry mouth (37.8%) and feeling nervous (35.6%) which was alike with our study findings. However, the study done by Lee et al.,[20] in HIV clinics and community sites in the San Francisco Bay area found that the most distressing symptoms were hair loss (52%) followed by "I don't look like myself" (48%), the problem with sexual interest (47%), feeling sad (43%) and sweating (41%). This variation might be due to the study setting.

The total symptom score was significantly different according to the age and CD4 count of the respondents; these findings parallel with other studies' findings as the prevalence and distress of symptoms were not associated with CD4 count and stage of the disease.[10,15] Moreover, the present study showed that respondents having comorbidities experienced more symptoms (p=0.000). Females experienced high physical symptoms and global distress, likewise in a study conducted by Koole et al.[15] also concluded that females experience higher symptoms burden, however in a study conducted by Nami Sango et al.[21] documented that being male was associated with psychological symptoms of distress, which corresponded with our study findings as male experience higher psychological symptoms distress. This study has significant limitations as being a single-center study that may need more generalization in other settings and populations. The cross-sectional design did not permit an evaluation of changes in symptoms over time, so further study is recommended for a longitudinal study.

CONCLUSION

The study concludes that people living with HIV experience distressing symptoms despite taking regular ART. The most typical physical and psychological symptoms are numbness and tingling in hands and feet, followed by lack of energy, pain, nervousness, sadness, and difficulty sleeping. Likewise, the most distressing symptoms are numbness and tingling in hands and feet, lack of energy, pain, nervousness, sadness, and difficulty sleeping. The total symptoms score and physical symptoms differ according to age, CD4 count, and the presence of comorbidity in people living with HIV. Therefore, healthcare providers and institutional policy should regularly practice comprehensive assessment and management of symptoms during follow-ups at ART centers considering the age, CD4 count, and presence of comorbidities of the people living with HIV.

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Original Article

Awareness Regarding Lithium Toxicity among the Caregivers of Mentally III Patients Attending a Tertiary Level Mental Hospital, Bagmati Province

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ABSTRACT

Background: Lithium is the commonly used drug for bipolar affective disorders. Patient and family education about adverse effects, drug therapy and serum lithium monitoring are essentials to prevent and manage the lithium toxicity. Therefore, this study was conducted with the aim of finding out the awareness regarding lithium toxicity among the caregivers of patients receiving lithium.

Method: A descriptive cross-sectional was adopted in this study. A total of 141 caregivers were selected purposively from the psychiatric outpatient department of Mental Hospital Lagankhel, Lalitpur over a period of four weeks from September 1st to 28th, 2019. Caregivers were interviewed using structured interview schedule. Data were analyzed by SPSS version 16. Descriptive and inferential statistics (chi-square test) were used to describe the socio-demographic variables and measure the association between level of awareness and selected socio-demographical variables.

Results: The study findings revealed more than (52.5%) half of the family members were not aware of the fact that lithium may cause toxicity if taken inappropriately. There was no statistically significant association between the level of awareness and respondents' socio-demographic variables.

Conclusion: More than half of the caregivers are unaware regarding lithium toxicity. Thus indicates a need to provide information and education regarding lithium toxicity to the caregivers of patients taking lithium.

Keywords: Awareness, Caregivers, Knowledge, Lithium Toxicity

INTRODUCTION

A mental disorder is a major disturbance in an individual's thinking, feelings, or behavior that reflects a problem in mental function. Mental disorders cause distress or disability in social work, or family activities.[1] Globally, an estimated 60 million people are suffering from bipolar disorder[2].It has been estimated the prevalence of bipolar disorder is between one to two percent and associated with a wide range of adverse mental and physical health outcomes. It is sixth leading cause of medical disability worldwide.[3, 4]

Lithium is a commonly prescribed medication for bipolar disorder. Lithium has been observed to have a unique therapeutic profile, including mood-stabilizing effects, as well as anti-suicidal and neuro-protective properties.[5] Lithium is used to treat a variety of psychiatric disorders and has demonstrated efficacy in the maintenance phase of bipolar disorder but this drug has a narrow therapeutic index and, if not monitored regularly, can result in toxicity.[6] Lithium toxicity is a potentially serious condition caused by having too much lithium in blood.[7]

Families are a primary care giving resource for people with mental illness. Studies show that families required basic information on facts about mental

illness and its treatment, behavior management skills, and the mental health system in order to better cope with their relatives' illness.[8]The treatment is usually more effective when caregivers are equipped with the proper knowledge.[9] In United States, 54% of care givers of mentally ill patients felt difficulty to find the right drug and dose.[10] In Sao Paulo, Brazil, 52.8% patients had little knowledge in relation to the dosage of medicine.[11] In India, it has been found that knowledge about lithium therapy was below average among the caregivers.[12]Similarly, according to another study in India, only seven percentages of caregivers had good knowledge.[13] Patients on lithium therapy may experience adverse effects of lithium that can be mild to severe in range which may require prompt management. Thus, psycho education to both patients and the caretakers is equally important to prevent and mange complication related to lithium therapy.[14, 13]

Studies show that knowledge about lithium in care givers tends to influence knowledge of their patients. So, it is important to provide information about the illness and lithium therapy which can influence the course of disease and reduce the risk of toxicity.[12]

Hence, with the aim of the finding out the awareness regarding lithium toxicity among the caregiver of mental ill patient, this study was carried out.

METHOD

A descriptive cross sectional research design was used in this study. The study was conducted in a tertiary level governmental mental hospital Lagankhel, Lalitpur district of Nepal among the caregivers of patients taking lithium. Caregivers living with and providing the care to patient at least for one month were included as study sample. A total of 141 caregivers who agreed to take part in the study were selected using on probability purposive sampling technique.

Structured questionnaire was developed by researchers based on research objectives that consisted of two parts. Part I was related to socio demographic variables and disease related characteristics consisting of 22 items, whereas part II was related to awareness on lithium toxicity consisting 16 items questions. Back translation was done in Nepali language. Content validity was established through extensive literature review and consultation with subject experts. Data was collected after getting ethical approval from the Institutional Review Committee of TU and administrative authority of Mental Hospital Lagankhel. Informed written consent was obtained from each respondent. Confidentialitywas maintained by not disclosing the information as well as the obtained data was used only for the research purpose. Data was collected via in-person interview using structured questionnaire. Data collection was done during September 2019. Data was analyzed with descriptive and inferential statistics.

RESULT

Age range of the respondent were 19-59 where 36.2% were from the age more than and equals to51 years, and 58.9% of the respondents were male and 41.1% of them were female. Nearly half of respondents (48.2%) were Brahmin\Chhetri followed by Janajati 33.3%. More than half (58.9%) of the respondents were from nuclear family. Likewise, 35.5% of the respondents were spouses of the patient. In terms of educational status, Majority (80.1%) of the respondents were literate, among them 26.3% had achieved education of bachelor level. Regarding occupation, one third (30.5%) of the respondents were farmers. They had their family income sufficient for one year and surplus.

Table 1: Socio–demographic Characteristics of Respondents **(n=141)**

Characteristics	Number	Percentage
Age group in completed year		
≤30	22	15.6
31 – 40	31	22.0
41 – 50	37	26.2
≥51	51	36.2
Mean Age ±SD =45.4±13.1		
Sex		
Male	83	58.9
Female	58	41.1
Ethnicity		
Brahmin\Chhetri	68	48.2
Janjatis	47	33.3
Dalit	22	15.6
Madhesi	4	2.8
Marital Status		
Married	131	92.9
Unmarried	10	7.1
Relationship with patient		
Spouse	50	35.5
Parent	49	34.8
Son	25	17.7
Daughter	10	7.0
Other (sibling, daughter)	7	5.0
Types of family		
Nuclear	83	58.9
Joint	58	41.1
Education		
Can read and write	113	80.1
Cannot read and write	28	19. 9
Level of Education (n=113)		
Informal Education	26	23.0
Primary	15	13.3
Secondary Level	16	14.2
Higher secondary level	26	23.0
Bachelor level	30	26.5

Table 2: Respondents' Awareness regarding Periodic Blood Testing during Lithium Therapy (n=141)

Variables	Number	Percentage
Need of Periodic Blood Testing		
Yes #	110	78.0
No	7	5.0
Do not know	24	17.0
Time Interval for Blood test (n= 110)		
Every 3 months	5	4.5
Every 6 months#	18	16.4
Every 6 months to 1 year	6	5.5
As per suggestion	36	32.7
Do not know	45	40.9
Reasons for Regular Blood Test (n=110) *		
To measure the amount of serum lithium level in blood	38	34.5
To check thyroid hormone level	25	22.7
To check sugar	14	12.7
To check kidney function	5	4.5
Don't know	38	34.5
Time interval between the last dose of lithium intake and blood investigation for lithium level (n=38)		
12 hours after last dose#	15	39.5
Other Test require while taking lithium*		
Electro cardio graph (ECG)	20	18.2
Thyroid test	14	12.7
Urine test	3	2.1
Do not know	113	80.1

*Multiple Responses #Correct Response

Table 2 indicates that 78% of the respondents were aware of the need for periodic blood tests. Likewise, 16.5% respondents said their patient required a blood test every 6 months and more than one third (34.5%) of respondents were aware to measure serum lithium level. Among them 39.5% of respondents were aware that serum lithium level should be done 12 hours after the last dose of lithium. Likewise, 18.2% respondents were aware about monitoring of ECG while being on lithium therapy.

Table 3: Respondents' Awareness Regarding Effects of Lithium (n= 141)

Variables	Number	Percentage
Therapeutic Effect of lithium*		
Reduce aggression	98	69.5
Stabilization of mood	62	44.0
Reduce impulses	9	6.4
Prevent relapse	46	32.6
Side effects of lithium*		
Diarrhea	3	2.1
Increased thirst	22	15.6

Weight gain	17	12.1
Hand tremor	13	9.2
Constipation	3	2.1
Others**	4	6.4
Do not know	79	56.0
Potentiality of Toxic effects of lithium	2	1.4

**Multiple Responses, ** Others, Acne-2, Excessive sweating-2, Frequent urination-1*

Regarding the effect of lithium, 69.5% of the respondents answered lithium reduces aggression concerning the side effects, 15.6% of respondents answered increased thirst likewise 12.1% of respondents said weight gain. Almost all (98.66%) of respondents were unaware about potentiality to toxic effect of lithium.

Table 4: Respondent's Awareness Regarding Prevention of Lithium Toxicity (n=141)

Variables	Number	Percentage
Missed dose management		
Take missed dose as soon as remembering it	25	17.7
Leave the missed dose, if it's time for the next dose, #	102	72.3
Take the missed dose and regular dose at once	6	5.7
Don't know	8	4.3
Can take other medication without doctor advice		
Yes	74	52.5
No #	67	47.5
Reason for not taking other medication (n=67) *		
To maintain serum lithium level	1	1.5
To prevent drug interactions	62	93.0
Do not know	5	7.5
Precaution to be taken in home*		
Take medicine as directed by Physician	135	95.7
Fluid intake 2-3 liter	130	92.2
Do not use any medicine without prescription	124	87.9
Do not engage in activity that require attention	2	1.4
Home Management of diarrhea related to Lithium Intake *		
Continue lithium	76	53.9
Take advice from the doctor	59	41.8
Increase the fluid intake and continue the dose of lithium	134	95.0

More than two third (72.3%) of respondents were aware about management of missed dose of lithium and near about half (47.5%) of respondents answered not to give any medicine without doctor advice. Concerning the reason for not taking other medication, most (91%) of the respondents were aware of preventing drug interaction. Almost all (95.7%) the respondents answered take medicine as directed by physician and equal percentage (95%) of respondents answered about increase the liquid intake and continue the dose of lithium for the management of diarrhea.

Table 5: Respondents' Awareness regarding Lithium Toxicity

Level of Awareness	Number	Percentage
Unaware (<50 %)	74	52.5
Aware (≥50 %)	67	47.5
Total	**141**	**100**

Table 5 shows that less than half 47.5% of respondents were aware regarding lithium toxicity.

Table 6: Association between Awareness and Socio-demographic Characteristics of Respondents (n=141)

Variables		Awareness		χ^2	p – Value
		Unaware (No.) %	Aware (No.) %		
Age of Respondent	<50	40 (28.4)	41(29.0)	0.733	0.392
	≥50	34 (24.1)	26 (18.4)		
Sex	Male	42 (29.8	41 (29.0)	0.286	0.593
	Female	32 (22.7)	26 (18.4)		
Religion	Hindu	59 (41.8)	58 (41.1)	1.164	0.281
	Others	15 (10.6)	9 (6.4)		
Ethnicity	Brahmin/ Chhetri	37 (26.2)	31 (22.0)	0.196	0.658
	Others	37 (26.2)	36 (25.5)		
Marital Status	Married	68 (48.2)	63 (44.7)	0.244	0.621
	Unmarried	6 (4.3)	4 (2.8)		
Type of Family	Single	44 (31.2)	39 (27.6)	0.023	0.880
	Joint	30 (21.3)	28 (19.9)		
Education	Literate	60 (42.5)	53 (37.6)	0.086	0.769
	Illiterate	14 (9.9)	14 (9.9)		
Occupation	Agriculture	11 (7.8)	4 (2.8)	2.926	0.087
	Non Agriculture	63 (44.7)	63 (44.7)		

Level of significance at <0.05

This study shows that there was no significant association between the level of awareness and selected variables like age, sex, religion, ethnicity, marital status, education and occupation of respondents.

DISCUSSION

Among 141 respondents surveyed, the mean age was 45.14 years and more than half (58.9%) were female. Regarding the relationship with patients more than one-third (35.5%) were the spouses and nearly same proportion (34.8%) were taking care as parents. The finding from current study reveals that majority (78%) of respondents were aware of the need for periodic blood testing. This finding is in contrast to the study conducted in India that showed 50% of the respondents were aware about regular blood testing.[12]However,onlyone-third (34.5%) of respondents were aware of the reason for regular blood testing. This finding is consistent with the finding of study conducted at Coimbatore India in which slightly greater proportion of respondents (48.7%) were aware of the reason of periodic blood testing.[12] Current study result shows that, 39.5% of respondents were aware about the fact that serum lithium level should be tested 12 hours after intake of

last dose of lithium and this finding is similar to the study done in Turkey.[13]Another study done in India has finding inconsistent to the finding of current study where 53.8% of caregivers had answered correctly.[12]

The study shows that the respondents' knowledge regarding action of lithium is low, as less than half (44.0%) of the respondents could correctly answered that lithium acts as mood stabilizer. This finding is similar to the study conducted in Coimbatore, India showed that 35.9% caregivers identified lithium as a mood stabilizer. This might be because the patient and family teaching was not focused in that topic. Regarding awareness about side effects of Lithium, more than half (56%) of the respondents were not aware about any of common side effects, only 15.6%, 12.1% and 9.2% could mention the side effects increased thirst, weight gain and hand tremor respectively. This finding is contrast to study done in India where 34% of caregiver were aware about side effect of lithium. The study reflects that family members of patients receiving lithium are prone to overlook the initial symptoms of toxicity and adverse effects. The current study reveals that almost all (98.6%) respondents were unaware of toxic effects of lithium. This finding has been contradicted with study conducted in Coimbatore, India where nearly 50 % of the respondents were aware about the warning signs of lithium toxicity.[13]

In contrast to the awareness on toxicity, the respondents were found a bit aware about the possibility of drug interaction while being on lithium therapy. The study finding revealed that nearly half (47.5%) of respondents were aware that other drugs should be avoided while taking lithium. This finding is consistent with the study done in Coimbatore, India where 50% of caregivers were aware about it.[13] Concerning reasons for not taking other medication, almost all (91%) of the respondents were aware of preventing drug interaction.

The finding shows that family members are aware about the need of continuing the medicine according to prescription from physician and as 95.7% of respondents agreed on this fact. Similarly, 92.2% of respondents answered that the patients need to take 2-3 lt. of water per day. Regarding the precaution to be taken during episode of diarrhea while taking lithium, most of the respondents (> 90%) were aware of need of increasing liquid during suffering from diarrhea. This finding has been contradicted with study done in Coimbatore, India where 56.4% of caregivers were aware of this fact.

The study result reveals that 52.5% of the respondents were not aware of lithium toxicity. This finding is also contradicted with another study done in India, which showed that 55% had average knowledge, 38% had poor knowledge and only 7% had good knowledge regarding lithium toxicity.[13]

The current study found no statistically significant association with awareness and selected variables. However, the study done in India showed that there was statistically significant association between the level of knowledge and education (p=0.02), sex (p=0.007), and socioeconomic status (p=0.007).[13]

CONCLUSIONS

The study has concluded that care givers of patients taking lithium are not aware of lithium toxicity. The awareness of caregivers is not associated with their socio-demographic characteristics.

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Conflict of Interest: None

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Original Article

Knowledge on Puerperal Sepsis among Hospitalized Postnatal Mothers in a Lumbini Provincial Hospital

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ABSTRACT

Introduction: Puerperal sepsis is a leading cause of maternal mortality and morbidity in developing countries due to the lack of knowledge on preventive measures. The objective of the study was to find out the knowledge on puerperal sepsis among hospitalized postnatal mothers.

Method: A descriptive cross-sectional research design was adopted among 262 postnatal mothers who were admitted in Lumbini Provincial Hospital. Data were collected by using non-probability purposive sampling technique, through structured interview schedule. Data was analyzed by using descriptive and inferential statistics.

Result: More than one third of respondents (38.2%) were from the age group 25-29 years with mean age was 26.21±4.44. Only 19.1% had good level of knowledge on puerperal sepsis.There was statistical association between level of knowledge on puerperal sepsis and ethnicity ($p=0.006$), educational level ($p<0.001$) and number of antenatal checkup ($p=0.012$).

Conclusion: The majority of the respondents had fair level of knowledge on puerperal sepsis. However, only few respondents had known the important issue regarding the risk factors such as prolonged labour, sexual intercourse in late pregnancy and anemia. There is need to increase awareness program for antenatal as well as postnatal mothers that would help to promote healthy postpartum period.

Keywords: Knowledge, Postnatal mother, Post-partum Period, Puerperal sepsis

INTRODUCTION

Maternal mortality is important indicator of the overall health of a population and functioning of the health system. The global estimated in 2017 every day approximately 810 women died from preventable causes related to pregnancy and childbirth[1]. Puerperal sepsis is leading cause of preventable maternal death, accounting for up to 11% of maternal death worldwide. [2] In Kenya, puerperal sepsis accounts for approximately 15% of maternal deaths. The challenges of the prevention and management.[3]. In Nepal 28% of maternal mortality occur in postpartum period where puerperal sepsis is fifth leading cause accounting 5%[4]. A study conducted in Nepal show that Puerperal sepsis was the most frequently diagnosed in 33.3%[5].

Puerperal sepsis is an important public health problem[6]. Education and knowledge plays an important role in prevention of puerperal sepsis[7]. In Egypt 87.4% of women had unsatisfactory knowledge on prevention of puerperal sepsis[8]. In India 87.5% respondents had inadequate knowledge,[9]. In Nepal there has been limited study conducted regarding the knowledge on puerperal sepsis.

METHODS

A descriptive cross-sectional design was used to find out the postnatal mothers level of knowledge. Non probability purposive sampling technique was used to select 262 sample using structure interview schedules. Ethical approval was taken from IRC, TUIOM. Administrative approval was taken from Lumbini Provincial Hospital, and written consent taken from each respondent. Sample size was

calculated for this study through the use of sample size calculation formula n= Z^2pq/d^2 (Cochran, 1977) by taking prevalence of Knowledge regarding puerperal infection (37%) from Hospital based Study in India(Sarkar et al., 2019) as below:n=Z^2pq/d^2

where, n=required sample size for the study , Z= 1.96 for 95% confidence interval=Prevalence of knowledge on puerperal infection= 37%= 0.37,q= 1-p=1-0.37=0.63, d=permissible error, value of d=6%=0.06 (taking 6% permissible error and 95% of confidence interval)

Then required sample size (n)= $\frac{1.96^2 X 0.37\ X 0.63}{0.06^2}$

n=248.7~ 249To adjust for possible non response, the sample size included additional 5 % of respondent in the calculated sample size.Hence, final total sample size was (249+13)=262 postnatal mothers.

Inclusion criteria were postnatal mothers who gave birth at Lumbini provincial Hospital and within six weeks of postnatal period and willing to participate in study. The research instrument was consists of two: Part I: Questions related to Socio-demographic information and Obstetric factors of respondents; included 13 questions. Part II: Questions related to knowledge on puerperal sepsis. It consist of 21 question that included 17 multiple choice questions (MCQ). The maximum possible score was 40. Content validity ensured by consultation with research advisor, subject experts. The instrument was pretested in 10% sample. Ethical approval was taken from IRC, TU, IOM. Administrative approval for data collection was taken from Hospital Administration of Lumbini Provincial Hospital, .Respondents were selected purposively among the postnatal mothers who were supposed to discharge by medical team. The postnatal mothers who had delivered through caesarean section were included in third day of caesarean section. Data was collected during day time as per the convenience of respondents. Before collecting the data respondent's comfort was ensured. Data was collected from February 14 to March 5th2021.The average time taken to complete interview for one respondent was 15-20 minutes. All collected data was overviewed, checked and verified daily for its completeness, consistency and accuracy. Data were inter SPSSversion 20. Data was summarized using descriptive statistics (Frequency, Percentage, Mean, and Standard Deviation) and inferential statistics (Chi square test).

RESULTS

Table 1: Respondents' Knowledge on Puerperal Sepsis (n=262)

Variables	Number	Percentage
Meaning		
Infection of the genital tract	254	96.9
Cause		
Microorganism	260	99.2
Risk Factors *		
Poor perineal hygiene	262	100.0
Poor personal hygiene	262	100.0
Delivery in an unhygienic environment	243	92.7
Poor Nutrition	235	89.7
Premature rupture of membrane	161	61.5
Prolonged labour	94	35.9
Sexual intercourse in late pregnancy	43	16.4
Retained bits of placental tissue	40	15.3
Anaemia	39	14.9
Sign and Symptoms *		
Foul-smelling vaginal discharge	238	90.8
Fever	198	75.6
Pain, swelling and pus discharge from tear or episiotomy site	157	59.9
Lower abdominal pain	115	43.9
Sub involution of uterus	8	3.1
Treatment		
Seek health facility	262	100.0
Complication of Puerperal Sepsis*		
Uterine problem	250	95.4
Infertility	202	77.1
Infection of blood	44	16.8
Don't know	8	3.1

*Multiple Responses

Table 1 reveals that almost all of the respondents (96.9%) knew the meaning of puerperal sepsis.

Regarding the cause of puerperal sepsis, almost all of them (99.2%) had known that microorganism as the causative factor. In regard to risk factors entire respondents (100%) knew that poor perineal hygiene and poor personal hygiene were the risk factors of puerperal sepsis. Beside that only 16.4%, 15.3% and 14.9%, respondents knew that sexual intercourse in late pregnancy, retained bits of placental tissue and anemia as the risk factors of puerperal sepsis respectively. Regarding the sign and symptoms, almost all of the respondents (90.8%) knew that foul-smelling vaginal discharge followed by fever (75.6%) and only 3.1% of respondents knew sub involution of the uterus. Furthermore, entire respondents (100%) knew that seeking a health facility is required for the treatment of puerperal sepsis. With regard to complication of puerperal sepsis, almost all of the respondents (95.4%) knew uterine problem followed by infertility (77.1%) and only 16.8% knew infection of the blood.

Table 2: Respondents' Knowledge on Activities to Prevent Puerperal Sepsis (n=262)

Variables	Number	Percentage
Taking Iron in the postnatal period	237	90.5
Taking iron one tab for 42 days (n=237)	155	65.4
Avoiding sexual intercourse in the postnatal Period	84	32.1
Three times of Postnatal Visits	25	9.5

Table 2 shows, almost all of the respondents (90.5%) knew that it is necessary to take the iron tablet in the postnatal period. Among them, only 65.4% of respondents knew the correct duration. Regarding the sexual intercourse, only 32.1% knew that the sexual intersexual should be avoided for at least six weeks after delivery. Regarding the required times of postnatal visit, only 9.5% of respondents knew the correct frequency of postnatal visit.

Table 3: Respondents' Level of Knowledge on Puerperal Sepsis

Level of Knowledge	Number	Percentage	95% confidence interval	
			Lower	Upper
Poor (<50%)	27	10.3	6.4	13.6
Average (50%-75%)	185	70.6	65.50	76.49
Good >75%	50	19.1	14.3	23.7
Total	**262**	**100.0**		

Table 3 shows that majority of the respondents (70.6%) had average level of knowledge regarding the puerperal sepsis, 19.1% had a good level and 10.3% had poor level of knowledge. The mean score of knowledge was 63.86±11.19.

Table 4: Association between Level of Knowledge on Puerperal Sepsis and Socio- demographic Variables (n=262)

Variables	Level of Knowledge		χ^2	P-value
	Poor No. (%)	Average to Good No. (%)		
Age Group(in a year)				
Up to 25	14(11.7)	106(88.3)	0.444	0.50
26 and above	13(9.2)	129(90.8)		
Ethnicity				
Brahmin/Chhetri	6(4.8)	118(95.2)	7.611	0.006
Others*	21(15.2)	117(84.8)		
Education Level				
Up to basic level	20(40.0)	30(60.0)	61.905	0.001
Secondary and more	6(2.9)	204(97.1)		
Occupation				
Home maker	25(12.1)	181(87.9)	3.494[a]	0.062
Others**	2(3.6)	54(96.4)		
Type of Family				
Nuclear	10(11.0)	81(89.0)	0.071	0.791
Joint/Extended	17(9.9)	154(90.1)		

¥ - Continuity correction, a-expected cell value >5

**: Dalit, Janajati, Madhesi, Muslim **: Service Holder, Business*

Table 4 shows that there was a statistically significant association in level of knowledge with ethnicity and education level. There was no statistically association with level of knowledge on age, religion, occupation and type of family.

Table 5: Associations between Level of Knowledge and Obstetric Variables (n=262)

Variables	Level of Knowledge		χ^2	P-value
	Poor No. (%)	Average to good No. (%)		
Parity				
First delivery	12(8.8)	124(91.2)	0.672	0.412
More Than one time delivery	15(11.9)	111(88.1)		
Number of Antenatal Checkups				
Less than four times	5(27.8)	13(72.2)	6.384	0.012
Four and more than four	22(9.0)	222(91.0)		
Type of Health Facility Used				
Health post	18(13.9)	117(86.7)		
Government hospital	7(11.7)	53(88.3)	5.344[a]	0.069
Other health facilities	2(3.0)	65(97.0)		

P-Value significant at <0.05 level χ^2-Pearson's Chi-square Test

A-expected cell value >5 other health facilities: Private hospital, Local clinic

Table 5 shows that there was a statistically association between respondents' level of knowledge and frequencies of antenatal checkup. There was no statistically association between the level of knowledge and parity (p=0.412) and type of health facility used for antenatal care (p=0.069).

DISCUSSION

Majority of the respondents (70.6%) had a fair level of knowledge, only 19.1% of respondents had a good level and 10.3% of respondents had a poor level of knowledge. This finding is similar to the study conducted by Sarkar[10] in Hariyana, India which showed that 63.33% had an average level of knowledge. This finding was also supported by the similar study conducted in Bhavnagar; India where 65% of the respondents had an average level knowledge Belagavi[11]. But this finding was inconsistent with the study conducted by Masoud[12] in Egypt, where almost all of the respondents (96.0%) had poor level of knowledge regarding puerperal sepsis. This finding might be inconsistent due to education where one third of respondents were illiterate.

The knowledge on danger sign in postnatal period, almost all respondents (98.5%) said excessive vaginal bleeding and 50.0% said fever are the danger signs in postnatal period. This findings were higher than the study conducted in Ethiopia by Amenu[13]where only 60.2% of respondents said vaginal bleeding and 36.8% said fever as the danger signs in postnatal period. However, the other responses regarding the postnatal danger signs in this study like foul smelled lochia (40.5%) and convulsion (24.8%) were supported by the above study where 38.5% of respondents said foul smelling vaginal discharge and 22% of respondents said convulsion as the danger signs in postnatal period.

This study showed almost all of the respondents (96.9%) knew meaning of puerperal sepsis, which in contrast with the study conducted by Gamel[6] Where only 30% knew about it. This might be due to dissimilar respondents where all of the respondents were primipara. Present study showed that entire respondents knew poor perineal hygiene and poor personal hygiene as the risk factors of puerperal sepsis. Besides that, other responses of risk factors were delivery in unhygienic environment (92.7%), premature rupture of membrane (61.5%), poor nutrition (89.7%) and sexual intercourse in late pregnancy (16.4%). This finding was inconsistence with the study conducted in Uganda by Ambrose[14] where it was found that only 54% respondents believed that the cause of puerperal sepsis was poor personal hygiene and 26% of the believed that some cultural practices were the causes of puerperal sepsis.

Regarding sign and symptoms, almost all of the respondents (90.8%) answered foul smelling vaginal discharge, fever(75.6%), pain, swelling and pus discharge from tear or episiotomy site (59.9%)and lower abdominal pain (43.9%) whereas only 3.1% respondents answered sub involution of uterus as the symptoms of puerperal sepsis. This finding was inconsistent with the study conducted by Ibrahim[15] in Uganda among the midwives where it was found that tender abdomen (90%) and pus discharge from the birth canal (86%)as the sign and symptoms of puerperal sepsis. However, the other responses like high fever and foul smelling from birth canal (80%) supported the present study. This might be due to dissimilar respondents.

Regard to the meaning of perineal hygiene 100% stated cleaning perineal area and changing the pad frequently. Allmost all respondents (93.1%) knew perineal pad should changeevery 3-4 hours. This finding was higher than a study conducted by Timilsina[16] in Nepal which showed that 85.71% knew keeping vulva clean and dry is perineal hygiene. Likewise, 83.16% had knowledge on frequently. The difference might be due to the different source of information where majority of respondents got information from friends and family.

More than two-third of the respondents (67.9%) knew that technique of cleaning perineal, (94.7%) said that sanitary pad was the best type of perineal pad and 9.5% respondents gave correct postnatal visit time. This result was not in agreement with the study conducted by Ganiga[17] in India, which showed that only 77% of respondents were aware that perineum should be cleaned after defecation and urination, 53% were aware on cleaning perineum area, and 65% were aware to use cotton pads in postnatal period and 54% were aware about postnatal checkup.

The potential difference could be due to difference setting.

In present study 90.5% of respondents knew that to take iron in postnatal period and 65.4% knew proper duration. It was inconsistent a study conducted by Shah[18] where 60% knew about it and only 25% know the during. It might be due to dissimilar setting and respondents.

Present finding revealed uterine problem (95.4%), subfertility (77.1%) and infection of blood (16.8%) were the complications of puerperal sepsis. This finding was supported by a study conducted in Uganda by Ambrose[14] where it was found that more than two-third of the respondents (66%) believed that puerperal sepsis lead to complications like female reproductive system infection, infertility and blood infection and almost all of the respondents(98%) agreed that puerperal sepsis should be managed from hospital.

Present finding revealed that no any statistically association between level of knowledge and age of the respondents (p=0.50), type of family (p=0.791). These findings were similar to the study conducted by Joe and Joykutty[19] and Indra[20] which showed there was no any statistically association between level of knowledge, age and type of family. But, this finding was contrast with the study conducted by Lalitha[21] which showed significant association between the level of knowledge and age of respondents with p value <0.05. The potential difference could be due to difference in study setting and sample size which was conducted in India and sample size was fifty.

Finding revealed the statistically association between the level of knowledge and ethnicity p value 0.006. No statistically association between level of knowledge and religion (p=0.798). In contrast to this finding, the statistically association was observed between level of knowledge on puerperal sepsis and religion of respondents with p value 0.04 in a study conducted by Joe[19]. This might be due to the reason that almost all respondents were Hindus in present study. Similarly, study showed statistically association between level of knowledge and educational with p value <0.001. This finding was supported by the study conducted by Sultana[22].The study revealed that there was no statistically association between level of knowledge and occupation (p=0.062). This finding was similar to study conducted by Indra[20].

The study revealed that there was no statistically association between level of knowledge and parity (p=0.412).This finding was similar with the study conducted by Sarkar[10]. But, this finding in contrast with Belagavi[11] which showed that there was significant association between level of knowledge and parity. This might be due to the difference in setting and source of information.

LIMITATION

This study was conducted in only one provincial hospital and using non probability purposive sampling technique due to unavailability of sampling frame of respondents. So the finding may not be generalized to other setting.

IMPLICATION

The finding of this study would help the concerned authority to plan and implement the awareness programme on puerperal sepsis. It would be useful to health service providers to take the preventive measure of puerperal sepsis as well as to conduct health teaching for postnatal mothers, which helps to modification and adaptation of healthy behavior and performance of regular antenatal visit, institutional delivery and postnatal care.

It is recommended that the need of continuous planning and implementation of the awareness programme for the postnatal as well as pregnant mothers for the promotion of healthy postpartum period.

CONCLUSION

Majority have average level of knowledge. Few numbers of respondents knows time of postnatal visit. Knowledge is poor in premature rupture of membrane, prolonged labour and sexual intercourse in late pregnancy and anemia. Regarding sign and symptoms very few respondents know the sub involution of uterus. There is statistically association between level of knowledge with ethnicity, education level, and number of antenatal visit.

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Original Article

Infant Feeding Practices among Mothers Attending Kanti Children's Hospital, Kathmandu

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ABSTRACT

Background: Appropriate feeding practices improve health, reduce disease burden and malnutrition. One-third of cases of malnutrition are caused by inappropriate infant feeding, which is one of the world's biggest issues. The objective of this study was to find out the infant feeding practices among mothers attending Kanti Children Hospital in Kathmandu.

Methods: A descriptive, cross-sectional research design was used to conduct this study. The study was carried out at Kanti Children's Hospital, Kathmandu. A non-probability convenience sampling technique was adopted to select 180 respondents. A semi-structured interview schedule was used to collect the data. Descriptive statistics (frequency, percentage, mean, and standard deviation) were used to describe the socio-demographic characteristics of mothers and infants. The inferential statistic (chi-square test) was used to determine the relationship between infant feeding practice level and selected variables.

Results: The study's findings revealed that most (91.1%) respondents had good infant feeding practices. More than half (56.9%) of respondents had initiated breastfeeding within one hour of delivery. The most of infants (95.6%) were given colostrum milk. Very few (2.7%) of respondents had given prelacteal feeding to their babies. More than half of respondents (58.9%) had done exclusive breastfeeding, and 54.4% began weaning at six months. Most (75.5%) infants were given dal, rice, or jaulo as their primary food among the complementary foods. Similarly, almost half (42.8%) of babies received their meals at the recommended intervals.

Conclusion: Most of the mothers practiced good infant feeding habit. Only few mothers had tried prelacteal feeding. One-third of the infants were bottle-fed. Nearly half of mothers began complementary feeding before six months. It is therefore advised to continue raising awareness about good feeding practices for infants. Emphasis should be given to educating mothers about complementary feeding practices.

Keywords: Colostrum, Exclusive Breast Feeding, Infant, Weaning

INTRODUCTION

Appropriate and adequate infant feeding practices are critical to achieving optimal infant health. According to the Global Strategy of the World Health Organization, the best infant feeding practices include exclusive breastfeeding for six months, complementary feeding that is safe and nutritionally adequate beginning at six months of age, and continued breastfeeding for two years or longer.[1] Children should be put to the breast immediately after birth, breastfed exclusively for the first 6 months of life, and continue to be breastfed after solid foods are introduced from 6 months to 2 years of age and beyond.[2]

An estimated 2.7 million child fatalities per year, or 45% of all child deaths, are attributed to under nutrition. The first two years of a child's life are particularly important because good nutrition during

this time improves development, lowers the risk of chronic disease, and lowers morbidity and mortality.[3]

Less than half of all newborns are breastfed within an hour of delivery globally. Only one out of every six children receives a nutritious diet. More than one-third of infants are receiving their first foods too early, and far too many are receiving them too late. Less than a third of children 6-23 months of age receive a minimum diversity of diet, and rates are lowest among infants 6–11 months old.[2]

In Nepal, infant and young child feeding practices were reported to be 35.8%. Early initiation of breastfeeding in Nepal is at 55%. In the world, 41% of women exclusively breastfeed, while 66% do so in Nepal. Whereas the global rate of continued breastfeeding is 71%, Nepal has a rate of 98%. In Nepal, the introduction of solid, semisolid, and soft foods for infants aged 6-8 months is at 84.3%, compared to 73% globally. [4]

The most successful preventive technique to save children's lives is exclusively breastfeeding for the first six months of life, which has the potential to prevent 13% of all under-five deaths in developing nations. A further 6% of deaths in children under five could be prevented with timely and adequate complementary feeding.[5]

Inappropriate and insufficient infant feeding practices contribute significantly to infant illness. Common practices, such as discarding colostrum, having an elder feed the baby honey, or having health professionals give the newborn a specific liquid, such as sugar water or infant formula, delay a newborn's first critical contact with his or her mother.[1, 3]

Infant feeding practices among mothers in Nigeria showed a high prevalence of inappropriate feeding practices. Only 34.5% of babies received 5–6 months of exclusive breastfeeding, and 38.8% of mothers used pre-lacteal feeding, while 60% of children were exclusively breastfed. Nearly half (48.3%) started complementary feeding at the age of 5 to 6 months, while 44.4% were given breast milk substitutes, and 72.4% were fed complementary foods.[6]

The majority of newborns in Nepal receive colostrum, but fewer than half start breastfeeding within an hour of delivery, and one-third are given prelacteal feeds, which may have a negative impact on breastfeeding and a baby's health in the first few months.[8] As a result, in order to understand the infant feeding practice, it is necessary to understand the infant feeding practices among mothers. Therefore, this study is conducted to find out the infant feeding practices among mothers attending Kanti Children Hospital, Kathmandu.

METHODS

The descriptive cross-sectional research design was used to investigate mothers' infant feeding practices. The study site was the outpatient department, observation unit, and immunization clinic of the Kanti Children's Hospital. According to WHO, infant and young child feeding practices in Nepal were reported to be 35.8% with a 95% confidence interval and a 7% allowable error. Sample size estimation was calculated as Z^2pq/d^2 (Cochran's sample size calculation formula). So the total sample size was 180 mothers. A non-probability convenience sampling technique was used for sample selection. Inclusion criteria for this study were the mothers of infant babies in the 9- to 12-month age group attending the Kanti Children's Hospital.

The structured interview schedule was used to collect data. The interview schedule was developed by the researcher herself with different practices of infant feeding as per the WHO recommendation. The tools were divided into three parts: Part I, Part II, and Part III. Part I includes 19 questions related to socio-demographic information about the mother and infant. Part II included 7 questions related to breastfeeding practice. Part III included 7 questions on the complementary feeding practices of infants. The total score ranged from 0 to 18. Infant feeding practice was classified as appropriate if it scored higher than the median and inappropriate if it scored lower than the median.

The content validity of the questionnaires was established through a thorough review of the available literature and consultation with peers, research advisors, subject experts, and research management cell members, and questions were revised based on their feedback. Pre-testing the instrument was done among 18 mothers with infants in the age group of 9–12 months who were available at the Kathmandu Valley Hospital.

Permission was obtained from the Research Management Cell of the Pokhara Nursing Campus, IOM, TU. Ethical approval was obtained from the Institutional Review Committee of the Institute of Medicine, Tribhuvan University and also from the Institutional Review Committee of the Kanti Children's Hospitals. The purpose of the study was clearly explained and signed informed consent was obtained from the study participants before collecting data. Participation was voluntary and respondents were free to withdraw their participation at anytime. Confidentiality of the collected information was maintained. The time taken was 15-20 minutes for each respondent. Data collection was done from 2075-5-17 to 2075-6-12. Those respondents who did not have adequate infant feeding practices were provided with the correct information and were advised to consult with health workers.

The obtained data were edited, coded, and organized before entry into the computer software system. Data entry and analysis was done using the computer software Statistical Package for Social Science (SPSS) version 16. The collected data was analyzed using descriptive statistical methods such as frequency, percentage, mean, standard deviation, and inferential statistics such as the chi-square to determine the association between infant feeding practices and selected maternal and infant variables.

RESULTS

More than half (59.4%) of the 180 respondents were between the ages of 25 and 35. The mean age of the mothers was 27.05 + 0.47 years. Nearly two-thirds (69.4%) of respondents were from the Janjati ethnic group. One third (27.8%) had completed secondary-level education and 77.8% of respondents were homemakers. More than half of the mothers (57.2%) had an average family income.

Table 1: Socio-demographic Characteristics of the Mothers and Infants (n=180)

Characteristics	Number	Percent
Age of Mothers (Completed Years)		
15-25	63	35.0
25-35	107	59.4
35-45	10	5.6
Mean±SD:27.05± 0.47		
Ethnicity		
Upper Cast	46	25.5
Janjati	125	69.4
Dalit	9	5.0
Type of Family		
Joint	117	65.0
Nuclear	63	35.0
Education Status		
Illiterate	22	12.2
Primary	27	15.0
Secondary	51	27.8
Higher Secondary	42	23.9
Bachelor and higher	38	21.1
Occupation		
Homemaker	140	77.8
Business	14	7.8
Service	13	7.2
Agriculture	13	7.2
Family Income (Rs)		
< 10,000	30	16.6
10000-36000	103	57.2
>360000	47	26.1

Number of Children		
One	95	52.7
Two	59	32.8
More than two	26	14.5
Age in Month		
9	56	31.1
10	39	21.7
11	24	13.3
12	61	33.9
Sex of Child		
Male	72	40.0
Female	108	60.0

Concerning infant feeding patterns, almost all (99.4%) respondents had breastfed their baby. Among them, 59.6% initiated breastfeeding within one hour. Similarly, colostrum milk was given to almost all (96.0%) of the infants. Only 58.9% of respondents exclusively breastfed their children (Table 2).

Table 2: Infants' Feeding Practices **(n=180)**

Variables	Number	Percent
Breastfeeding is done exclusively	179	99.4
Breastfeeding starts within one hour	102	56.9
Breastfeeding within 24 hours	53	29.6
Colostrum Given	172	96.0
Pre-Lacteal Feeding	5	2.7
Exclusive Breastfeeding	106	58.9
Bottle feeding is given	47	26.1
The Purpose for Bottle Feeding		
Not sufficient milk production	34	72.3
Get enough milk	132	7.6
Introducing Food Before 6 Months	74	41.1
Reasons for Starting Solid Food Before 6 Months* (n=74)		
For proper energy and nutrients	48	64.8
No enough breast milk	16	21.6
Mother illnesses	7	9.4
Working mother	7	9.4
Types of Food Introduced Before 6 Months * (n= 74)		
Infant formula	23	31.0
Cow/Buffalo's milk	26	35.1
Cerelace	20	27.0
Lito	7	9.4

Multiple response (each response is considered as 100%).*

More than half (54.4%) of the respondents started weaning at six months and 70.4% of the weaning food was cereal-based, which included lito, cerelace, dal, and rice. Among the complementary foods, the majority (75.5%) of infants were fed dal, rice, or jaulo as their main food. Nearly half (41.1%) of infants received diverse dietary foods. Fifty percent of infants were fed at the recommended frequency of semi solid or solid food (Table 3).

Table 3: Infants' Coplementary Feeding Practices (n=180)

Variables	Number	Percent
Starting of Weaning Food in Age		
Less than 6 months	74	41.1
6 months	98	54.4
More than 6 months	8	4.4
Types of Weaning Food (n=98)		
Cereal based food	69	70.4
Milk and Cereals	29	29.5
Types of Complementary Food Fed Daily to Baby*		
Dal /Rice/Jaulo	74	75.5
Lito	54	54.0
Animal Milk	48	48.9
Egg/Meat	22	22.4
Cerelac	28	28.5
Vegetables/Fruits	24	24.4
Roti	5	5.1
Dietary Diversity		
1-3 items	57	58.1
4 times and more than 4 times	41	41.1
Frequency of feeding semi solid/ solid food		
1-2 times/day	50	51.0
3-4 times/day	42	42.8
5-6 times/day	6	6.1
Frequency of Food (egg/meat) in past 7 days (n=40)	15	37.5
1-3 times/week	25	62.5
Four and more than four times/week		

**Multiple response (each response is considered as 100%)*

Regarding level of infant feeding practice, 91.1% of respondents had a good level of infant feeding practice, and only 8.9% had a poor level of infant feeding practice (Table 4).

Table 4: Respondents' Level of Infant Feeding Practice (n=180)

Level of feeding practice	Number	Percent
Good (10-18)	164	91.1
Poor (0-9)	16	8.9

Min score=0, Max score=18, Median=9

There was no statistically significant relationship exists between the level of infant feeding practice and these selected socio-demographic variables (Table 5).

Table 5: Associations between Level of Infant Feeding Practice and Selected Maternal and Infant Socio-demographic Variables (n=180)

Variables	Infant Feeding Practice		χ2	*p*-value
	Appropriate n (%)	Inappropriate n (%)		
Age Group of Mothers	57 (90.4)	6 (9.6)	0.048	0.826
<25years	107 (91.4)	10 (8.6)		
>25years				
Ethnicity	39 (84.7)	7 (15.3)	3.056	0.080
Brahmin/Chhetri	125 (93.2)	9 (6.8)		
Janjati/Dalit Cast				
Education	21 (95.4)	1 (4.5)	0.133	0.716
Illiterate	143 (90.5)	15 (9.5)		
Literate				
Occupation Status of Mother	130 (92.8)	10 (7.2)	2.372	0.124
Unemployed	34 (18.8)	6 (3.4)		
Employed				
Family Income per Month	121(90.9)			1.00
Less than 36000 per month	43 (91.4)	12 (9.1)	0.000	
More Than 36000 per month		4 (8.5)		
Number of Children				0.817
One	24 (92.3)			
More than one	140 (90.9)	2 (7.7)	0.054	
Sex of Child		14 (9.1)		
Male				0.748
Female	65 (90.2)			
	99 (91.6)	7 (9.8)	0.103	
		9 (8.4)		

p- value significant at <0.05

DISCUSSION

The study was conducted to determine infant feeding practices among mothers. The results of this study revealed that 91.1% of mothers had good infant feeding practices. This finding was in contrast to a study done in Lalitpur, which revealed that infant feeding practice was suboptimal. [9] Findings that were also contradictory to other studies done in Nijeria and Ethiopia showed that infant and young child feeding practice was poor. [7, 10]

The present study showed that 56.9% of respondents initiated breastfeeding within one hour of delivery, which is in contrast with a study done in an urban area of Nepal, which revealed that 61% were breastfed within one hour of birth.[11] This study was also supported by a study done in the hilly region of Nepal, which revealed that 69.2% of participants were initiating breastfeeding in a timely initiation of breastfeeding.[12] The findings were also consistent with those of a study conducted in Bhaktpur, Nepal, which concluded that 57% of women began breastfeeding within one hour of delivery. [11] Finding was contradictory with one of the study done in Chitwan, Nepal revealed that 37.1% respondents had initiated first breast feeding after 1 hour of birth of the baby.[13] According to this study, most (96.0%) infants were fed colostrum milk. This study's finding is in line with the study's finding that 80.3% of respondents fed colostrums.[13]

Very few (2.7%) infants received prelacteal feed. This study's findings are similar to those of an Ethiopian study, which found that 15% of mothers gave prelacteal feeds.[10] In contrast to this study, a study conducted in Chitwan, Nepal, showed that 43.4% practiced prelacteal feeding.[13] Similary, present study finding was also in contradiction with other studies done in India and Faizabad District (U.P.) showed

that 57% and 38.64% of parents, respectively, gave pre-lacteal feed to their babies. [14, 15]

The study demonstrates that more than half of the respondents (58.9%) had provided exclusive breastfeeding to their babies. This finding is consistent with another study conducted in Chitwan, Nepal, which revealed that 49.2% of women had done exclusive breastfeeding for 6 months.[13] The findings also contradicted a study conducted in Bhaktpur, Nepal, which found that 29% of mothers exclusively breastfed their babies.[11] According to this study, 26.1% of babies were bottle-fed, which is similar to a study done in Ethiopia that showed that 23% of mothers used a bottle to feed their child.[10]

Concerning complementary feeding practices among mothers, research revealed that 54.4% started weaning at six months, which is the appropriate time for weaning. This finding is consistent with a study conducted in Nepal's hilly region, which found that 53.3% of mothers initiated complementary feeding on time.[12]

Regarding the type of weaning food, 70.6% of weaning food was cereal-based, which included lito, cerelace, dal, and rice. Findings were similar to those of a study done in India, which found that homemade weaning foods were commonly given to infants, and mothers also included green leafy vegetables like spinach in weaning foods.[16] This study's findings contrast with those of a previous study conducted in Kathmandu, which found that mothers used marketed weaning foods.[17]

In this study, the proportion of children receiving a minimum of dietary diversity was 41.1%. Similar observations were made in other studies in Rupendehi, Neal, and Ethiopia. [10,12, 18] Regarding the introduction of complementary food, 75.5% of babies were fed dal/rice or jaulo as their main food, which is similar to a study conducted in Dhamrai, Bangladesh, which revealed that common types of complementary food were khichuri (49.7%), shagu, suji (21.5%), and fruit juice (6.8%) given as family food. [19] Likewise, in this study, 42.8% of babies were fed as per the recommended frequency, which is 3–4 times per day. This study's finding is in line with a study conducted in Kathmandu, Rupandehi, and Ethiopia. [12,17,18]

According to this study, a significant association was not found between infant feeding practices and selected sociodemographic variables. This finding is in contrast to the findings of a similar study conducted in India, where a significant association was found between infant feeding practices and economic status. [20] The age of the mother and mode of delivery were associated with infant feeding practices.[9] Infant feeding practice was associated with age, education, unemployment, and income. [21]

CONCLUSION

Mothers have a good level of infant feeding practice. Prelacteal feeding had been attempted by only a few mothers. One-third of the infants were bottle-fed. Almost half of mothers began complementary feeding before six months. Whereas the minimum dietary diversity and minimum meal frequency were less. Furthermore, the study found no statistically significant relationship between the level of infant feeding practices and these selected socio-demographic variables of mothers and infants. Based on the study's findings, it can be recommended to continue raising awareness about good feeding practices for infants. Emphasis should be given to educating mothers about complementary feeding practices.

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Conflict of Interest: None

The researcher declares that they have no conflicts of interest in relation to this study.

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Original Article

Perception of Educational Learning Environment among Undergraduate Nursing Students

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ABSTRACT

Background: Learning environment have both direct and indirect influence on learning of the students, their engagement in learning and motivation to learn. How teachers interact with students and how students interact with one another affects learning and can be phrased as positive or negative learning environment. This study aimed to find out students' perception on educational environment of the undergraduate nursing students.

Methods: A cross sectional descriptive design was adopted. Maharajgunj Nursing Campus was the study setting. Complete enumerative sampling method was applied. Total sample size was 218 undergraduate nursing students. Structured self-administered questionnaire Dundee Ready Education Environment Measure (DREEM) an international inventory tool was used to collect data. Analysis was done using descriptive statistics such as frequency, mean, and percentage.

Results: Most of the respondents were above 20 years (91.7%) of age, female (98.2%), and followed Hindu religion (95%). More than half (54.6%) were studying B.Sc. Nursing, The total mean score of the respondents in Dundee Ready Education Environment Measures was 130.54 ± 17.44 with the score ranging from 75 to 186. The mean score on the subscales student's perception of learning was 32.22±4.987 with the score ranging from 15-48, student's perception of teachers 28.26±3.93 ranging from 11 to 41, academic self-perception 22.69±3.709 with the score ranging from 13 to 43, perception of learning atmosphere 30.30±5.196 with the score ranging from 11 to 45 and student's social self-perception 17.05±3.735 with the score 8 to 51. Most of the respondents (85.3%) have positive perception towards educational learning environment.

Conclusion: The study concludes that most of the respondents have positive perception on learning environment as well as positive perception towards the teachers, followed by perception of learning atmosphere as positive.

Keywords: Educational Learning Environment, Perception, Students

INTRODUCTION

Education is the means of gaining knowledge, which helps us to open up our inner eyes & understand the ultimate truth of the universe. According to Ralph Tyler, "Education is the process of changing the behaviour pattern of people". Components of the educational environment includes the physical infrastructure; such as rooms for lectures, tutorial activities, facilitating an constraining factors for learning, the atmosphere created by fellow students and faculty including teaching and administrative staff.[1]Globally rapid and continuous changes in the educational system of health professions including new programme, curricula and strategies have increased the attention to improve the learning environment of all level of students under universities. The purpose of higher education is to provide learning environment that guides the students toward academic achievements which promote their professional and personal lives.[2]It is essential for managers to make effort to create an educational environment for students for proper learning. Supportive learning environment

are essential for medical education and will increase positive perception towards learning environment.[3]

A study done in two medical colleges stated that learning demands an ideal provision of academic environment, as well as a teacher equipped with virtues of sound knowledge, credibility, preparedness and effective communication skills. Moreover, the horizon is not only limited within classroom but is beyond that which encompasses other factors like student-teacher relationship, teaching-learning strategies, physical facilities as well as address to students' psychological and emotional needs.[4] Similar study showed that most of the master level nursing students (81.7%) had positive level of perception on their educational environment and few had excellent perception. Student's positive and negative perception towards the academic environment determines the quality of education.[2] So the researchers conducted this study to find out students' perception on educational environment of the undergraduate nursing program in Maharajgunj Nursing Campus. The objective of the study was to find out perception of educational learning environment among undergraduate nursing students of Maharajgunj Nursing Campus.

METHODS

A cross-sectional descriptive study design was adopted to find out perception of educational learning environment among undergraduate nursing students studying in Maharajgunj Nursing Campus. Study population were all 218 students of all academic years (2nd, 3rd& 4th) of Bachelor of Science in Nursing (BSc. Nursing) and all academic years (2nd, & 3rd) of Bachelor Nursing Science (BNS). Total enumerative sampling method was applied to select the sample for the study. All B.Sc. and BNS Nursing students who gave voluntary consent to participate in the study were included. Those who did not gave voluntary consent and were absent during data collection period were excluded. A structured self-administered questionnaire containing Dundee Ready Education Environment Measure (DREEM) tool was used to collect the data from 30th January 2022 to 11th February 2022. DREEM consists of 50 items with five-point Likert scale where 0=Strongly Disagree, 1=Disagree, 2=Uncertain, 3=Agree and 4= Strongly agree.

The items are categorized into five subscales as: Perception of Learning (SPL) - 12 items, Perception of Teachers (SPT) - 11 items, Academic Self Perception (SASP) - 8 items, Perception of Atmosphere (SPA) - 12 items and Social Self Perception (SSSP) - 7 items. There are nine negative items (items 4,8,9,17,25,35,39,48 and 50) for which reverse scoring was done while entering the data. The maximum score obtained is 200 which is interpreted as: 0-50=very poor, 51-100= plenty of problems, 101-150= more positive than negative and 151-200= excellent. However, 9 of the 50 items (numbers 4, 8, 9, 17, 25, 35, 39, 48, and 50) are negative statements and should be scored: 0 Strongly Agree, 1 Agree, 2 Uncertain, 3 Disagree, 4 Strongly Disagree. Data collection was done after getting administrative approval from Maharajgunj Nursing Campus. Ethical approval was obtained from Institutional Review Committee (IRC) of Institute of Medicine, Tribhuvan University IRC No. 213/(6-11)E2-078/079. The objectives of the study was explained and made sure that the collected information will be used only for the study purpose to the respondents and informed consent was taken prior to data collection. They were given full right to withdraw from the study if they were not willing to take part at any time. The questionnaire was distributed to all the students in the classroom, total of 45 minutes to 1 hour was given to fill the questionnaire, and researchers were present at the time of data collection to clarify any queries. After completing the questionnaire the researcher collected all the forms and checked for completeness. Privacy and confidentiality was maintained throughout the study. Collected data were entered into SPSS version 16.0. Coding and recoding was done as required. Analysis of the data was done using descriptive statistics such as frequency, mean, and percentage and presented in the tables.

FINDINGS

Table 1: Socio- demographic Characteristics of the Respondents (n=218)

Characteristics		Frequency	Percentage
Age	Below 20	18	8.3
	20 and Above 20	200	91.7
Sex	Male	3	1.4
	Female	215	98.6
Program	BNS	99	45.4
	BSc. Nursing	119	54.6
BSc. Nursing	Second year	39	17.9
	Third year	40	18.3
	Fourth year	40	18.3
BNS	Second year	49	22.5
	Third year	50	22.9
Ethnicity	Brahmin/Chhetri	164	75.2
	Newar	21	9.6
	Other Janajati	22	10.1
	Dalit	4	1.8
	Madhesi	7	3.2
Religion	Hinduism	207	95.0
	Buddhism	9	4.1
	Islam	2	0.9
Marital status	Married	48	22.0
	Unmarried	170	78.0
Work experience	Yes	99	45.4
	No	119	54.6

Table 1 showed that most of the respondents were 20 years and above age (91.7%) and female (98.2%). More than half (54.6%) were studying in B. Sc. Nursing and majority (75.2%) belonged to Brahmin and Chhetri ethnicity. Among them almost all 95% followed Hindu religion. Most of the respondents (78%) were unmarried and more than half of the respondents had experienced working as a nursing staff.

Table 2: Score of Respondents in Educational Learning Environment (n=218)

Subscales of Educational Learning Environment	Minimum Score	Maximum Score	Mean Score	SD
Students Perception of learning	15.00	48.00	32.22	4.987
Perception of teachers	11.00	41.00	28.26	3.932
Academic self-perception	13.00	43.00	22.69	3.709
Perception on atmosphere	11.00	45.00	30.30	5.196
Social self-perception	8.00	51.00	17.05	3.735
Total Score	75.00	186.00	130.54	17.44

Table 2 showed the total score of the respondents in educational learning environment along with five subscales of Dundee Ready Education Environment Measures. The total mean score is found to be 130.54 $\pm$ 17.44.

Table 3: Level of Perception of Educational Learning Environment of Respondents (n=218)

Level of Perception	Frequency	Percentage
Plenty of problem (Score <100)	10	4.6
More positive than negative (Score 101-150)	**186**	**85.3**
Excellent (Score 151-200)	22	10.1

Table 3 depicted the level of perception of educational learning environment of the respondents. It showed that most of the respondents (85.3%) have positive than negative perception towards educational learning environment and very few, (4.6%) perceived that there are plenty of problems.

Table 4: Perception of Educational Learning Environment in Five Subscales (n=218)

Variables		Frequency	Percentage
Students Learning Perception	Teaching is viewed negatively	15	6.9
	More positive perception	**165**	**75.7**
	Teaching highly thought of	38	17.4
Students' Perception of Teachers	Abysmal	1	0.5
	Need of some training	11	5.0
	Moving in right direction	**194**	**89.0**
	Model course organizer	12	5.5
Students' Academic Self-Perception	Many negative aspects	11	5.0
	Feeling more on the positive side	**152**	**69.7**
	Confident	55	25.3
Students' Perception of Atmosphere	A terrible environment	1	0.5
	There are many issue that need changing	25	11.5
	A more positive attitude	**176**	**80.7**
	A good feeling over all	16	7.3
Students' Social Self-Perception	Not a nice place	45	20.7
	Not too bad	**163**	**74.8**
	Very good socially	9	4.1

Table 4 showed the perception of educational learning environment in five different subscales. Regarding students learning perception more than half (75.7%) have more positive perception, most of all (89%) perceived that teachers are moving in right direction. Similarly more than half (69.7%) have feeling of more on positive side regarding academic self-perception. Most of the students (80.7%) have more positive attitude towards educational learning atmosphere and more than half of the respondents (74.8%) perceived that the social environment is not too bad.

DISCUSSION

In this study the mean score for perception of respondents on their learning environment was 130.54±17.44. Respondents' level of perception of educational learning environment was more positive than negative (85.3%). Most of the students (75.7%) agreed to a more positive approach regarding their learning moving in the right direction (89.0%). For their teachers, feeling more on the positive side (69.7%) for their academic self-perception, feeling more on the positive side for their learning atmosphere (80.7%), they also reported that their social self-perceptions were " not too bad (74.8%).

Similarly, study done among 122 nursing students studying at B.P. Koirala Institute of Health Science, Dharan reported that first year students were found to be more satisfied (68.23%) with the educational environment (136.45 ± 16.93) compared to student of other years. Academic self-perception (21.94 ± 3.42) was the highest scoring subscale (68.57%) while the social self-perception (16.43 ± 2.96) was the lowest (58.66%). The overall DREEM score (131.25 ± 15.82 out of 200) indicated that perception of learning environment among the students was positive. Despite overall positive perception, students

perceived that the teachers were authoritative and there is lack of good support system for the students at the time of stress. The total DREEM score varied significantly between the years of enrolment ($p < 0.05$). This study concluded that positive perception of learning environment which varied significantly according to the year of enrolment. However improvements are required across all the five domains for the high quality educational environment.[5]

Likewise, another study carried out to find out perception of clinical learning environment among 75 nursing students of Sanjeevani College of Medical Sciences and Lumbini Nursing College of Butwal Sub-metropolitan city revealed that majority of the respondents (88%) were satisfied with the clinical learning environment and agreed with the criteria that 'they do not think their clinical placement was just waste of time' because maximum respondents (91%) agreed to the criteria that student nurses learn more from nursing staffs by observing how they carry out their roles in the hospital. Similarly, majority of the respondents (87%) agreed to the criteria whereby patient receives individual care, and (95%) agreed to the criteria whereby the nurse teachers regard them as a learner rather than as a worker. In the same way (80%) of the respondents agreed to the criteria - 'I am able to reach equipment adequately for providing nursing care to the patients' and 81% agreed to the criteria - 'I am not compelled to perform the task beyond my clinical course'. Majority of the respondents (93%) have been found agreed with the criteria that their supervisor encourages them to be innovative in their work. Findings of this study concluded that the overall perception of all the respondents regarding different variables on the clinical learning environment has been found positive.[6]

Another cross-sectional study done to compare of undergraduate educational environment in medical and nursing program among 884 students of Aga Khan University, Karachi, Pakistan revealed that the mean+SD DREEM score was measured as 126±20.3 with 84.1% average response rate. Nursing students regarded more positive perception about their EE (127.3+19.3) as compared to medical students (124.6+21.3) and was found to be statistically significant (P=0.027). Medical students scored higher in the domain of perception of atmosphere whereas, nursing students scored higher in academic self-perception. Both of the groups have rated lower scores on the domain of Perception of Teaching. Both medical and nursing students appreciated the Educational environment pertaining to Perception of Learning, Academic Self- Perception, and Perception of learning and Social Self-perception. The study showed that nursing students' perception on their educational environment was relatively more satisfactory than medical students. However, both medical and nursing students identified areas of improvement in the domain of Perception of Teaching.[7]

Similar study was carried out to compare students' perceptions of the academic learning environment in Paediatric and Maternity courses among 511 nursing students of Egypt reported that total mean score for paediatric and maternity nursing students' perception of their learning environment were 115.0±.23.02 and 110.3±17.4; respectively. Students' belief in their gaining knowledge of environment in both specialties were "more positive than negative" with a significant difference between both groups (t=2.6, p=0.01). All students agreed to a more positive approach regarding their learning "moving in the right direction" for their teachers, feeling " more on the positive side" for their academic self-perception, feeling " more on the positive side" for their learning atmosphere " a more positive attitude" they also reported that their social self-perceptions were " not too bad.[8]

Another study conducted to investigate the viewpoints of 493 undergraduate medical sciences students on the learning environment at Rafsanjan University of Medical Sciences (RUMS) of Iran reported that mean scores in the five domains was 113.5 out of 200 (56.74%), which was considered to be more positive than negative. The total mean scores for perception of learning, teaching, and atmosphere were 27.4/48 (57.24%), 24.60/44 (55.91%), and 26.8/48 (55.89%), respectively. Academic and social self-perceptions were 20.5/32 (64.11%) and 15.7/28 (56.36%), respectively. The total DREEM scores varied significantly between courses ($P<0.01$). The total scores of the students of operating room nursing, anaesthesia, and laboratory sciences, first year students, and females were significantly higher than the other students ($P<0.01$).[9]

CONCLUSION

Most of the undergraduate nursing students have positive perception towards learning environment**.** The perception of educational learning environment in five different subscales showed; students learning perception have more positive perception, most of all perceived that teachers are moving in right direction. Similarly more than half have feeling of more on positive side regarding academic self-perception. Most of the students have more positive attitude towards educational learning atmosphere and more than half of the respondents perceived that the social environment is not too bad.

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Review Article

Integration of Simulation Based Education in Nursing and Midwifery Education

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ABSTRACT

Simulation-Based Education (SBE) has been more prioritized among universities in their specialized health courses like as medicine, nursing and midwifery at different level. Evidences have proved that SBE helps students to acquire knowledge, attitude and skills into structured non-threatening environment which equipped them for clinical practice with more confident, less clinical errors resulting into better health outcome of their patient and client. Integration of structure curriculum is essential for implementing SBE where educators can facilitate their students for quality education which can transfer into quality practice during preservice courses.

INTRODUCTION

The core concept of simulation is "Preparation through education is less costly than learning through tragedy" which aims to prevent and minimize clinical errors while dealing with patients. Simulation is the artificial representation of a complex real-world case with sufficient fidelity to facilitate learning through immersion, reflection, feedback, and practice without the risks inherent in a similar real-life experience. [1] Simulation is increasingly used in all aspects of healthcare education and at all levels to teach cognitive, psychomotor and affective skills to individuals and teams in order to promote patient safety and quality care. Simulation is recognized as being able to provide a safe and relevant learning experience. A wide variety of clinical conditions can be simulated in controlled environments to produce standardized experiences. [2, 3] Beside this, Simulation based education challenges the traditional evaluation mechanism of assessing knowledge through structured multiple choices questions with the use of skills competencies assessment techniques. [4] In present days scenarios, SBE can be considered as new strategy for teaching and learning in health education with its integration in course instructions through application of practical guide. [5]

RATIONALE

Evidences have revealed that simulations have positive impacts among nursing students, midwifery students, educators and health care professionals to develop their skills which aids to provide quality health care at different level. [6] Nursing students found simulation sessions as stimulating, useful and a realistic learning method [7]. Statistical differences were observed on the clinical performances of nursing students who received simulation education [8, 9,10]

Importance of Integration of SBE on Curriculum:

Simulation should be utilized as an adjunct to patient care experiences and its integration into the curriculum should be well-planned and implemented. [5] For this, framework of the circle of learning consisting of following five steps of simulation learning skills has been widely referred [11]:

Step I: Knowledge acquisition: Process of acquiring knowledge through textbooks, charts, anatomical models etc.

Step II: Skills proficiency: Process of developing psychomotor skills through repetitive practice to master practical procedures typically using task trainers and simulators. Here, checklists and skills

labs play an important role. Checklists ensure objective and standardized learning of skills.

Step III: Critical thinking/ decision making: Using problem-based learning/ computer programs/ case studies that provide intelligent feedback to develop critical thinking and decision-making skills.

Step IV: Simulation in teams: Allows a group of students to practice and role play realistic scenarios to improve technical- critical thinking, physical skills and clinical decision-making skills and non-technical skills like communication, time management during clinical care, leadership and teamwork. Students have the opportunity to apply their previous knowledge and skills attained in a classroom to real world situations which require making decisions that in many cases well before they experience it in their clinical practicum experiences.

Step V: Clinical experience and practice: Learning through reflecting on the management of real patients, personal tuition, and exchange of knowledge with colleagues.

Planning / Implementing Clinical Scenario/ Simulation

Planning scenario is based on learners' level, environment and types of simulator and resources available. Formulation of clear objectives is important. Generally, objectives are based on types of simulators used. For eg. in low -fidelity simulation objectives to attain for knowledge and psychomotor skills are set. In medium-fidelity objectives are formulated to acquire complex knowledge and technique, in high -fidelity simulation focuses are set to achieve on communication, decision making team work and clinical judgements. And descriptions for scenario need to be create accordingly.

Educators Role for Planning:

Clinical protocols or guidelines should be prepared and available. Plan to incorporate feedback effectively into simulation education.

Determine how and when the feedback will be provided in a manner consistent with the learning objectives for the simulation session.

Ensure that you have emergent objectives which are not predetermined, but arise during the simulation, such as a knowledge gap or systems issue that should be addressed. It is important to note that not all objectives will be able to be discussed, so the facilitator must decide which are most important for the given session [12]. Prepare the environment with appropriate script for the simulation.

Implementing Clinical Scenario/Simulation: Clinical scenario is implemented on following three steps. i. Briefing, ii Action, iii. Debriefing

Educator roles in implementing clinical scenarios

Step I: Briefing

The details of patient and the physical condition are provided to the students. Allowing them to understand what they are expected to do. This step should be clearly, objectively and briefly presented.

Step II: Action

This step begins only after student have understood the situation to be managed. The scenario should give within 10- 15 minutes and ends when students have achieved the define objectives.

Step III: Debriefing

Debriefing focuses on the reflexion of the experiences performed by the students on their given role. [13]

Evaluation:

Students' satisfaction, performance competencies need to be evaluated. And simulation need to be re planned as per the feedback and outcome.

Educator role for Evaluation of Simulation

Create standardized tool and assess the performance

CONCLUSION

In these days simulation is getting more attention by most of the health-related universities through integration in curriculum. Simulation based Learning allow students to practice in simulation scenarios which yield them with more confidence to apply their knowledge, attitude and skills into clinical practice resulting in better health related outcome. Educator need to consider framework of circle of learning and their role very attentively and creatively in each step for obtaining quality education and practice.

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Review Article

Medication Error

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ABSTRACT

Background: Medication errors are one of the patient safety problems with a high prevalence in several countries, and often involve a lack of collaborative communication between health professionals, including doctors, pharmacists, and nurses. This article aimed to review about medication error in hospital settings.

Methods: Literature review was done through searching electronic database like PubMed, Research Gate, Google Scholar, and Science Hub and create library via Zotero software to save data.

Results: The review article found most of the medication error occurred in medical and surgical units of the hospital and in morning shift, the most of the nurses are accountable for avoiding medication errors, and it happens mostly during administering the drugs to the patients.

Conclusion: Medication errors and difficulties associated to nurses, doctors and pharmacists in hospital settings must be carefully monitored in order to maintain patients' safety.

Keywords: Literature review, medication error, nurses, safety.

INTRODUCTION

Medical error is a significant public health issue that could endanger patient safety. Reducing medical errors has become an international concern. Medical error is defined as "An act of omission or commission in planning or execution that contributes to or could contribute to an undesired effect". [1] When a healthcare professional choose an ineffective way of care or wrongly applies an appropriate approach, a medical error can occur. There is currently a rising understanding of the significance of prevention of medical error and its effects on both the quality of treatment and patient safety. Therefore, reducing medical errors has become a priority strategic for the majority of healthcare organisations in improving patient safety. Medication errors in hospitalized people can result in negative consequences, increased expenses, and even fatalities.[2]

Medication mistakes are challenging for the experts involved and pose a major threat to public health. The procedure of giving medication to patients involves many interrelated decisions and actions at various phases (medical prescription, solicitation to, separation and dispensing of pharmaceuticals from pharmacy, nursing receipt, nursing preparation, and administration). Errors can arise at any phase of this process. The release of the Institute of Medicine's (IOM) report in 2000 AD, which noted that around 98,000 hospital deaths each year in the United States of America were caused by adverse events (AD).[3]

Patient safety incidents are most frequently caused by drug-related mistakes. The estimated incidence of preventable adverse medication events is 15/1000 person-years, with a global burden of US $42 billion/ year, according to study reported by Assiri.[4]

According to a study on the administration of medications during surgery, 1 in 20 drug administrations resulted in errors, 79 % of which could have been avoided. This finding points to the urgent need for intervention. [4]

For safe administration of the drugs, nursing personnel do follow the common and conventional "five right" principles: the right patient, the right medication, the right amount, the right route,

and the right time. These concepts are covered in pre-registration nursing education for nursing students. The construction of a thorough medication history (reconciliation) when patients arrive at the hospital and providing junior nursing staff and pre-registration nursing students with in-depth training in pharmacological knowledge are some of the hurdles that still need to be overcome.[5]

METHODS

An extensive review of literature has been done through electronic search. Major database like Research Gate, Scopus, PubMed, Goggle scholar, EBSCO, Science-hub were viewed and saved all needful articles with created library in Zotero software. Then after collect the recent needful information regarding title and prepare the article. The words used for searching relevant information are medication error, nurses, hospital and safety.

RESULTS AND DISCUSSION

Medication error prevention and management has become an important part of hospital management and health care organisations.[6]

It was found in study of medication errors in nursing students that there were 1305 errors of a general kind throughout a 5-year period, with omission errors (19%) and the wrong dose (17.16%) ranking first and second, respectively.[7] The most prevalent medication errors reported in the research by Valdez were errors of omission and the wrong dose, which accounted for 34 percent (n = 26) and 41.9 percent (n = 26) of all errors, respectively. [8]

One study done in Brazil at tertiary level hospital, errors occurred in different areas and a total of 1054 errors, errors occurred mostly in the medical-surgical unit, which accounted for 771 (73.1 %) cases from a total of 1054. As for time of the day, the morning (0700 to 1300 h) period showed the greatest number of errors that was 347 (33.0 %) out of a total of 1054 in the morning followed by in afternoon time(0100 to 0700 h) period as similar as 318(30.1%). The night shift had also the greater number of errors, with 248 (23.5 %) out of 1054 errors.[9]

With regards to error occurring among team personnel, nurses were seemed the most responsible which accounted for 490(46.4%) out of 1054. Similarly 342(32.4%) errors happened by physician, there were less errors happened by pharmacy as accounted for 205(19.4%) in comparison to nurses and physicians.[9]

The errors were also classified into five stages: medical prescription, transcription, validation of the prescription by the pharmacist, administration and monitoring. The greatest number of errors occurred during the administration of medications, with 35.5 % (374 of 1054 errors) during the prescribing 364(34.5%), dispensing 207(19.6%), transcribing 73(6.9%) and monitoring 36(3.4%) respectively. [8, 9, 10]

With regards medication error, one study done in North-eastern New York, reported as prescribing errors committed by physician that occur in tertiary care teaching hospital. Total of 289411 written medication orders in the one year study period, among them 905 prescribing errors were detected of which 522(57.7%) having potential for adverse consequences. The overall detected error rate was 3.13 error per 1000 written orders. The error rate was greatest (4.01 per 1000 orders) between 12.00pm to 3.59pm.[10]

Causes of medication errors found in hospitals[11, 12, 13]

- Work load/time pressure or fatigued health care professionals, environmental issues (poor lightning and ventilation)
- Lack of standardized protocol and procedure, lack of accuracy of patients records
- Physical and psychological health issues among nursing staffs
- Using expertise incorrectly, failing to create a plan, overlooking the most evident diagnosis, or providing healthcare automatically.
- Issues with communication, a lack of understanding of the hierarchy, weak leadership, and confusion over to whom to report a problem, failure to reveal problems, or a fragmented system incapable of solving problems.

- Lacking in education, training, orientation, and experience.
- Inadequate methods of patient identification, incomplete admission assessments, a failure to get consent, and a failure to educate patients, inadequate policies to guide healthcare workers.
- Lack of consistency in procedures.
- Inadequate staffing and/or poor supervision.
- Technical failures associated with medical equipment.
- No audits in the system.
- No one prepared to accept blame or change the system.

Similarly prevention of medication errors are given with different points. [12, 13, 14]

- Identify patient safety dangers and risks
- Identify patients correctly by confirming the identity and name tag
- Improve communication such as getting test results to the correct person quickly
- Build better rapport among teams and members
- Develop safeguards into an administration that requires double- and triple-checks involving look-alike or sound-alike drugs.
- Carefully label medications delivered in bulb syringes, medication cups, and basins.
- Fasten to report abnormal test results.
- Adhere with the written protocols and procedures.
- Building a "quiet zone" or "time out" when preparing medications for administration.
- Monitor hospital discharges through the clinician, nurse, family, and patient; if any have reservations, reconsider discharge.
- Perform any procedure carefully like tube insertion or catheterisation.
- Involve a pharmacist in all high-risk drug delivery to patients
- Limit shift duration to avoid fatigue-related errors.
- Place hazard warnings where they will be seen.
- Promote education, therapeutic training and counselling in avoiding errors
- Store dangerous drugs in a separate area of the electronic dosage medication system.
- Take precautions to prevent central line-associated infections.
- Use anti-coagulants safely.
- Use computer technology for order entry. Maintain audit system and good management in health care centre/institution.

CONCLUSION

It is concluded that medication errors are still of great concern. Most of the medication errors are found among nurses. Regarding area, mostly happened in medical and surgical ward in morning shift and during administering the drugs. It is recommended to monitor the activities regarding medication errors and provide in-depth training in pharmacological knowledge and skill for nurses and other health personals working in health organisation that helps in reducing and preventing medication errors in hospital settings.

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Review Article

Advanced Care Planning for Patients with End Stage Renal Disease: An Integrative Review

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ABSTRACT

Introduction : Patients with end stage renal disease have a high rate burden of disease and mortality. Advance care planning is important for improving the end-of life care for these patients but it is complex and challenging. This review aims to find out the interventions, context and experiences of advance care planning for end stage renal disease.

Methods: Databases ProQuest Nursing and Allied Health, Cumulative Index to Nursing and Allied Health Literature, Google Scholar, PubMed were searched for 15 years' period from 2006-2020 yielded 10 articles. We included the studies with adult patients, diagnosed with end stage renal disease, have hemodialysis, peritoneal dialysis or without dialysis, any setting and any design quantitative and qualitative, any interventions and outcomes, qualitative studies, and family members and significant caregivers.

Results : We included ten studies that involved 1526 participants (one study not mentioned the participants) which investigated advance care planning to the patients with end stage renal disease and their families/friends/surrogates. The interventions used were Patient-centered Advance Care Planning, Peer-mentoring, Printed material, Booklets and patient expert, Sharing Patient's Illness Representations to Increase Trust, Model test. Patients and caregivers felt the more need of advance care planning.

Conclusion: Advance care planning needs to include as important component of renal care for management of patients with end stage renal disease though it is inadequately used. More interventional studies are needed to be carried out to find the most effective intervention and context to manage this trajectory illness.

Keywords: Advance care planning, advanced directive, ESRD, hemodialysis, interventions

INTRODUCTION

End stage renal disease (ESRD) is a chronic and progressive illness [1] that requires lifelong dialysis or transplantation [1,2] and dietary and fluid restriction.[1] ESRD causes a high rate of mortality and disease burden [2] and unpleasant consequences for patients, families, and society. [3]

Advance care planning (ACP) "is the process of continuing communication among patients, their family and health care professionals about what plans for future care are preferred in the event that patients become unable to make their own decisions. [4] ACP "is a conversation a person has in advance of a medical crisis with a loved one and/or a health care provider (HCP) about his/her values, goals of care, preferences for future health care, and the designation of a surrogate decision maker for the potential case that one loses decisional capacity". [5] ACP gives priority to ethical, psychosocial, and spiritual issues relevant to starting, continuing, withholding, and stopping dialysis. [6] ACP integrating palliative care improves the patients' physical, mental, and psychological care needs. [7] ACP that focused on communication may better meet the needs of people who have diverse culture. [8] It enables the patients to become empower and communicate their preferences of future treatment relevant to their goals and values.

However, internationally, it is estimated that only 6%-49% of patients with CKD receive ACP. [9] ACP improves patient and family outcomes through identifying, documenting, and enacting patients' EOL preferences. [8] It is associated with overall cost reduction. [10] Therefore, it is necessary to find the interventions and context and experiences of patients with ESRD and their family members or primary caregivers about ACP to manage patients' health issues, support the patients and families.

METHODS

Eligibility criteria

Studies that include ACP, original articles or review articles that included original articles, design both quantitative or qualitative, full article available, published in peer review journal, in English language, adult patients diagnosed with ESRD, under the treatment of hemodialysis and peritoneal dialysis or without dialysis, studies that included family members or significant caregivers.

Searching method

We searched the electronic databases ProQuest Nursing and Allied Health, Cumulative Index to Nursing and Allied Health Literature (CINAHL), Google Scholar, PubMed were searched using key words related to ESRD and ACP includes ESRD, hemodialysis, ACP, advance care planning, advanced directives, strategies, interventions etc.

Review Questions

1. What interventions are used as a part of ACP among the patients with ESRD and their family members or primary/significant caregivers?
2. What is the context and experiences of patients with ESRD and their family members or primary caregivers about ACP?

FINDINGS

This study included ten studies: Systematic review[1], Randomized controlled trial[11,12], Interventional descriptive [13], ACP discussion and document review[14] and costs and outcomes evaluation[15], Grounded theory[16], Qualitative, interpretative descriptive[17], Ethnography[18], and semi-structured qualitative interview study.[19] Of them four studies were from USA, two Canada, two UK, one Australia, and one Hong Kong. All studies included patients with ESRD and or their surrogates/caregivers. Interventions used were Patient-Centered ACP (PC-ACP), Peer mentoring, Printed Material Intervention, Sharing Patient's Illness Representations to Increase Trust (SPIRIT), Communication and discussion and provided peer support at the time of ACP completion and subsequently by telephone, assisted where necessary by the ACP nurse. The number of participants included in each study were ranges from minimum 9 to maximum 620.

Systematic review

Systematic review was conducted to determine whether ACP in haemodialysis patients, compared with no or less structured forms of ACP, can result in fewer hospital admissions or less use of treatments with life-prolonging or curative intent, and if patient's wishes were followed at end-of-life (EOL). Both RCTS Kirchhoff (2010) and Perry (2005) were conducted in USA with a total of 337 patients. Kirchhoff (2010), 70 patients received PC-ACP and 64 in control group received usual care. Intervention group participants completed 60 to 90 minute interviews with a trained facilitator. PC-ACP assessed understanding and experiences of patients and surrogates about illness; provided information about disease-specific treatment options and their benefits and burdens; assisted in documenting patient preferences for treatment; and assisted surrogate partners to make decisions in line with patients' preferences. Control group received usual care consisted ACP facilitation; standard advance directive counselling; assessment of advance directive (AD) on admission; more information if patient needed. Study reported that there was improved understanding of patient goals and preferences for future medical decisions among surrogates who received PC-ACP than control group. Higher percentage of surrogates in the intervention group knew about decision making authority that a patient wished to grant the chosen surrogate than control group. Higher rates of concordance between patients' preferences and end-of-life care among intervention group participants compared with the control group, including cardiopulmonary arrest. [1]

Perry (2005) involved 203 patients; 63 provided peer-mentoring intervention, 59 provided printed material intervention, and 81 control group received usual care. Peer intervention group were contacted by peers eight times (five telephone calls and three face-to-face meetings) to discuss about important of completing AD, attended workshop and discussed issues of AD. Peer mentors and patients discussed the program, shared their experiences with chronic

illness, goals outside ESRD; spiritual orientation and fears; EOL considerations and barriers to complete AD; contribution to others and patient's strength. Patients on printed material intervention group received literature developed by the US National Kidney Foundation and control group received routine care provided by the dialysis unit (not described). Peer support intervention resulted in a higher proportion of participants completing an AD or expressing a desire to complete, greater levels of comfort about discussion of AD than printed material and routine care group participants.[1]

Randomized controlled trial

Randomized trial examined the efficacy of ACP intervention on preparation for EOL decision making for dialysis patients and surrogates and for surrogates' bereavement outcomes of 420 participants (210 dyads of prevalent dialysis patients and their surrogates) in 20 dialysis centers of USA. Control group received usual care where as intervention group assigned to SPIRIT (Sharing Patient's Illness Representations to Increase Trust) had an in-depth ACP discussion at the center and a follow-up session at home after 2 weeks. Dyad congruence surrogate decision-making confidence were better in SPIRIT than controls, but patient decisional conflict did not differ between groups. Surrogates in SPIRIT had less anxiety depression and posttraumatic distress than controls. SPIRIT was associated with improvements in dyad preparation for EOL decision making and surrogate bereavement outcomes.[11]

Nurse-led ACP was conducted to determine the feasibility of conducting a deferred entry randomized controlled trial of ACP with patients who have ESKD having hemodialysis aged 65 years or older. It incorporated an economic evaluation and mixed methods process evaluation in two renal haemodialysis units in Northern Ireland, UK. Sixty-seven patients invited to participate, 30 declined and 36 were randomized to immediate or deferred ACP groups. Twenty-two made an ACP and completed data collection at 12 weeks; 17 were able to identify a surrogate willing to be named in the advance care ACP document. The intervention was well-received and encouraged EOL conversations, but did not succeed in helping patients to fully clarify their values or consider specific treatment choices. There was no significant difference in health system costs between the immediate and deferred groups.[10]

Descriptive interventional

An interventional descriptive study explored the experience on ACP for ESRD patients in secondary care hospital, Hong Kong with sample of 600 patients (265 renal replacement therapy (RRT) & 335 renal palliative care (RPC). Patients were empowered to make an informed choice of future medical care through structured ACP and followed up overs a median of 782 days. Majority of patients and relatives declined dialysis due to physical burden, 1.6% of palliative care patients started dialysis. Structured ACP could empower the patient to make an informed decision on the management of ESRD. [12]

A document review on ACP discussion assessed dialysis withdrawal preferences among 61 patients from 2 hemodialysis centers, USA. Patients were engaged in ACP on EOL discussions, completion of AD and 'do not resuscitate' or 'do not intubate' (DNR/DNI) orders were ascertained by a questionnaire and record of dialysis unit. Overall, 57% of participants reported having an EOL discussion with a health care provider, 38% had completed an AD and 10% had a DNR/DNI order in their dialysis chart. Among the individual aspects of ACP, there were significant differences in EOL discussions and DNR/DNI orders by race/ethnicity, with Blacks and Asians being more likely to engage in EOL discussions and Latinos less likely to engage in EOL discussions as compared with Whites. Conversely, no Black or Latino participants completed DNR/DNI orders as compared with 10% of Asians and 24% of Whites. There were trends for lower completion rates of AD and DNR/DNI orders among participants <50 years, but no statistical significance. [13]

A study evaluated the costs and outcomes of nurse-led ACP with usual care to the patients with hemodialysis using hospital data, and modelled the effect of nurse-led ACP on EOL care. Outcomes were assessed in terms of patients' EOL treatment preferences being met or not, and costs included all hospital-based care. The proportion of patients in the model who received end-of-life care according to their preferences was higher in the ACP group compared with usual care (68% vs. 24%). Model suggests nurse-led ACP leads to receipt of patient preferences for EOL care, but at an increased cost.[15]

Qualitative Study

A Grounded theory among 13 patients and 9 families/ friends was used for understanding patients' and

families' diverse needs can strengthen systematic efforts to improve ACP in dialysis units, USA. Patients and families said ACP discussions rarely occur, yet most patients desire them. Factors that may affect perspectives on ACP included a desire for more of a connection with the nephrologist, positive and negative experiences with the dialysis team, disenfranchisement, life experiences, personality traits, patient-family/friend relationships, and power differentials. Most patients and family/friends felt that the nephrologist should lead ACP discussions, all of the options available for EOL care should be discussed as part of ACP, ACP discussions should be held in a private space at the dialysis unit on a non-dialysis day and ACP should be an iterative process started early in the disease course and followed up annually.[16]

A qualitative, interpretative descriptive study was conducted to understand hope in the context of ACP from patients' perspective among 19 patients in Canada. Patients' hopes were highly individualized and shaped by personal values. They identified hope as central to the process of ACP, hope helped them to determine future care goals and provided insight into the perceived benefits of ACP and their willingness to engage in EOL discussions. More information at earlier stage of illness that focus on impact of daily life, patients' empowerment, enhancement of professional and personal relationships were key factors for sustaining patients' hope. Potential barriers for hope were reliance on professionals to initiate EOL discussions and daily focus of clinical care.[17]

Ethnography was conducted among 24 patients on salient elements of ACP discussions in Canada. Patients required more information and earlier initiation of ACP discussions. Information are needed to focus more on the individual and how his or her illness and interventions would affect his or her life and relationships and what he or she values most. Empathetic listening also was viewed as an integral component of facilitated ACP. Physicians clearly were seen as having the responsibility for initiating and guiding ACP. The role of patients and family within ACP is complex and varies significantly between patients. For most, family was an integral component of ACP, and many relied extensively on family to make EOL decisions. [18]

Qualitative interview was uesd to explore the experiences of people with ESKD regarding starting haemodialysis, its impact QOL and their preferences for future care and to explore the ACP needs and timing of this support among 20 patients in UK. Emerged themes were: looking back, emotions of commencing haemodialysis; current experiences, illness and treatment burdens; and looking ahead, facing the realities. Challenges were get information, communication with staff and the 'conveyor belt' culture of haemodialysis units. Patients reported a lack of opportunity to discuss their future, when their health deteriorated, and variable involvement in treatment decisions. However, some accepted more the discussion of these sensitive issues.[19]

CONCLUSION

ACP is important for the managing the care, delaying the complications, avoiding the conflict, taking appropriate care decision, reduce health care cost and economic burden, and improve QOL and death. Still there is little discussion about ACP and interventions for ESRD.

RECOMMENDATIONS

Although descriptive and qualitative studies explore context of ACP and few facilitators and barriers; RCTs are needed to find out what kinds of interventions can apply to individual patient and context, reduce decisional conflict and improve health and QOL. It is necessary to keep ACP as a component of renal care. Facilitated ACP through using timely appropriate information can positively uplift the patients' hope. Adequate discussion and clear communication is necessary among renal health care teams, ESRD patients, family members and significant caregivers.

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Review Article

Impact of COVID-19 among Nurses

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ABSTRACT

Background: The corona virus disease (COVID-19) is a highly contagious disease with mild to fatal effects to the people around the world. Unavailability of medicine and uncertainty of disease made the life of nurses more stressful leading to disruption on emotional, social and family health. This article intended to assess the impact of COVID-19 among nurses.

Methods: Total 55 original, review and other articles were searched through electronic database like PubMed, Research Gate and google scholar. Among them, 19 relevant articles were selected then critically analysed, cited and prepared a reference list by using Zotero software. After thoroughly reviewing those articles different impacts among nurses around the world related to COVID-19, were analyzed and organized in this article.

Results: Nurses experienced tremendous fear and anxiety for the safety of themselves and their family members. Likewise, stigma related to COVID-19 affects the emotional and family health of the nurses. Thus, nurses should be adequately prepared to battle such pandemic situations and they should be supported emotionally and socially including organization enrichment. Adequate resources are indispensable for the better adjustment with such pandemic situations like COVID-19.

Conclusion: Organization support with adequate resources including community awareness against social stigma is indispensable to support the nurses during such pandemic situation.

Keywords: COVID-19, impact, nurses

INTRODUCTION

With the initiation of the coronavirus (SARS-CoV-2) pandemic in Wuhan (China) in December, 2019, it rapidly spread all over the world. Since the beginning of the outbreak, 532,201,219 people have been infected worldwide and 6,305,358 have died in the world till 10 th of June 2022.[1] The COVID-19 pandemic affected the population globally. On 30 th of January 2020, WHO declared the outbreak of coronavirus as a Public Health Emergency of International Concern (PHEIC) and on 11th March 2020 it was declared as a pandemic. Within a 6 months period virus spread around the globe making dreaded morbidity and mortality of people. Similarly It brought down the economies globally, making the situation more challenging to tackle. [2]

Around 27 million people make up the global nursing and midwifery workforce comprising nearly 50% of the health workforce.[3] During this pandemic the shortage of nurse and midwife workforce skyrocketed due to exposure with virus and had to stay in quarantine and isolation until COVID-19 negative status or recovery from the disease. A study of Turkey, revealed that more than half (54.5%) of nurses and midwives said that their life had been worse since the outbreak started and around two third (62.4%) faced difficulty in dealing with the uncertain situation due to COVID-19 infection and 42.6% wanted psychological support.[5] In This terribly pandemic situation, an adequate health workforce having good health and psychological well-being is crucial to fight the battle of the pandemic.

METHODS

The review article is based on the systematic search of the 55 articles (original, review and systematic reviews), among them 19 relevant articles were selected from 12 countries of the world for the study. Articles have been searched by means of PubMed and google scholar on the title of "impact of COVID-19 among nurses" within the period of 2020 to 2022. At first, articles had been searched and abstracts of the related articles were reviewed and articles relevant with the title of the study were saved in Zotero software for through study, citation and referencing. After that reviewed articles were critically analysed. The main findings have been written by organizing in a sequencing manner. The findings were organized in the sequence of abstract, introduction, method, finding and conclusion.

FINDINGS

In this pandemic situation, people who were linked with disease were labeled as stereotyped, discriminated from society, treated differently as a consequences they had low self-esteem. Such behaviors have a negative effect on diseased persons and their near and dear ones. [4] Due to COVID-19 pandemic, almost all (94.9% nurses were experiencing difficulty in family and private life, including fear of infecting her family (71.9%), not meeting her family (7%) and missing her family (21%).[5] Another study revealed that the main causes of the fear and emotional distress of nurses were fear of transmitting their near and dear one, unclear decision form the authority, shortage of personal protective equipment (PPE) and workload.[9] In such difficult scenario during COVID-19 pandemic, quality of nursing and midwifery care has been threatened.

Similarly, less than half (40.8%) of the nurses were also faced difficulty in social life, including not going outside from home and not meeting with friends (74.8%), neighbour do not allowed them to enter the home and child's caregiver quits work (8.4%), which was challenging for the working women like nurse.[5] More than half (53.7%) of the nurses had experienced stigma due to occupation. Among those nurses 49.8% stigmatized because of profession; followed by being accused of being a carrier of disease (40%), threatened (5.9 %) and asked to leave the rented room(4.3%).[6] Stigma faced by health workers was significantly associated with experiencing symptoms of anxiety, depression and insomnia.[6] Even though they are providing 24 hours nursing care in such deadly pandemic situations, being separated from their near and dear ones, they were stigmatized and discriminated against, developing and fighting with mental health problems like anxiety and depression facing psychological problems due to COVID-19 pandemic.

The psychological aspect of the health was the most affected area in this COVID-19 pandemic.[9] Nurses working in direct care to COVID-19 patients and current smokers were significantly associated with depression.[11] Similarly, the prevalence of psychological distress among nurses is related to having concern for family, being discriminated against, not having proper coping mechanisms and COVID-19 related stress. [12]

In South Korea , health workers lived with family member with chronic underlying diseases such as diabetes, hypertension, chronic kidney disease, heart disease and stroke showed significantly higher level of anxiety than others. [7] Training or orientation programme before working CODE-19 unit is very important for the safety of the patients as well as nurses [8], which reduce fear and anxiety related to COVID-19. Nurses were feeling tired more than usual and also faced difficulties in sleeping during COVID-19 pandemic period.[8] A study of China revealed that only child status, infected population, highly infectious, high mortality if not treated early, long duration of the outbreak and separation from family for a long time are the major stressors of the nurses during COVID-19 pandemic.[10] Similarly, inadequacy of precautionary measures in the place and history of medication for mental problems are significantly associated with having symptoms of anxiety, depression and insomnia. [6]

Yang et. al.(2020) found out among health workers working in COVID-19 pandemic, 50%had anxiety and 11.1% had depression in South Korea. In China, the prevalence of depression among emergency department nurses was 43.61% .[11] Around half (48.9%) of the nursing staff working in this pandemic situation faced anxiety, one in four (25%) had been affected by depression in Brazil. Frontliner nurses

engaged with patients directly in provision of care of COVID-19 patients were associated with a higher risk of having symptoms of depression, anxiety, insomnia and distress.[13] Among health workers in Jordan, prevalence of depression was 23.8%and anxiety was 13.1%. Among Philippines nurses, 37.8% had high level of anxiety.[17] However, among the students, anxiety was the most prevalent which was 21.5% followed by health professionals (11.3%), and the general population (8.8%).[14] A study of Nepal revealed that 41.9% health workers had symptoms of anxiety, 37.5% had depression and 33.9% had insomnia.[6] Two different studies of Nepal and China revealed that nurses were significantly more likely to experience anxiety symptoms than other health workers.[6,13] Nurses also experienced more severe depression, anxiety, insomnia and distress than physicians.[13] Similarly, among the nurses, female nurses were more affected with severe symptoms of depression, anxiety and distress while caring for patients with COVID-19. [13,15,16]

In Turkey, around half (49.7%) of nurses and midwives experienced sometimes regret for their profession due to COVID-19 pandemic and almost all (94.9%) the nurses faced difficulties family and private life, 68.2% had fear of infecting their family and 21%missed their family.[5] Similarly, 70.7% had experienced difficulty in professional life, 75.9%said decreased work efficiency due to fear of transmission, 9% said reduced care of patients due to fear of transmission and just 5% said tiring and inadequate working with protective equipment.[5] In Israel, nurses perceived themselves as at high risk of contracting the virus and one third of nurses feared togo for work because of potential transmission and inadequate protection. Similarly, 40.9%nurses feared to care COVID-19 patients (18). Around 11.8% nurses were alienated from their job because of the COVID-19.[5] Workload and reduced income of the nurses due to this pandemic situation [8], made their financial situation worse. The quality of life (QOL) of depressed nurses working during the pandemic was lower compared to non depressed nurses. [11]

Resilient nurses receiving support from organization and society have low levels of anxiety associated with COVID-19 pandemic.[17] Thus, related organizations, hospitals and communities should support the nurses to battle in such pandemic situations for the better coping and good outcome of the patients.

Despite having many challenges during working COVID-19 pandemic nurses had strong dedication to providing work and didn't feel regret in working in the nursing profession.[18] Study South Korea revealed, 59.4% nurses said that they felt valuable and realized the importance of the profession and 76.5% said that they felt proud as a health care worker in this pandemic situation. [5]

Nurses were more affected by social stigma and psychological problems during COVID-19 pandemic. Anxiety, depression and insomnia are common problems among nurses during COVID-19 pandemic. Even though they were affected, they were motivated and dedicated on work. Strong family, community and organization support are indispensable to battle such deadly pandemic.

CONCLUSION

Nurses around the world were facing physical, social and psychological consequences during COVID-19 pandemic. Discriminatory behaviour of society, separation with family and fear of transmission of COVID-19 to their family were the major stressors of anxiety and depression among nurses, which was a huge problem during this pandemic. Their personal and family life was in big threat due to fear of morbidity and mortality related to COVID-19 and social stigma faced in the community. In this way, provision of emotional support and training in coping strategies is indispensable for health care workers including nurses working in hospitals in such pandemic situations.

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Review Article

Exercise in Pregnancy: It's Effect on Maternal and Fetal Health an Evidence Based Findings

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ABSTRACT

Introduction: Exercise in pregnancy is one of the important contributors which also has a direct link between healthy mothers and healthy fetus. The purpose of this study is to review the published articles and recommend the information regarding benefit of exercise in pregnancy on maternal and fetal health.

Methods: Systematic search of peer- review publications had been done through Google Scholar, Medline, Pubmed and Scopus. Among the 32 relevant articles on this topic has been selected and reviewed ,analyzed and significant findings have been concluded. Pregnant mothers who do not have obstetric or medical contraindications should be encouraged to exercise during pregnancy. Observational studies of women who exercise during pregnancy have shown benefits such as decreased gestational diabetes mellitus, cesarean birth and operative vaginal delivery. It is related with the course of a healthy pregnancy, since it can increase physical fitness, lower the risk of excessive gestational weight gain, gestational diabetes, pre-eclampsia, macrosomia, and stillbirth. Exercises during pregnancy advances neuro-behavioral relaxation in the fetus.

Conclusion: Regular exercise is are recommended for pregnant women, for overall health benefits of maternal and fetal health. Evidences supported that moderate level exercise during pregnancy is safe for the fetus during intra uterine life.

Keywords: Benefit, exercise, maternal and fetal health

INTRODUCTION

Pregnancy is a time in women's lives that is associated with considerable physiological and psychological changes which may promote sedentary behaviors and/or low levels of physical activity. Such behaviors have been associated with elevated risk of gestational diabetes, pregnancy-induced hypertension, high gestational weight gain, and the long-term risk for overweight/obesity development, Type 2 diabetes, and cardiovascular disease [1].

One of the important constituent of care to pregnant mother is exercise in pregnancy [2]. Exercise, defined as physical activity consisting of planned, structured, and repetitive bodily movements done to improve one or more components of physical fitness, which is an essential element of a healthy lifestyle [3]. Exercise improves or maintains physical fitness and overall health and wellness 4. It is important and can help with some common discomforts of pregnancy and even help prepare body for labor and delivery [4].

During pregnancy, there are several changes in the pregnant women's body due to effects of hormones which reduce support and increased mobility in structures to which muscles and tendonsare attached. Some of them include low back pain, loss of balance, and weakness of the pelvic floor muscles, urinary incontinence and constipation. These discomforts can be relieved through appropriate exercise in pregnancy [5].

In American Congress of Obstetrician and Gynecologist has recommended low impact moderate intensity exercise for pregnant women, which can be gradually progressed over a period of time for 30 minutes a day on most days of the

week. It recommended many water or ground-based physical activities during pregnancy. A sedentary lifestyle before or during pregnancy is frequently associated with negative maternal health impact and poor neonatal outcomes so sedentary women should increase their activities gradually and progressively. A pregnant women without obstetric or medical problems are encouraged to engage in moderate exercise a day avoiding the risk of abdominal trauma. The strengthening of the abdominal and back muscles could minimize the riskresulting lordosis 3. Exercises during pregnancy decreases adipose tissue growth, increases stress tolerance and advances neuro-behavioral relaxation in the fetus [6].

METHODS

The review article is based on the systematic search of 32 articles in Google Scholar, Medline, Pubmed and Scopus. They were original articles, review articles and other general articles, listed in the references. After reviewing those articles following information are concluded which are categorized in terms of types of exercises in pregnancy, benefit of exercise in pregnancy on maternal health, fetal health and recommendation of exercise for pregnant mothers.

Types of Exercises in Pregnancy

The exercises which are recommended during pregnancy include breathing exercise, aerobics, pelvic floor exercise, brisk walking and indoor stationary cycling. Breathing exercise ensures a steady intake of oxygen as well as prepares the woman for the need to maintain uniform and rhythmic breathing during labor [7]. Studies also emphasize Safe and Beneficial exercise during pregnancy are Walking, Aerobic exercises, Dancing, Stretching exercises, Hydrotherapy, water aerobics which could be done throughout the week. Irrespective of the types of exercise, pregnant mothers should be under the care of an obstetrician-gynecologist or other obstetric care provider who will advise them to adjust their exercise during pregnancy and postpartum [8]. The available evidence from intervention trials combining both aerobic and muscle strengthening physical activity support the recommendation for regular strength training to be included for pregnant women [9].

Strength training exercises are activities that strengthen muscles. They include swimming walking uphill, yoga and even digging the garden. They will improve muscle tone and build stamina, which will help during labour [10].

Benefit of Exercise in Pregnancy on Maternal Health

There is increasing evidence that Exercise during pregnancy is indeed beneficial to maternal physiological and psychological health [11]. The general benefit of exercise for pregnant women include reducing blood pressure decreases cardiac vascular such as clot formation, helping to maintain ideal body weight [12].

These kinds of Lifestyle intervention targeting physical activity have the potential to prevent Gestational Diabetes Mellitus (GDM), pre-eclampsia and excessive gestational weight gain in pregnant women [13]. The study done in Nepal reveal that 27% in among 200 pregnant women hadgestational diabetes mellitus in which risk factors were obesity and lack of physical activity during

pregnancy [14].The study done in the United States has observed that moderate exercises such as walking/ cycling can prevent pregnancy induced hypertension. In an article emphasis was given particularly exercise in pregnancy will improve cardiovascular function, decrease risk of gestational diabetes mellitus, hypertension, and the limitation of weight gain are among the more pronounced benefits to the mother. Exercise also decreases aches and pain associated with pregnancy[15]. Similarly a meta-analysis study was conducted based on calculations of pooled estimates using the random-effects models which revealed that exercise during pregnancy was shown to decrease the occurrence of GDM in normal-weight women. Regarding secondary outcomes, exercise during pregnancy can decrease gestational weight gain [16]. In pregnancy, greater self- reported overall physical fitness and cardio respiratory fitness are associated with less bodily pain, lumbar and sciatic pain, and reduced pain disability. A 2016 systematic review and meta- analysis in normal-weight pregnant women with a single, with a significantly lower incidence of GDM and hypertensive disorders [17].

A systematic review conducted in 2010 finds broad literature support of the antidepressant effects of exercise in the general population, and a small

number of observational studies reported that regular physical activities improve self-esteem and reduce the symptoms of anxiety and depression during pregnancy [18]. In 2012, Robledo-Colonia et al published a randomized control trial of exercise during pregnancy that involved 80 nulliparous, pregnant women. The experimental group completed a 3-month supervised exercise program, whereas the control group continued usual activities with no specific exercise program. After the 3-month intervention, the women who exercised regularly had a statistically significant decrease in depressive symptoms compared withthe control group [19].

Pregnant women who exercise have generally shorter labor and faster and easier deliveries [12]. Exercise can also prevent early onset of labor premature rupture of membrane and can help to shorten the duration of labor [15]. Exercise during pregnancy reduces the risk of cesarean delivery. This is an important finding to convince women to be active during their pregnancy and should lead the physician to recommend physical exercise to pregnant women, when this is not contraindicated [20]. Women who participated in an exercise program throughout their pregnancies had a lower percentage of cesarean section and instrumental vaginal deliveries compared with a control group [21]. A Systematic review conducted in 2016 normal-weight pregnant women with a single-n uncomplicated gestation showed that Exercise was associated with a significantly higher incidence of vaginal delivery and a significantly lower incidence of cesarean birth [17]. Women who participated in an exercise program throughout their pregnancies had a lower percentage of cesarean section and instrumental vaginal deliveries compared with a control group. [21]

Benefit of Exercise in Pregnancy on Fetal health

Evidence continues to grow in support of the notion that exercise during pregnancy is beneficial for fetal health and well-being, extending into childhood 22. Different evidence based literature was analyzed here. The studies suggest benefits to the fetus that may be used to motivate women to exercise during pregnancy include decreased resting fetal heart rate, improvement in the viability of the placenta [23]. Benefits for offspring are observable related to body weight and composition, cardiovascular health, and nervous system development [22].

Exercise in pregnancy also showed beneficial effects for the fetus. Exercise in early pregnancy increases the umbilical blood flow and improve placental circulation as well as the fetal cardiac adaptation to the environment. It also advances neuro-behavioral relaxation in the fetus [6].

Multiple studies have shown that blood flow to the fetus is not significantly altered by moderateintensity physical activity [24].

The Pubmed database was analyzed from January 1970 to January 2011 on exercise during pregnancy which indicated a significant reduction in rates of preterm labor, intrauterine growth retardation ($p < 0.003$), low birth weight ($p < 0.01$), in those who practiced exercise during pregnancy[25]. The study also shows that exercise during pregnancy is not detrimental to the fetal cardiovascular system and neuronal function in the developing child[11]. The review article also clarify that this makes an increase in endothelium-dependent vasodilation, it will possibly provideprotection against preeclampsia [26].

Overall, birth weight was not significantly different between physically active women and inactive women [27]. Another study also revealed exercise during pregnancy potentially improved neurodevelopment as benefits for the child [15]..

Recommendation of Exercise for Pregnant Mothers

Regular physical activity in all phases of life, including pregnancy, promotes health benefits. Pregnancy is an ideal time for maintaining or adopting a healthy lifestyle and the American College of Obstetricians and Gynecologists makes the following recommendations' Physical activity and exercise in pregnancy are associated with minimal risks and have been shown to more benefit for most women, although some modification to exercise routines may be necessary because of normal anatomic and physiologic changes and fetal requirements' A thorough clinical evaluation should be conducted before recommending an exercise program to ensure that a patient does not have a medical reason to avoid exercise. Women with uncomplicated pregnancies should be encouraged to engage in exercises before, during, and after pregnancy. Obstetrician–gynecologists and other obstetric care

providers should evaluate women with medical or obstetric complications carefully before making recommendations on physical activity participation during pregnancy. Activity restriction should not be prescribed routinely as a treatment to reduce preterm birth. [28].

The American College of Obstetrics and Gynecology (ACOG) recommends 30 minutes or more of moderate exercise per day on most if not all days of the week, unless you have a medical or pregnancy complication 29. Although regular exercise is recommended during non-complicated pregnancies to promote maternal and fetal/infant health, estimates suggest that only 15% of expectant mothers achieve current exercise recommendations[30]. The 2018 update Department of Health and Human Services Physical Activity Guidelines for Americans reinforces prior recommendations of at least 150 minutes of moderate intensity aerobic activity per week during pregnancy and the postpartum period [31].

A 2016 systematic review and meta- analysis in normal-weight pregnant women with a single- n uncomplicated gestation showed that aerobic exercise for 35–90 minutes 3–4 times per week is not associated with an increased risk of preterm birth or with a reduction in mean gestational age at delivery [17]. This also led to international recommendations for exercise during pregnancy [32]. As long as healthy pregnant women participated in exercises, their blood pressure could be

slightly regulated, while hypertension susceptible pregnant women significantly lowered blood pressure.[33]

LIMITATION

Physical activity has been theoretically related to preterm birth because it increases the release of catecholamines, especially norepinephrine, which might stimulate myometrial activity. Conversely, exercise may reduce the risk of preterm birth by other mechanisms such as decreased oxidative stress or improved placenta vascularization. Therefore, the safety of exercise regarding preterm birth and its effects on gestational age at delivery remain controversial [17]. Exercise during pregnancy is not associated with a reduction of mean gestational age at delivery or an increase in the odds of cesarean delivery.[16]

CONCLUSION

There are various benefits of regular moderate exercise during pregnancy for low risk women in terms of their physical and mental aspects and also to the fetus, so pregnant women should be encouraged to perform physical exercises if there are no contraindications.

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Review Article

Transitional Care Models for Stroke Survivors to Improve Quality of Care through Bridging the Care Gap from Hospital to Home: A State of Art Review

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ABSTRACT

Introduction : Stroke is a life threatening medical emergency that occurs suddenly and impact greatly in all aspect of an individual's normal life since the early stage to long term. Various types of transitional care models are using by Health systems to improve care transition among stroke patients. Aims:

This paper aims to explore the existing transitional care models used to improve the quality of care and patient's outcome among stroke survivors.

Methods: An Integrated review was conducted of empirical literature available in PubMed, Google Scholar, ProQuest, and NepJol by June 20, 2022 to identify studies of hospital to home care transitions of stroke patients with quality of care as the primary outcome.

Results: There are 6 main types of transitional care model which focused on care transition for stroke survivors: 1) Naylor's Transitional Care Model (TCM), 2) Coleman's Care Transition Interventions (CTI), 3) Project Re-engineered Discharge (project RED), 4) Better Outcomes by Optimizing Safe Transition (Project Boost), 5) Enhanced Discharge Planning Program and 6) Comprehensive Post-Acute Stroke Services (COMPASS). Although, all models are differing by design, each of the models can provide a framework for managing health conditions from hospital to home settings in collaboration with the client and his/her family. Hence, the transitional care Models are effective to bridge the care gap between hospital to home and improve the quality of health care and patients outcomes among stroke survivors.

Keywords: Stroke, Transitional care, Care transition, Transitional care model, Early discharge planning

INTRODUCTION

Stroke is a life-threatening condition; however, stroke patients can return to participate in usual self-care and daily activities as independently as feasible. The time, patterns and intensity of rehabilitation needs are changed over time across the care continuum and vary in each individual due to the reality of stroke patients of various aspect of health and functional impact as well as varying trajectories of recovery periods of its impact. This phenomenon may lead to complexity of the rehabilitation process to the stroke survivors. Therefore, current evidence based practices need to be employed to improve the effectiveness and efficiency of rehabilitation for people with stroke. Currently, various types of evidence-based practices are extensively trailed and demonstrated the efficacy of practice having common goal to improve the health condition of stroke patients. [1]

A model is a visual representation of concepts or process of care. Originally transitional care model (TCM) was developed by University of Pennsylvania School of Nursing with the aims to facilitate earlier hospital discharge of vulnerable patients as a substitution of hospital care through transitional home follow up care by Advanced Practice Nurses. [2] Similarly, common outcomes of the TMC were focused on prevention of health-related complications and re-hospitalizations of

chronic ill elderly hospitalized patients by providing comprehensive discharge planning and home follow up care by nurses who are trained in the care of chronic conditions. [3] The core features of Transitional Care Model were comprehensive in-hospital planning and home follow-up care through home visit and telephone call. [4] Later on, a number of TCM were developed and implemented to improve quality of care and bridging care gap from hospital to home of stroke survivors. In this background, this paper aims to explore the existing Transitional Care Models used among stroke survivors to improve the quality of care and patients' outcomes through bridging the care gap.

METHODS

An Integrated review was conducted of empirical literature available in PubMed, Google Scholar, ProQuest, CINAHL, and NepJol by June 20, 2022 to identify studies of hospital to home care transitions of stroke patients with Quality of care as the primary outcome. Data extraction on study design and intervention components was limited to studies of adult stroke patients. The findings from the existing literature are described as following.

RESULTS

Currently, Transitional Care Models were broadly used for managing the vulnerable people and their family caregivers for bridging the care gap between hospital to home which ultimately improved quality of care. [6] and health outcomes of stroke survivors. [6] TCMs were used as a framework for providing patient centered care process for early recognition and resolution of health problems. The benefits in utilizing these models during transitions phase were to reduce and prevent potential complications, unscheduled emergency visit, hospital readmission, and its associated costs.

It was found that there were six existing transitional care models that were used as a framework among stroke survivors from hospital to home settings. They are 1) Naylor's transitional care model (TCM), 2) Coleman's Care Transition Interventions (CTI), 3) Project Re-engineered Discharge (project RED), 4) Better Outcomes by Optimizing Safe Transition (Project Boost), 5) Enhanced Discharge Planning Program and 6) Comprehensive Post-Acute Stroke Services (COMPASS). [7-11] All the models were described in Table 1. Although all models are differing by design, each of the models can provide a framework for managing health conditions across settings of care in collaboration with the stroke survivors and his/her family and coordinated by nurses.

All models were trialed with chronic illness included stroke but there is no single study to support exclusively for stroke patients. However, existing substantial literature review showed that Naylor's Transitional Care Model (TCM) is more effective model for early recognition and resolution of changes in a patient's health outcomes such as preventing potential complications / adverse events, lessening days of hospital stay, patients satisfaction, its associated costs as well as improving the quality of care in the setting from hospital to home. The description of this transitional care model is as follows

Naylor's Transitional Care Model (TCM).

The Naylor's Transitional Care TCM is a nurse-developed and nurse-led, multidisciplinary approach providing comprehensive, holistic care to older adults hospitalized with chronic illness conditions. [2, 7] A major emphasis of this model was client-family understanding and management of health issues, and early identification and response to potential problems to prevent decline in client health status.

Transitional Care Nurse (TCN) works as a care coordinator during hospitalization and after discharge. At hospital, the nurse 1) conducts daily patient visits with focus on maximizing the patients' health for discharge 2) conducting the comprehensive assessment of the health of the patients, health behavior, level of social support and goal, 3) develops the evidence-based guideline and plan of care in collaboration with the patients, family members and health care team. Similarly, after discharge, the nurse performs series of home visit, telephone follow up calls and facilitates the communication with outpatient's providers. During home visit and phone call, nurses should focus on two main things 1) identification of changes in patients' health 2) managing or preventing those health problems.

The core components of Naylor TCM were summarized by Wong et al. (2005) for chronic illness patients. [12] They were comprehensiveness, collaboration, coordination and continuity of care. Those components are described as following.

Comprehensiveness

There are several features commonly found in the design of interventions among the Transitional care studies. The interventions mainly focused on health assessment and management [2, 12 - 15], provision of health information, [6, 13,14, 15] patient education and promotion of self-management skills through teach-back methods to ensure the understanding and enhance adherence behavior in medication, diet, exercise and healthy lifestyles, physical exercises and ADL training signs and symptoms assessment and management and mobilization of health and social resources. [12, 15, 16] In addition to comprehensive management focus on reduction of modifiable risk factors, maintenance of health status, and management of post stroke complications [14]. Similarly, Puhr & Thomson (2015) had done systematic review of transitional care model in stroke patients, concluded 13 randomized control studies with stroke patients. The interventions of those studies are varies however, some common interventions are comprehensive discharge planning, stroke education, emotional support to patients and caregivers, medication reconciliation, ongoing rehabilitation/ physical therapy, individualized care and connecting to patients with community based services. All most all studies initiated in hospital and continue to home through telephone call and home visit. [18]

A systematic review of 27 transitional care studies with acute stroke care recommended that the hospital initiated transitional care strategies can improve some outcomes including reducing hospital days and improving physical activities for neurological patients. The authors also concluded that hospital-initiated strategies focusing on coordination of care are important determinant for improving health care. [19] Another study also reported that, home-visiting programs those led by multidisciplinary team can reduce mortality in all the follow-up times and enhances the activities of daily living for stroke survivors after hospital discharge. [6]

Coordination and collaboration of care

Nurses can play primary care coordinators in transitional care model, as well as play the primary role as a transitional care coach, holistic care manager, case managers, holistic nurse manager and community nurse with special training. [12, 14, 15] However, systematic review studies suggested that patients and family caregiver's engagement in care process, use of a dedicated transitions provider and facilitation of communication with out-patients providers require time and resources for successful implementation of transitional care for stroke patients. [19, 20]

Continuity of care or/ Follow up visit

Continuity of care is also called continuum of care is to what degree the care is coherent and linked to one setting to another setting. The dimensions of continuity of care based on person and disease comprises informational continuity, relational continuity and management continuity. For the continuity of care, nurses performed series of home visits and telephone calls with patients and caregivers based on standards protocol. The continuity of care or post discharge interventions lasted for 1- 3 months. [3, 4, 14]. Some studies mentioned about sole telephone follow-ups also promoted positive health outcomes by bringing lifestyle changes and quality of life ultimately improved health outcomes. [15, 21] Other studies consider the home visit as the major component in transitional care. [6, 13, 15] Additionally, most of the studies used both telephone call and home visit as a continuity of care. [15]

Outcomes of the existing studies related to transitional care Model

A systematic review of 13 randomized control trial studies regarding transitional care model for stroke patients reported the significant improvement in satisfaction and less adverse events, stroke knowledge and cost of care. [18] Likewise, another systematic review with 12 RCTs summarized about quality care outcomes following transitional care interventions concluded that patients and family center care outcomes were limited in pertaining to the patients and carer experience, carer burden, care competency skill and emotional support for patients and carers. [22]

The TCM with four components was used as a framework and tested through randomized control trial (RCT) for providing stroke rehabilitation. The study revealed that nurse-led transitional care interventions demonstrated a significant improvement in self-efficacy, increased QOL in stroke survivors, stroke-related knowledge, and reduction in unplanned hospital readmissions and caregiver-related burden. [6] Likewise, all TCM components were also tested by randomized controlled trial studies in stroke patients found the significant effect on quality of life, functional ability, reduction of complications and adverse events. [23]

Moreover, a randomized control trial on providing the hospital initiated holistic transitional care intervention for stroke rehabilitation reported the quality of life, patients' satisfaction, functional outcomes, depression was measured by SP-36 and WHO-QOL-spirituality, Religion & Personal Beliefs. The result showed significant improvement in intervention group compared to usual care on satisfaction score (p=0.001); Barthel index (p=0.001), Depression (p=0.001) and total score of quality of life (p= 0.001) after intervention compared to usual care. However, the holistic intervention was based on Chinese culture. [15] The setting of the study might not fit in context of resource limited countries like Nepal because of limited resources, cultural variation and difference in system of care for stroke patients as well.

Likewise, most of the transitional care study measured the physical health outcomes: neurological function, functional wellbeing, physical status, mobility function, self-care ability, self-efficacy, and signs and symptoms assessment. [4, 6, 14] In the aspect of psycho-social care in terms of psychological or social support, emotional support was only found in a few studies. [15, 24] Physical component of care was focus in stroke transitional care studies such as exercise, mobility and ADL training as well as prevention for stroke complications. [14,15]

The most frequently documented psychosocial health outcome such as depression was measured in few studies. Apart from this, quality of life measures in four dimensions; physical, functional, psychological and social health were measured using short form (12 items and 36 items) health-related quality of life instruments. [14, 15]

The American Nurses Association (ANA) identified patient satisfaction with nursing care as a key nurse-sensitive outcome. It is an essential quality indicator to capture key aspects of nursing care quality. However, this outcome was measured in two studies. [4, 15]

CONCLUSION

In summary by reviewing the outcome measures reported in previous transitional care studies in regard to quality of care, the majority of outcomes measured for evaluation were readmission rate, length of stay and net cost. There are no existing studies which directly addressed the process measure for evaluation which is directly link to nursing care quality such as patient's outcome: safety, satisfaction and functional status, however, patient's satisfaction was measured in limited studies. Other process related outcomes such as satisfaction on care process, reduction of adverse events and prevention of medical complications are directly linked with quality of care in care process. Most of the study protocol content about patient self-management as well as symptoms management and medication reconciliation for patients' safety. There are very few studies measured the outcome of family caregivers however, family care givers are equally involved in care process and transits with patients together and felt puzzle and crisis in patients' care. So that existing studies still have paucity or show the clear gap in quality of care process in transitional care studies including stroke patients.

Table 1: Description and Comparison of Transitional Care Models

Model	Naylor's TCM	Coleman CTI	Project RED	BOOST	COMPASS	ESD
Essential elements	1. Preparation of TCN guided by MDT through training 2. TCN is primary care coordinator 3. In Hospital assessment & EB nursing care plan 4. Home visit & telephone call by TCN 5. Physician- nurse collaboration 6. Indiviadualized holistic care 7. Educational support to patients and Care givers 8. Early identification & response of problems 9. Patients & CG in team 10. TCM hospital discharge screening tool for high risk 11. Open communication	**Four Pillar** 1. Medication 2. patients center records 3. Follow up 4. Red flag	1. Education related to diagnosis, diet medication and exercise 2. Post discharge appointment, tests etc 3. Discharge reconciliation with national guideline; 4. Emergency plan, 5. Follow up care	1. Patients preparation 2. Teach back process 3. Risk specific intervention 4. Written discharge instruction 5. Technical assistance used combined with CIT or TCM	1.Identifying and enrolling eligible patients (experienced a stroke or transient ischemic attack), 2. Providing educational materials to patients at discharge 3. Communicating with patients within 2 days post-discharge 4. conducting an outpatient clinic visit to develop an individualized electronic care plan for each patient, 5. connecting patients with relevant community resources (home health providers, pharmacy services, local support groups).	1. Early and complete assessment of discharge needs and medication reconciliation. 2. Patient & caregiver education and counselling 3. Timely and complete communication of management plan 4. Early postacute follow-up within 24–72 h for high-risk patients by HCP 5. Early postdischarge nurse phone calls or home visits plans in high-risk patients. 6. Appropriate referral for home care & community support services when needed
Primary role	Nurse as a coordinator	Nurse as a coach	Nurse and pharmacist	Not specified	Registered nurse Advanced Practice Providers (APPs) and physicians on post-acute clinic visits	Nurse, physiotherapist and occupational therapist
Setting	Hospital acute care to Home	Hospital to home	Hospital to community	Hospital to home	Hospital to home	Hospital to home
Target population	Age > 65 years, hospitalized patients of various chronic illness	Age > 65 years, hospitalized patients of non- psychiatric illness	Age > 18 year hospitalized and plan to discharge to community	>65 years with 7 medication & risk factors lack of support & discharge to home	Not specified, however, survivors of stroke and TIA	Not clear, but ESD is the substitute & continuity of hospital care for those who discharged home early from hospital.
Pre discharge services	• Daily visit by nurses within 48-hour after hospital admission. Hospital visit is continue until discharge	Before: APN or RN coach meets with patients at least once in hospital.	Before: Nurse discharge advocate meets with patients at least once in hospital.	Frequency of contact is not specified.	First visit within 2 days of hospitalization	Focus on acute care

Post discharge care	• To minimum home visits. & additional visits as needed; • First visit within 24 hours of discharge; • Telephone call: at least weekly phone contact with patient or caregiver by TCN phone support 7 days per week • APN accompanies patient to 1st follow-up	One home visit within 48 to 72 hours after discharge; 3 phone calls	One phone call. pharmacist calls patients 2 to 4 days after discharge	One phone call recommended for high-risk patients within 72 hours of discharge.	Within 14 days of discharge from hospital	Not clearly specified but nurses and other health care team do the home visit
Post-discharge time frame	28-90 days	30 days	2-4 days a	3 days	2 day call and visit within 14 days	7 days to 5 weeks but not clear

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Review Article

COVID-19 and Nursing Care of Ophthalmic Patients During Pandemic

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ABSTRACT

Background: The corona virus, a novel, enveloped single stranded RNA virus (sarscOv-2) which has mainly affected respiratory system with life threatening results. The SARS-CoV-2 has been detected in several body fluids including tear and discharge of patients suffering from conjunctivitis. The aim of this paper is to explore the nursing care of person with ophthalmic problems.

Methods: A literature review was conducted using data based of Google scholar, Google, Pubmed, Medline since 2015-2023.

Results: An ophthalmic nurse can play a key role in teaching a patient and their attendants about general eye care and protection of vision during COVID-19 monitoring the patient's condition, as well as ophthalmic instruments after it's use have been are two main responsibilities of the nurse working in the ophthalmic units. Nurses also have responsibilities to maintain the safe and clean working environment of the unit, making the environment clean and safe.

Conclusion: The environment of the eye ward must be clean, safe and free from organism. A nurse should warn the patients not to touch or rub the eyes and dressings or eye shields with unprotected hand during this COVID-19 pandemic.

Keywords: ACE 2, Conjunctivitis, Corona virus, COVID-19, Ocular manifestations, Ophthalmic nurses.

INTRODUCTION

Nowadays novel Corona virus disease (COVID-19) is a global public health problem mainly affecting respiratory system with life threatening results[1]. Till now daily life has been jeopardized in all services including eye care facilities. SARS- CoV-2 is a Corona virus that cause COVID-19 which is highly contagious disease transmitted through direct or indirect contact with infected people or contaminated surfaces[1]. Several research articles are published which evaluated the ocular findings in patients with COVID-19.Ophthalmic nurses can play a crucial part for prevention and control of ocular diseases that may be due to COVID-19.Since eye is a very delicate and important organ, it's care and protection during COVID-19 is of the utmost importance. COVID-19 has some ocular manifestations that should not be ignored as the ocular surfaces can also be a mode of transmission of disease through tears and other ocular secretions[2]. Ophthalmic nurses can teach the client and family members about home care of an eye for prevention of eye infection due to COVID-19. Ophthalmic nurses can advise for scrupulous eye care and hygiene to minimize viral transmission through person to person contact[3].Eye health professionals are at risk to contract COVID-19 because they have to adhere to significant proximity necessary for procedures like Ophthalmoscopy, Retinoscopy, Slit lamp biomicroscopy etc. So a great care should be taken by them to be in safe condition [4].

COVID 19 and MECHANISM OF EYE INFECTION

The novel Corona virus can enter our body through our eyes in addition to our nose and mouth. If somebody suffering from Corona Virus sneezes, coughs or talks, he/she spreads droplets that contain virus. The healthy individuals are now most likely

to breathe in those droplets and suffer from Corona virus. Corona virus targets the angiotension converting enzyme 2(ACE 2) receptors in airway epithelium, mainly nose and upper respiratory tract mucosa. Such receptors are present in corneal and conjunctival epithelium as well. Angiotensin converting enzyme 2 serves as the receptor for the virus which is transmittable through human tears and ocular secretions [5]. The conjunctiva of an eye is easily exposed to infectious droplets and fomites during close contact with infected individuals and contaminated hands. Anatomically mucosa of the ocular surface and the upper respiratory tract are connected by the nasolacrimal duct [6]. So when the infected droplets comes in contact to eyes, it is partially absorbed by the cornea and conjunctiva but mostly drained into the nasal cavity through nasolacrimal duct and then transported toward the lower part of respiratory tract including nasopharynx and trachea. The pathogens can later be swallowed into the gastrointestinal tract spreading the infection [4].

OCULAR MANIFESTATIONS OF COVID-19

Most of the current literatures have shown that acute follicular Conjunctivitis with bilateral diffuse red eye (Viral) is the main ocular manifestation of COVID-19 with average duration of 5.9 days [4]. Ophthalmic nurses should be fully aware about the eye diseases that might occur due to COVID-19. Some of the other ocular findings during COVID-19 are Subconjunctival hemorrhage, Keratoconjunctivitis, Episclerits, Dry eye, Orbital cellulitis, Acute dacryoadenitis Uveitis, Retinitis, Vasculitis, Optic neuritis, Cranial nerve palsy etc [6]. Ocular manifestation can occur before, parallel or after the presence of systemic manifestation. One or more ocular manifestations can be seen in hospital admitted COVID-19 patients [4, 6].

ROLE OF OPHTHALMIC NURSE FOR CARING DURING COVID-19

Nurse has a great role for managing patients during COVID-19 pandemic either infected or non-infected with corona virus. Problem in eye is very critical and sensitive which need prompt and immediate treatment. So in hospital, a number of clients with various eye problems came for the treatment even in pandemic situation, related eye problems. Those clients might be infected with COVID 19. Therefore, corona virus may be spread all around the hospital surrounding such as in patients department and out patients department such as surgical area or operation theaters, diagnostic and ophthalmic procedure room, and nursing. Nurses have great responsibility for managing all area for minimizing the risk of getting infection.

1. NURSING CARE AT SURGICAL AREA

A nurse should constantly update herself with the various ocular pathogens during COVID-19 and ophthalmic equipments that can play a role for transmission and contamination of Corona virus during ocular examination and surgical procedures. In the beginning use of the standard masks constantly by patients, eye care providers and visitors should be motivated [8]. Nurse is a first person to arrive at the operation theatre in the morning to see the cleanliness of the section. All the surgical equipments must be sterile for the day's work [9]. She must instruct to the patients who are undergone surgery to never touch their eyes, eye dressing or eye shields specially during COVID-19 pandemic. A nurse should monitor whether aseptic techniques are carried out in Operation Theater and minor operation procedure room or not to prevent contamination from pathogens [10]. During the operation or any procedures, all ophthalmic personnel should use gowns, gloves, masks, N95 respirators, face shields with goggles. The door should be kept open and all rooms well ventilated. All ophthalmic surgeries must be day care unless mandated. Moreover simultaneous double table surgery protocol should be discarded and single room single patient at one time is recommended to ensure limited people for each procedures. Masks should be provided and continued in the patients before, during and after the surgery. During the pandemic, a larger eye drapes with sizes of 80X80 cm or even more should be used. A cotton tip applicators should be used to manipulate the eye lids instead of touching with fingers to separate them. Before the surgery, it is recommended to request for chest X-ray as a routine investigation to rule out active pulmonary infiltration. After attending a suspected or confirmed case of COVID-19 in case of immediate ophthalmic emergency, disinfection of all surfaces that may have come in contact with a patient or any

members of the surgical team should be done. Proper cleaning of frequently touched surfaces such as door knob, bedrails, table tops, light switches of a surgical room at two hours intervals should be carried out. The active ingredients for cleaning agents include 70-90% alcohol, hypochlorite, hydrogen peroxide and phenol [8].

2. NURSING CARE AND PRECAUTIONS AT OUTPATIENT DEPARTMENT/MINOR OPERATION THEATRE AND INVESTIGATIVE ROOMS

In the examination room or any procedure room, only one patient at a time should be allowed with no or just one attendant with one patient. One should avoid touching a patient with non gloved hands. After doing any procedures, one should immediately need to sanitize the gloved hands before writing a typing a case details. Maintaining a adequate distancing is important while talking to a patient or their attendants[11]. A nurse should give instructions prior to the procedures and avoid talking while examining a patient. Initially viral like conjunctivitis can be a presenting symptom of COVID-19, so such an individual should be treated with extra caution as early detection may result with improved prognosis and mitigate spread. Special precautions are needed during the ophthalmic procedures like lacrimal irrigation and probing, intraocular pressure measurement with contact tonometry, slit lamp examination, ophthalmoscopy, gonioscopy, biometry and ultrasonography of a patient [4]. Breath shields should be mounted on any ophthalmic equipment like keratometer, non contact tonometer and optical biometer. Ophthalmic equipments like B scan probes, trial frames, chin rest and forehead rest of various instruments, breath shields should be sterilized using 70% ethyl alcohol or isopropyl alcohol. Instruments that come in direct contact with ocular surfaces like tonometer tip, gonio lens, laser lens etc should be immersed in 1:10 sodium hypochlorite or three percent hydrogen peroxide for five minutes and wiped with 70% ethyl alcohol or isopropyl alcohol. During ophthalmic procedures, disposable instruments can decrease the risk of transmission of virus. All ophthalmic procedures should be done with proper personal protective equipment and gloves, give instructions prior to the procedures and avoid talking while examining. For a patient with confirmed or suspected COVID-19, ophthalmic consultation should be completed within the quarantine ward to avoid cross infection[12]. Through cleaning of ophthalmic instruments before and after every new case should be done while performing tests like Gonioscopy, Tonometry, Keratometry, OCT, Fundus photos, A scan/B Scan, Visual field etc. The wall and floor of the examination rooms should be cleaned every two hours. The practitioner should speak as less as possible and a patient should also be informed not to speak a lot. Hand washing to be preferred over alcohol based hand sanitizer before and after examining each patient and also before touching any equipment used for ocular examination. All patients care area and even waiting area including floor, furniture and fixtures should be cleaned at least two times a day. Similarly mopping with one percent sodium hypochlorite should be done at the evening after out patient department finishes it's examination procedures[11].

CONCLUSION

Caring for ophthalmic clients, a nurse needs to be fully familiar with common ocular manifestation of COVID-19 and its management in hospital as well as in a home. Acute red eye with follicular conjunctivitis are often noted ophthalmic symptom of clients with corona virus infection. Transmission of corona virus among people is very high during pandemic even from the ocular surface, tears and other secretions through eyes. To prevent the transmission from the ocular surface, ophthalmic nurse have great role and responsibilities by using PPE, obtaining knowledge and skill for caring and proper cleaning the contaminated surface such as indoor and outdoor department.

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Review Article

Historical Overview of Nursing Education in Nepal

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ABSTRACT

In the changing world, history is the key to understand the trend in any society. History of nursing education helps to understand how nursing education has progressed from past to present. The objective of this review article is to briefly describe the initiation and progression of nursing education in Nepal with special focus on trends in nursing education in Maharajgunj Nursing Campus, the first institution for nursing education in Nepal.

Initiation of Nursing Education in Nepal

Nursing education has more than six decades of history in Nepal starting from 1956.Before1956, nursing service in Nepal was provided by foreign trained nurses. With the felt need for preparing nurses in Nepal, the first school of nursing now named as Maharajgunj Nursing Campus, was established in June 1, 1956 AD (Jestha 19, 2013 BS) under the Ministry of Health, Directorate of Health Services, with support from World Health Organization.[1] Late Lamu Amatya, who received nursing degree from Calcutta Medical College in1954 AD, worked as the first in-charge of the school[2] and program was named as staff nurse training program. This school offered basic nursing program of three and half year duration with 15 students in the first intake.[3] With the idea of bringing the nursing school near the clinical practice site i.e. Bir Hospital, this school, initially located in Surendra Bhawan, Sanepa, Lalitpur was shifted to Chhetrapati and then to Bir Hospital complex at Mahaboudha, Kathmandu. With the establishment of Tribhuvan University Teaching Hospital, this school, the pioneer institution of nursing education in the country, was shifted to Maharajgunj as Maharajgunj Nursing Campus (MNC) in March 14, 1986 (Chaitra 1, 2042) [3] In 1959 AD(2016 BS) another school of nursing (later named as Lalitpur Nursing Campus (LNC) was opened at Nir Bhawan, Lalitpur under United Mission to Nepal(UMN) program.

New Education System Plan and Nursing Education

Following the implementation of New Education System Plan in the country, Institute of Medicine (IOM) was established in 1972 AD (2029 BS) under Tribhuvan University (TU) with the mandate to govern all health professionals' education programs in the country. Then, nursing education in Nepal which existed before the establishment of this institute also came under this institute. As a result pre-existing nursing schools came under TU, IOM and they were renamed as nursing campuses and Staff Nurses Training program as Proficiency Certificate Level (PCL) nursing program. The MNC became an IOM constituent campus and the LNC an affiliated campus. The duration of nursing program was changed from 3½ years to 3 years. Lalitpur Nursing Campus is under Patan Academy of Health Sciences since August 2015.[4]

Influence of Girl Education and Royal Involvement in Nursing Education

For many years from its inception, nursing education in Nepal remained a female oriented education and there was a gradual change in its entry requirement. During the early years, due to prevailing patriarchal society, the girls' education was low and nursing profession was not accepted well. These factors hindered in attracting candidates to join nursing. As a result it was difficult to fill up the intake quota and the entry qualification was kept as test pass until before 1969 AD (BS 2026). With increasing number of girls with higher education, the minimum entry qualification was increased to School Leaving Certificate (SLC) pass in1969**.** From 1981 AD (2038 BS), the entry qualification was changed to SLC pass with second division marks. In 1990s along with entry qualification, an entrance examination was also introduced to select the best candidates in nursing education. Enrolment of late Princess Prekshya Rajya Laxmi Devi Shah in PCL nursing program in

1973 AD (2030 BS), has helped greatly in changing the social status of nursing education in Nepal.[3]

Trends in PCL Nursing Curriculum

Many changes occurred in nursing education after it came under TU, IOM. To get an equivalent status with other PCL programs of TU, PCL nursing curriculum was revised with addition of liberal arts subjects such as Nepali, English, Nepal Parichaya, as compulsory subjects. Behavioural Science and Applied Sciences like physics, chemistry and biology were also added in the nursing curriculum to broaden the students' understanding of human behaviour and application of scientific knowledge in nursing. PCL nursing curriculum which was initially clinical-focused was changed to learner–focused in1976. In1987this curriculum was revised to make it primary health-care oriented with the aim of producing nurses with knowledge and skills to provide preventive, promotive, curative and rehabilitative care to individuals, families and communities. This curriculum was again revised in 2007 (2064 BS) to incorporate Skilled Birth Attendant (SBA) core skills along with addition of mental health nursing and geriatric nursing as per the changing health care need of the country and the global health care demands.

Trends in Nursing Education Institutions and Programs

Until 1980 AD, there were only two nursing campuses i.e. MNC and LNC to prepare nurses to serve in the country. In order to meet the increasing demand for nurses as a result of expansion of health services in the country, IOM upgraded some of the Auxiliary Nurse Midwife (ANM) and Community Medicine Assistant (CMA) campuses for PCL nursing program. These included upgrading Biratnagar ANM campus (established in 1966 AD i.e.2023 BS) to Biratnagar Nursing Campus in 1981 AD (2038 BS), Pokhara CMA campus(established in 1982 AD i.e. 2039 BS) to Pokhara Nursing Campus in 1984 AD (2041 BS), Birgunj CMA campus (established in 1975 AD i.e. 2032 BS) to Birgunj Nursing Campus in1986 AD (2043 BS) and Nepalgunj ANM campus (established in 1969 AD i.e. 2026 BS) to Nepalgunj Nursing Campus in1987 AD (2044BS).[5] In 1989 AD (2046BS) one more nursing campus i.e. Bir Hospital Nursing Campus was started under Ministry of Health with affiliation from TU, IOM. This campus came under National Academy of Medical Sciences in 2002 (2059BS).[6] In the later decades education system was expanded in the country with the establishment of different universities and academies. Consequently nursing campuses are also expanded in the country.

Until early 1970s, there was only one level nursing program in the country i.e. PCL nursing program. Gradually nursing education programs were expanded from PCL level to bachelor level, master level and PhD level programs. In 1976 AD (2033 BS) two and half years Post-Basic Bachelor of Nursing (PBBN) program was started for the first time in midwifery[7] in MNC with intake of 10 students to provide higher education opportunity in midwifery for the PCL nursing graduates. After completion of two batches, midwifery program was stopped and in March 1981 (Chaitra,2037)PBBN program in community Health Nursing of 2 years duration was started with the intake size of14 students and it continued for four batches as per the need of the country and the available faculty resource. In May, 1983 (Jestha, 2040) PBBN program in adult nursing was started with intake of 16 students and in February 1985 (Falgun, 2042) PBBN program in child health nursing with intake of 14students were started and continued for three batches in both (MNC Record). However, there was mismatch found in the clinical placement of these PBBN graduates.

As a result of the mismatch of PBBN graduates in clinical placements, all PBBN curricula were reviewed in1988AD (2045BS) and reorganized to form two track curriculum i.e. hospital nursing and community health nursing tracks with core courses in areas of teaching, leadership and management and research to enable graduates to be flexible and adaptable to any area of practice. This two-track curriculum was implemented from 1988. In 2000 AD (2057 BS) psychiatric nursing track was added to this curriculum. In 2013 AD(2070BS) as per the feedback received from the PBBN graduates, and global health care need scenario, a major revision in PBBN curriculum took place with addition of basic sciences and geriatric nursing and five tracks i.e. midwifery, adult health nursing, child health nursing, psychiatric nursing and community health nursing with duration of program as 3 years. The curriculum

was renamed from PBBN to Bachelor of Nursing Science (BNS) curriculum. This BNS curriculum was implemented in IOM nursing campuses from the year 2013 AD (2070) and intake in 2 years PBBN program was stopped from the same year.

With the aim of bringing gender equality and positive change in nursing, previously female dominated nursing education was opened to male candidates in 1986 AD. A10% quota from designated seats was allocated to male candidates in PCL nursing program. However, due to the pressure from community and dissatisfaction from students' side, after 4 batches of intake, this policy was stopped from 1990.[3] Later on in 2018, by the decision of Nepal Nursing Council board meeting of June 19, 2018 (Ashar 5, 2075) nursing education was re-opened to male candidates with provision for 15% quota to male candidates in PCL and B Sc Nursing programs.[8]

Nursing teachers were also benefitted after the nursing program became university program. Need for strengthening of teacher capacity through further education and training was realized and during 1980s, two nursing teachers received PhD degree and more than 20 nursing teachers received master's degree from different universities outside Nepal. Truly saying,*"....the decade of 1980s can be remembered as the golden period for nursing education in Nepal".* [1] Then, these teachers greatly contributed in refining nursing curricula and improving its implementation in terms of classroom and clinical teachings.

Need for post-graduate level of nursing education in Nepal was felt and a feasibility study for initiation of master of nursing program was conducted in 1991 under the Nursing Education Department, IOM. The study indicated that with the expansion of health services, there would be a need for more nursing positions requiring higher level qualifications. The study also indicated that almost all (90.0%) of the PBBN graduates surveyed were interested in undertaking master's study in Nepal.[9] As a result of this feasibility study, Master of Nursing Curriculum was developed with support from WHO and in April 15, 1995 AD (Baisakh2, 2052 BS) MNC started Master of Nursing (MN) program in Women Health & Development specialty with intake of 4 students. In the subsequent years, Adult Nursing specialty (in April 2000), Child Health Nursing specialty (in April 2001), Psychiatric Nursing specialty (in April 2016) and Community Health Nursing specialty (in April 2020) were added to MN program in MNC. Currently in total 32 students are enrolled annually in MN program in MNC. By now, not only IOM constituent and affiliated colleges run the Masters level nursing program but also other educational institutions like BPKIHS, NAMS, PAHS and Kathmandu University have masters level nursing programs.

In 1996 another cadre of nursing program i.e. B Sc Nursing program was started in BPKIHS for the first time in the country. In IOM, it was started first in MNC in December 15, 2005 (Mangsir 30, 2062) with intake of 20 students. In the later years this program was initiated in other TU, IOM campuses as well as in other universities and academies. By now all nursing campuses under TU IOM have B.Sc. nursing program.

Another institution, the Council for Technical Education and Vocational Training (CTEVT) was established in the country in 1989 (2045 BS) as an autonomous body for the production of technical human resources including human resources in health required by the nation. As a consequence, TU decided to phase out all its PCL programs gradually and IOM abided by this decision phased out its PCL programs gradually from its constituent campuses. PCL nursing program was phased out from MNC and Pokhara Nursing Campus from the year 2015 AD (2072BS).[10]

Another milestone in nursing education was the provision of opportunity for nurses for the highest level of education i.e. Doctor of Philosophy (PhD) program in nursing in Nepal. TU, IOM started PhD program in nursing in MNC in February 1, 2012 (Magh 18, 2068 BS). By 2021, 4 candidates have completed PhD in nursing from MNC.

CONCLUSION

With increased demand for nursing education, country has succeeded in progressive expansion of nursing institutions under different universities and academies in the country. By now, nurses prepared in Nepal are serving not only in the country but outside country also. Now, there is a need to reflect back and take steps for quality nursing education to meet the demands of the competitive world. Nursing

campuses/colleges should foresee the problems and obstacles that are inevitable in their way and undertake timely remedial actions. With long history of existence of nursing education in Nepal, it is expected that this education will flourish further more during the years to come.

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Review Article

Maternal and Newborn Health Service in Federal System of Nepal

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ABSTRACT

Maternal health is the health status of women during pregnancy, childbirth, and the post-partum period, which combines the health care dimension of family planning, preconception, prenatal care and postnatal care is vital to reduce maternal and newborn morbidity and mortality. In this regard, government of Nepal is adopted two key strategies to improve maternal health: ensuring that a selected health facilities have emergency obstetric care services that are available 24 hours a day and the presence of health personnel with midwifery skills who can competently provide safe and effective delivery care. In this context, three level of government namely; federal, provincial and local government is providing the maternal and neonatal health service.

Keywords: Levels of Care**,** Maternal health, Skilled Health Professionals, Service Sites

INTRODUCTION

Maternal and newborn health service is the priority program of Nepal. National Health Policy 2019 has been formulated as the powers and functions of federal, state and local levels as per the constitution of Nepal on the basis of the policies and program of the Government of Nepal and the international commitments made by Nepal at different times .[1] Nepal has preserved the right to safe motherhood and reproductive health services in the constitution of Nepal. The Right to safe motherhood and reproductive health act 2018 and its regulation, 2020 has also considered maternal, reproductive and newborn health services as fundamental rights of the people.[2] Similarly, Public Health Service Act 2018 and its regulation 2020 considered safe motherhood and new-born health service as basic health services. [3, 4] Nepal is a signatory to Sustainable Development Goal and has committed to one of the important targets to reduce the maternal mortality ratio to less than 70 per 100,000 live births and reduce new-born mortality rate to less than 12 per 1000 live births by 2030 and to ensure a healthy life and the well-being of all mothers and newborns. [5] With the adoption of federalism through the constitution, seven newly created provincial and 753 local governments are responsible to manage public resources and deliver critical services to the citizens.[6] Federalism is an important opportunity for Nepal to achieve universal health coverage.[7] The Constitution of Nepal has the provision of the right to get free basic health services from the state as a fundamental right of the citizens. In this context, is necessary to gradually transform the health sector from being a profit-oriented to service-oriented. As per the constitution, the functions of formulating health policy and standards, ensuring quality and monitoring, traditional treatment services and infectious disease control have been assigned to the federal government whereas the responsibility of health services have been assigned to the federal, provincial, and local levels. For its effective implementation, inter-ministry coordination and collaboration is most important. [8]

Government of Nepal developed different strategies based on the national health policy. Among them strategies to address the health need of citizens of all age groups as per the life course approach and to make additional improvements and expansion of overall development of mother and child, adolescents, and family management services; following working policies are stated in fifteenth five year plan.[8]

- The overall development of mother and child, children and adolescents, and family management services will be reformed further and expanded as per the concept of the lifecycle.

- The health services will be made senior citizen-, gender-and disability-friendly as per the Life Course Approach to address the health needs of citizens of all age groups.
- Provisions will be made for regular health check-ups for the rapid detection of health risks of various age groups.
- Provisions will be made for a free check-up for the diseases increasingly prevalent among women such as breast cancer and cervical cancer.
- Special program including evidence-based midwife education and services will be formulated and carried out for reducing the maternal mortality rate

Skilled health professionals (SHP/SBA) are needed for the provision of maternal and newborn health service. Furthermore, skilled health personnel are competent maternal and newborn health (MNH) professionals educated, trained and regulated to national and international standards. They are competent to: (i) provide and promote evidence-based, human-rights based, quality, socio-culturally sensitive and dignified care to women and newborns; (ii) facilitate physiological processes during labour and delivery to ensure a clean and positive childbirth experience; and (iii) identify and manage or refer women and/or newborns with complications. [9] In addition, as part of an integrated team of MNH professionals (midwives, nurses, obstetricians, pediatricians and anesthetists), they perform all signal functions of emergency maternal and newborn care to optimize the health and well-being of women and newborns. Likewise, health workers required in order to meet the need for all essential sexual reproductive maternal and neonatal health services in Nepal are Midwife, ANM, Staff Nurse, Nursing Officer, Medical Officer, MD in General Practice and Emergency Medicine (MDGP), Obstetrician/Gynaecologist (Ob/Gyn), Paediatrician, Anaesthesiologist and Anaesthetic Assistant.[10]

Organization of Services and the Role and Responsibilities of the Skilled Health Professionals (SHP/SBA)

1. Referral Hospitals (existing central, zonal and regional): In 12 selected referral hospitals onsite midwife-led birth unit (OMBU) will be established and 482 midwives deployed to provide a continuum of MNH care by 2025. The existing ANMs would gradually be phased out.

2. Comprehensive Essential Obstetric and Neonatal Care (CEONC) sites: In the maternity wards of CEONC sites, skilled health professionals (Ob/gyn/MDGP/ASBA, midwife, nurses, anesthetist/ Anesthetic assistant) will provide maternity care services. In the meantime, the trained registered ANMs (SBAs) would continue to provide services as part of the MNH team.

3. Basic Essential Obstetric and Neonatal Care (BEONC) sites (15 bedded Primary Hospital of Rural Municipality): In all BEONC sites, skilled health professionals (SHPs) (doctors and nurses) and other health workers with SBA training (ANM) will provide maternity care services. It is gradually replace the ANM posts by the certificate midwife

4. Health Post: In the selected Health Post with birthing services, SBAs will provide MNH care. Currently, there is no sanctioned position for SNs at HP. Once they are made available, staff nurses would replace the existing ANMs.

5. Ward level: The National Health Policy directs the availability of one skilled service provider (community nurse/SHP/SBA) to provide a continuum of care- ANC, PNC, newborn care, and referral at every ward especially in the remote hills and mountains.

Services at the Different Levels of Care and Service Sites

CEONC sites: The main responsibility of CEONC sites is to provide services as per the standards and protocols. The following MNH services are provided at CEONC sites:

- Administer parenteral antibiotics
- Administer uterotonic drugs
- Administer parenteral anticonvulsants for pre-eclampsia and eclampsia (MgSO4)
- Manual removal of retained placenta

- Removal of retained product of conception (e.g MVA, dilatation and curettage)
- Assisted vaginal delivery (vacuum extraction, forceps delivery)
- Neonatal resuscitation (with bag and mask)
- Caesarean section
- Blood transfusion

Peripheral MNH service sites: The main function of these sites is to provide key MNH services depending upon the level of the health facility. At the most basic level, Health Posts function as birthing centers whereas relatively higher-level sites such as PHCC/ Primary Hospital function as BEONC site. These sites also provide outreach services (PHC/ ORC). The following services are available at birthing centers:

- Antenatal Care
- Post-natal Care
- Assist normal physiological birth and early identification of obstetric complications and initial management (obstetric first aids):

  i. administers parenteral antibiotics

  ii. administer parenteral uterotonic drugs

  iii. administer parenteral anticonvulsants (loading dose of MgSO4)

  iv. Neonatal resuscitation (with bag and mask)

- Immediate referral of obstetric complication, after stabilization and providing obstetrics first aid (OFA).

In addition to the above, the BEONC site provides 7 signal functions:

1. Administer parenteral antibiotics
2. Administer parenteral uterotonic drugs
3. Administer parenteral anticonvulsants, for pre-eclampsia and eclampsia (MgSO4)
4. Manual removal of retained placenta
5. Removal of retained product of conception (e.g MVA, dilatation and curettage)
6. Assisted vaginal delivery (vacuum extraction)
7. Neonatal resuscitation (with bag and mask) (11)

CONCLUSIONS

As per the Constitution of Nepal, every citizen has the right to free basic health services from the state. The basic health service package includes the continuum of maternal and neonatal health services (ANC, delivery, PNC, newborn care), as the responsibility of the local governments, that are also responsible for local level policies and program related to health service management. These include the management of infrastructure, human resources, equipment, and drugs at health facilities that have less than 15 beds[11]

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Review Article

Developmental Supportive Care for Preterm Infants in Neonatal Intensive Care Units

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ABSTRACT

Survival of preterm infants (PTIs) is increasing with the availability of neonatal intensive care, advanced technologies and equipment. Nonetheless, they are vulnerable to developmental impairment. They require special care in neonatal intensive care units (NICU) involving their parents for survival with development. Therefore, this article was prepared to enhance awareness about the need and components of those care among nurses working in neonatal care units (NCUs). A review of the relevant literature showed that interventions for supporting the development of the infant include minimizing the environmental stressors in NICU. Some effective Developmental Supportive Care (DSC) interventions are skin-to-skin contact (SSC) or kangaroo mother care (KMC), breast milk feeding, sleep protection, positioning and handling, supportive sensory environment, protecting skin, stress and pain management, and minimizing infant-parent separation.

INTRODUCTION

Improved neonatal intensive care and expanded access to life-saving commodities, equipment, and technologies like Continue Positive Airway Pressure (CPAP), mechanical ventilation, and exogenous surfactant have resulted in increased survival rates even for very preterm and extremely preterm infants.[1, 2] However, the immature brain, lungs, gastrointestinal tract, and skin of PTIs are still susceptible to injury and abnormal development often leading to long-term neurological and health problems. Preterm birth is an important contributing factor with an inverse relationship between birth weight or gestational age and risk for developmental impairment.[2,3] However, literature indicated enhancement of developmental outcomes with special nursing care in NICU.[4,5] Therefore, this article was prepared to create awareness about the developmental supportive interventions for preterm and sick newborns among nurses working in neonatal care units.

METHODS

The literature search was done to explore the different components of DSCs. The search focused on guidelines and protocols, review articles, original articles, systematic review/meta-analysis, and reports. The electronic databases used for the literature search were Pub med, Google Scholar, Hinari, Science Direct, Cochrane Library, academia search, and research gate. The keywords and phrases like preterm infants/newborns/babies, inpatient/facility-based neonatal care, developmental supportive care, and neuroprotective care. Articles published within ten years were included with more emphasis on within five years. A total of thirty relevant literature was reviewed, summarized and to prepare this article.

Preterm Infants and Developmental Vulnerability

The third trimester of gestation is the period of intense growth and evolution for the fetal central nervous system. PTIs born before the third-trimester experience disruption in the delicate process of fetal maturation and neurologic growth.[6] Although the resources of the NICU may save lives, the typical NICU environment is stressful for infants and their families. Abruptly separated from mothers, they are handled by many, exposed to uncontrolled light and noise, sleep disruptions, fluctuation of temperature and oxygen levels and pain and discomfort. Most touch are procedural, uncomfortable, and painful.[6,7]

Mismatch of the normal intrauterine environment and exposure of inappropriate sensory input of the NICU at a critical stage of fetal neurologic development produces maladaptive physiological processes and predisposes the infant to improper developmental outcomes. In such environment, the pre-birth risk factors may be potentiated, further adversely affecting neurocognitive development.[6,8] Later, PTIs show features of developmental impairment like mental retardation, cerebral palsy, autism, attention deficit disorders, visual and hearing problems, speech and language disorders, learning disabilities and many more.[8] The cerebral palsy (CP) is the most commonly reported disabilities for which risk increases with decreasing gestational age.[3] Previous studies reported higher prevalence of developmental impairment among preterm and LBW infants. The screening of 427 NICU admitted children in rural India reported developmental delay among 134 (31.6%) infants. Among the affected children, (45.5%) were preterm, (59.7%) had low birth weight (LBW).[8] The systematic review to estimate long-term neurodevelopmental impairment risk among PTIs survivors revealed that among estimated 13 million preterm survivors, 345,000 (2.7%) were had moderate or severe, and 567,000 (4.4%) had mild neurodevelopmental impairment. Many more had specific learning or behavioral impairments or reduced physical or mental health.[9]

Developmental Supportive Care

Despite the impact of prematurity has long been recognized, the early days of neonatal care focused upon the survival care. The focus of care gradually shifted from mere survival to survival without disability.[7] DSC is based on the principles of nursing science as outlined by Florence Nightingale which signifies the nurses' responsibility in creating and maintaining a healing environment.[10] Considering its significance, WHO has also suggested for transforming care incorporating the DSC components partnering with the parents with maximum information sharing with them.[11] In the context of Nepal, NENAP provides guidance on some elements of DSC like KMC, and early exclusive breast feeding.[12]

Various models of developmentally supportive care are suggested to support the presumed neurodevelopmental needs of PTIs.[11,13,14]The overall goal of such care is to create a more stress-free caring environment for the PTIs and family to promotes both physiological stability and neurological development. [7] Some of the common interventions mentioned in different model are SSC or KMC, breast milk feeding, protected sleep, supportive sensory environment, positioning and handling, protecting skin, stress and pain management, and minimizing infant-parent separation.[6,11,14] SSC or KMC is a fundamental, essential component of neuro-protective care for PTIs admitted in NCUs. KMC with breast milk feeding can fulfill all the developmental care need of PTIs.[6] The health personnel education and training should be the part of the DSC program.[14]

Kangaroo Mother Care

The KMC is the kangaroo position in which the infant is placed and held in an upright position with direct skin to skin contact on the mother/father's chest. Although early initiation and continuous KMC (over 18 hours/day) with exclusive breast feeding is the best practice, practice depends on the stability of the PTIs and the care context.[15] Even intermittent KMC for more than one hour is important intervention for the PTIs and their mothers. Continuous or prolong KMC provided by mother can provide the optimum environment for the infant. It facilitates supportive positioning and handling, fosters optimal autonomic and physiologic stability and promotes sleep, minimizes stress and pain, protects skin by providing humidity and supporting thermoregulation. It promotes breast milk supply among mothers, infant-parent attachment and accelerate brain development. It also empower parenting role.[6,16]

Nutrition and Feeding

Breast milk is the best nutrition for the PTIs. Preterm breast milk has more protein, less fluid, and higher levels of various bioactive molecules necessary for the PTIs.[10,17] PTIs unable to breastfeed are fed expressed breast milk (EBM) through oro-gastric (OG) tube or oral feeding. Parental fluid with adjunct to enteral feeding is necessary in some critical cases. Enteral feeding is safe and preferred with trophic

feeds or minimal volumes of EBM feeds (10–15 mL/kg/day) through OG tubes (to prevent intestinal atrophy) preferably within 24 hours of life or by 24–48 hours according to the hemodynamic condition of the PTIs. The nutritional feeding is started gradually increasing amount of feeding and progressed in route from OG tube to oral and breastfeeding.[12,17–19]

Early, fast enteral feeding has better outcomes compared to late, slow, or intermittent feeding. PTIs can be fed while on a ventilator or continuous positive airway pressure.[17–19] Trophic feeding is more effective when combined with EBM oral stimulation.[20] The Non-nutritive Sucking is the evidence based intervention to support the physiological maturation for feeding progress from tube to oral and breastfeeding. The effective technique for NNS is to instruct mothers to empty her breast milk and make her PTI suck her empty breast for short period (2-3 minutes).[19,20]

Proper Positioning

The spontaneous resting posture of PTI is often flat, extended, asymmetrical with head to one side, with the extremities abducted and externally rotated. This type of posture can be baseline for the significant developmental delays and sometimes permanent disabilities.[6] The recommended positioning for PTIs is similar to the usual fetal position in the utero: neck slightly flexed, head and neck in straight aligned with the body, extremities flexed towards the midline and spine slightly flexed position. To maintain proper positioning therapeutic positioning aid, nesting (blanket/linen rolls around the PTI) and swaddling (wrapping the infants in a sheet or blanket for recommended position) are used. Prone or side-lying positions with support are preferable to supine positioning.[6,11,21] Proper positioning enhances optimal musculoskeletal development, physiological stability, thermal regulation, neurobehavioral organization, comfort, sleep facilitation and skin integrity[14,21]

Furthermore, moving suddenly and quickly can be stressful and has detrimental effects on brain development. Frequent handling of PTIs for activities like diaper change, position change, therapeutic procedure can be stressful with physiological responses like brady/tachycardia, apnea, hypoxia difficulty sleeping. Therefore, they should be handled gently and slowly with the extremities flexed and body well supported. Caring and other diagnostic/therapeutic procedures should be clustered considering minimal handling.[6,10,22]

Protected Sleep

Individual sleep patterns begin to emerge at approximately 28 weeks of gestation. Preservation of sleep and sleep cycles in the critical period of brain development is important for enhancement of brain plasticity and for neurodevelopment. It is also essential for the energy restoration, maintenance of bodily homeostasis, adequate growth and healing process of PTIs.[6,10] The recommended interventions to promote PTI's sleep in the NICU are environmental modification like promoting quiet environment, minimizing light and noise, minimum handling with clustered routine care based on infant sleep wake status. The nursing care strategies include nesting, swaddling, facilitated tucking (wrapping to maintain a flexed in utero posture), nonnutritive sucking, gentle touch and massage, KMC, calm auditory stimulation.[6,10,11,14] Care should be clustering to coincide with the feeding time, avoiding unnecessary sleep interruptions and postponing interventions that are not essential until the PTI wakes up. If care cannot be postponed, it is important to awaken gently for less abrupt transition from sleep to wake state.[6,14,22]

Supportive Sensory Environment (SSE)

Early extra-uterine environmental exposure to the bright lights, noise, high activity levels, painful interventions, unpredictable care patterns, and parental separation in NICU acutely stress the fragile PTIs' physiological capabilities. Such stress if intense or prolonged, becomes toxic causing chronic hyper-stimulation of the autonomic nervous system. Even necessary caregiving practices like diaper changes, bathing, or weighing are stressful to PTIs. Parental separation alone can disrupt infant's physiologic stability. Therefore, the SSE aims to minimize associated stress though complete elimination is unlikely. It involves promoting positive tactile, auditory and visual sensory system of PTIs. Physical environment includes facility to support the parental presence for breast feeding, KMC and other care. [6,22]

Temperature

PTIs should be provided a thermo-neutral environment in which neither gaining nor losing heat.[6,23] The environmental temperature of the NICU should be 22-26°C, humidity 30-60%, with adequate air exchange. The SSC by parents is the best environment in which temperature of mother's chest increases by 2°C to warm a cool infant and decrease by 1°C to cool an overheated infant (thermosynchrony). When SSC is not possible, temperature (36.5°C – 37.5°C) need to be maintained using incubator or radiant warmer, preferably incubator.[23]

Sound Precaution

PTIs are especially sensitive to noise because they are exposed to excessive auditory stimulation before complete development of auditory system. The noisy situations are stressful responded with apnea, hypoxia tachy/bradycardia, and increased intracranial pressure, sleep interruption in PTIs. The excess noise exposure disrupts their growth and development and put them at risk for hearing, language, and cognitive disabilities.[10,24] Nevertheless, systematic review revealed noise levels consistently above the recommendations in most of the NICUs.[24]

Recommended acceptable sound level in NICU by American Academy of Pediatrics is 45 dB. [24] In NICU, high sound levels are related to therapeutic equipment (like ventilator), alarms, communication devices (phone, pager, mobile), sound of door and windows as well as talking and loud laughter. Sound levels are often related to activities such as shift change and medical round. Measures to minimize noise in NCU are to stopping alarm soon, minimizing sound of alarm and other equipment, telephone; eliminating radio; staff conversation in low volume or conversation away from infant bedside, keeping the porthole of incubator closed, not keeping equipment on the top of the incubator and application of quiet period especially during night.[6,14,24]

Light Precaution

The visual system is not developmentally ready for external visual stimuli. Sleep deprivation and intense light exposure affect visual development. In most of the NICUs, continuous intense light such as examination lights, phototherapy lamps and ambient space light affects neonatal sleep.[21] Some interventions to control excess light are cycled lighting (low light at night), covering incubators with opaque covers, control excess light from the outside, using dimmer lights, restricting bright lights only for procedures and do not turn light bulbs directly onto the newborn's face. Eye patches need to be applied when exposed to bright light. Only indirect ambient lighting should be used.[6,10,22]

Protecting Skin (Skin Care)

PTIs have an underdeveloped skin barrier, which increases the risk for high water and electrolyte loss, thermal instability, additional skin damage, and infection. In NICU, they have further risk of skin compromise related to the presence of dressings, adhesives tapes, and medical devices, such as intravenous cannula, and nasal prongs for their care.[25] Effective measures to protect skin of PTIs are maintaining humidity of more than 70% inside the incubator to decrease trans-epidermal water loss, less frequent (every 4 days) bath with plain water, limiting adhesive tape use and removing it gently, and topical emollient and coconut oil application. Skin to skin contact also provides good skin care. It is important to assess the skin condition using validated skin assessment tools.[6,22,25]

Pain Management

The environment of NICU can be stressful for PTIs related to many procedures that cause pain, stress, and discomfort. PTIs experience stressful and painful events such as intubation, eye examination, lumbar puncture, heel pricks, and nasogastric tube insertion. Exposure to greater numbers of painful and invasive procedures during neonatal period are associated with delayed postnatal growth, and neurodevelopmental consequence in infants and children.[26,27] Therefore, accurate monitoring of pain as the fifth vital sign is necessary utilizing standardized pain assessment tool (such as the Premature Infant Pain Profile-Revised) and consistent management of pain in neonates are important.[6] The evidence-based, non-pharmacological management of neonatal acute pain includes maternal touch, holding and massage by mother, breastfeeding or human milk (has potent pain relief effect when used with breastfeeding or via oral-gastric tube); non-nutritive sucking (sucking

behaviors have an analgesic effect; a pacifier can be used); facilitated-tucking; swaddling; skin-to-skin contact. Sweet solutions, such as sucrose and glucose, are used to prevent acute-procedural pain in the NICU.[28,29]

Parents Involvement in Care

Separation with inconsistent caregivers is one of the harmful stressor for PTIs' immature brain in NICU. Even in early days, PTIs know their parents voice, smell and touch and soothed by their loving presence. Minimization of infant-parent separation, early bonding and attachment and infant-parent makes significant difference in structural and functional development of their brain.[6,30] Therefore, it is essential to support infant-parent attachment and involve them in infant minimizing their separation. Parents, especially mothers should be involved for providing positive sensory experience, comfort and security to their PTIs through infant touch, interaction, handling, supportive positioning, skin-to skin contact, feeding, and other general care. For parental involvement in care, providing information about PTI care and supportive environment in NICU are important ([6,10,14]). Family centered care is the hallmark of care in global neonatal practice.

CONCLUSION

With the increased survival rate among PTIs, related developmental squeala is the concern in perinatology. Available literature suggested that nurses and other health professionals in NICU need to consider implementation of DSC components to maximize the chances of healthier developmental outcomes in very and extremely PTIs. PTIs need to be protected from discomfort, distress, and pain experiences in NCU by minimizing sound and light; minimum handling and clustering the care; facilitating the sound sleep; promoting skin-to-skin contact, exclusive breast milk feeding, and minimizing infant-parent separation. It will help to achieve more organized physiological, emotional and behavioral regulation in their developmental processes.

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