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EDITORIAL

We are pleased to announce the inception of the Journal of Nursing and Health Sciences Nepal, the first issue of Pokhara Nursing Campus, Institute of Medicine, Tribhuvan University. We are very happy to express that this academic journal will help in uplifting the professional development.

It gives immense pleasure to work with the competent and dedicated editorial committee members, advisors and professionals who acquire a strong hold in health care professional's forum of Nepal. Nurses have a wider scope of practice and areas to work in, so the contribution of nurse academician in producing evidence based practice will add up to provide effective and efficient care to the public at large.

Our gratitude goes to all the researchers for submission of their valuable work and the interest to include their work in this journal for wider dissemination to the nursing and other health sciences. We would also like to thank the reviewers for their valuable time and effort to review the articles.

On behalf of the editorial board, we would like to thank graphic designer, RealDesign for designing the cover of this journal. We mention that the next issues will continue to consist articles which will cover the variety of areas of nursing and health sciences.

Lastly, the authors, reviewers, the editorial members and the publication team are the four groups of people that lay the foundation and success of the journal. We look forward to have more ideas and clinical based research work contributing to the field of nursing and health sciences.

Editors

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Virtual Learning: Satisfaction among Nursing Students

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ABSTRACT

Introduction: Because of the COVID-19 pandemic, education system has been affected significantly. So, virtual learning in the form of alternative method has been widely used to continue with the academic program. The learning environment, teaching methods and teacher-student interaction are the major factors which influence student satisfaction. Therefore a web based study was carried out with the aim to assess the nursing student's satisfaction on virtual learning.

Methods: A descriptive cross sectional research design was used. Before data collection written informed consent was taken. Data was collected through online questionnaires using Google Form through complete enumeration and downloaded in an Excel spreadsheet then transferred into a statistical package for social science (SPSS) version 16. Total number of sample size was 218. Descriptive statistics frequency, percent, mean and standard deviation and inferential statistics independent t tests and One way ANOVA was calculated at 5% level of significance. Pearson co-relation coefficient was also calculated.

Results: The study revealed the mean age of the respondents was 24.89 with SD 4.7., 72.4 % were unmarried, 89.5% were from urban area and 63.3% belong to Brahmin/Chhetri. Majority (94.8) of the respondents used wifi, and 56.7% used both laptop and mobile for taking virtual class. Regarding satisfaction, 47.1% were satisfied in overall virtual learning whereas 63.3% were satisfied in Clarity of Outcome subscale. The item that earned the highest score was on interactive communication among students and the item that earned the lowest score was on "use of technology that interferes with the ability to accomplish the coursework". There is a strong correlation between overall satisfaction score with other subscales which shows significant positive relation. There are significant differences in satisfaction scores in marital status, educational status, duration of computer and internet use.v

Conclusions: Study concluded that more than half of the students were less satisfied with virtual learning. Master level students were more satisfied than Bachelor level students. Similarly, married students and those who have been using computers and the internet for more than five years were more satisfied. The impression of the university relies on student's satisfaction. Therefore, identifying the dimensions of student satisfaction helps the institution to pinpoint the strengths and identify areas for improvement.

Keywords: COVID-19 Pandemic, Student's satisfaction, Virtual learning

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INTRODUCTION

Worldwide people are faced with global challenges due to COVID-19 pandemic and educational system has also been affected.[1] The pandemic situation forced the educational institutions to close, which has impacted over 90% of the world's student population.[2] Teaching learning classes would be better when there is interaction between teachers and students and synthesizing information and experiences.[3]

Regardless of time and place to fight this

pandemic situation, institutions are pursuing online education.[4] Nowadays student's preferences are different from the past. They prefer an active learning environment, rather than passive, they prefer a participatory approach and highly interactive learning environment. They expect a creative and collaborative learning environment through a variety of instructional models.[5] A study from Web-based survey shows that partially online courses are somewhat more satisfactory than fully online courses. Convenience was the most cited reason for satisfaction and Lack of interaction was the most common reason for dissatisfaction.[6]

Study conducted at Lumbini Medical College and Teaching Hospital shows that 75.4% nursing students were very satisfied with the teacher's preparation for taking online classes. Likewise, 59.7% of the participants strongly agreed that face-to-face learning was more effective and 51.2% respondents said that better interaction.[7]

The interaction plays an important role in students learning both in classroom and online learning modalities. Studies have shown that the student interactions are highly correlated with student satisfaction. However, investigators have noted that demographic and cultural considerations also impact online learning.[8]

Many studies have revealed that online learning has been applied in nursing education and demonstrated equal learning outcomes and greater satisfaction than traditional learning. Learner characteristics, attitudes, and needs are critical factors affecting learning efficacy, outcomes, and satisfaction.[7] Significance of virtual learning also depends upon content delivery in multiple formats, managements of the learning experience, and networked community of learners, content developers and experts.[8]

Study on the college of nursing at university of Mosul shows that 85% of the students have a computer, but only 23% of them have an internet connection, only 74% students present during online classes.[9] Likewise, a study conducted at Peshawar also revealed that 36.1% were in agreement and majority 38.6% of the respondents strongly agreed with the statement that slow computers and poor internet connections discouraged the use of online learning. Regarding student teacher interaction, 20.5% respondents strongly agree that there is weak interaction between student and teacher through online education.[10]

Studies suggest that the students and teacher's interaction is weak through online learning as well as slow computers and poor internet connections discouraged to use online learning. This means students face multiple challenges at the time of virtual learning therefore this study aims to identify student's level of satisfaction in virtual learning.

METHODS

A cross sectional descriptive research design was adopted to assess the satisfaction of nursing students towards virtual learning. The study was conducted among the Bachelor and Master level of nursing students studying in the Pokhara Nursing Campus. The total of 218 students were involved in this study with a response rate of 100%. From the total received questionnaire form, eight forms were incomplete and were excluded from the analysis. So the final sample size was 210.

For the development of instruments, researchers utilized academic rigor and appropriate process to develop a valid, reliable tool for virtual learning satisfaction. Although many studies related to online education and their resulting instruments gave valuable insight. On review neither was solely appropriate for evaluating the satisfaction of virtual learning in Nepalese context. After review and consideration of possible methods and procedures, the procedure used by Biner

and Roberts and team was considered to be particularly appropriate for this study.[11]

The instrument is divided into two sections: Part I consist of questions related to background characteristics, which included age, marital status, education level, economic status, etc. Part II consists of questions related to Satisfaction on virtual learning. It consists of 33 items and categorized into five domains: Satisfaction with content– 5 items, Satisfaction with class Interaction – 6 items, Clarity of Outcomes - 6 items, Satisfaction with Technology 11 items and General Satisfaction 5 items. Furthermore, students' level of satisfaction will be measured on four-point Likert scale (1) strongly disagrees, (2) disagree, (3) agree, and (4) strongly agree. The tool was prepared in English language and pretested in 22 students that were 10% of the total sample size. Reliability of the variables was checked by calculating Cronbach alpha (α) indicator value is 0.73. After the pretest, the statements were kept in proper sequence.

Data was collected after getting approval from institutional review committee Tribhuvan University, Institute of Medicine. The purpose of the study was explained and voluntary participation was ensured in the study. Online consent was sent to all participants, and they were provided with contact information if they wanted to clarify doubts or ask questions. Questionnaire was sent via Google form and they were asked to complete the questionnaire by clicking on the link. The time taken to fill the form was 15-20 minutes. Confidentiality was maintained by not disclosing the data and used for research purposes only. Anonymity was maintained by not mentioning the name of the respondents and by using code number. The respondents also assured that all the information given during the data collection was used for the academic purpose only and they were free to withdraw from the study at any time if they desire. The collected data was downloaded in an Excel spreadsheet and transferred into a statistical package for social science (SPSS) version 16. For descriptive analysis, data was analyzed by using frequency, percentage, mean and standard deviation. Pearson Correlation test was used to assess relationship between total satisfaction score with its different subscales and for inferential analysis Independent t test and one way ANOVA was used at 5 % level of significance.

RESULTS

Socio-demographic characteristics

Total number of study participants were 210 out of which about 44 % of the students were in the age group 19-23 years with the mean age 24.8 and SD 4.7. Majority, 72.4% were unmarried, 89.5% of the students were residing in urban areas, 54.5 % were BNS students, 92.4% followed Hinduism and 63.3% belonged to Brahmin/Chhetri. Likewise, 57.6 % of mothers were homemakers and 31.9 % of fathers were government employees (Table 1).

Table 1: Socio-demographic Characteristics of the Nursing Students (n=210)

Characteristics	Number	Percent
Age (yrs)		
19-23	92	43.8
24-28	87	41.4
29-33	18	8.6
34-40	10	4.8
41-45	3	1.4
Marital status		
Single	152	72.4
Married	58	27.6
Residence		
Urban	188	89.5
Rural	22	10.5
Educational Level		
BNS	115	54.8
B.Sc Nursing	67	31.9
Master of Nursing	28	13.3

Religion		
Hinduism	194	92.4
Buddhism	12	5.7
Christian	4	1.9
Ethnicity		
Brahmin/Chettri	133	63.3
Janajati	62	29.5
Dalit	7	3.3
Madhesi	7	3.3
Other	1	0.5
Mother's Occupation		
Homemaker	121	57.6
Business	37	17.6
Government employee	20	9.5
Non-government employee	13	6.2
Agriculture	19	9.0
Father's Occupation		
Government employee	67	31.9
Business	66	31.4
Agriculture	23	11.0
Non-government employee	33	15.7
Foreign Country	15	7.1
Unemployed	6	2.9

Mean ± SD :24.89±4.71

Information Technology Related Information

Out of 210 students, 43.1% of the students have been using computer for more than 5 years, 61.4% were using the internet for more than 5 years. Regarding gadgets, 56.7% use both laptops and mobiles, and 94.8% use WIFI connections (Table 2)

Table 2: Information Technology related Information (n=210)

Characteristics	Number	Percent
Duration of using Computer		
<1 year	23	11.0
1-3 years	54	25.7
3-5 years	42	20.0
> 5 years	91	43.3
Duration of using the internet		
Never used before	1	0.5
less than 1 year	3	1.4
1-3 years	22	10.5
3-5 years	55	26.2
above 5 years	129	61.4
Experience of online class before lockdown	52	24.8
Gadget used for virtual learning		
Laptop	39	18.6
Mobile	38	18.1
Tablet	4	1.9
Desktop computer	4	1.9
Laptop and Mobile	119	56.7
Laptop, mobile and tablet	6	2.9
Type of internet connection		
WIFI	199	94.8
Mobile data	11	5.2

Majority of the students agreed with the statements of satisfaction regarding content, classroom interaction and clarity of outcome. The items that earned the highest score were on interactive communication among students (Table3).

Table 3: Satisfaction of Nursing Students on Content, Classroom interaction and Clarity of Outcome Subscale (n=210)

SN	Statements	Mean	SD
A	**Satisfaction with Content**		
1.	The lecture notes used in the classes facilitated the learning.	3.010	0.5715

2.	The content presented in the classes was of appropriate difficulty level.	2.633	0.6061
3.	Application of problem-solving skills facilitated the learning	2.895	0.5433
4.	Critical thinking activities facilitated my learning	2.862	0.6302
5.	The sequence of content was effectively organized and easy to follow.	2.910	0.4953
B	**Satisfaction with class interaction**		
6.	Interactive communication among students when participating in classes	3.243	1.0413
7.	Able to ask for clarification from a teacher when needed	3.038	0.6018
8.	Received timely feedback from teacher	2.867	0.6274
9.	Get individualized attention from teacher when needed	2.700	0.6493
10.	When contacted, the teacher responded in a timely manner	2.933	0.5580
11.	Although I could not see the teacher in this class, I felt his/her presence	2.910	0.6159
C	**Clarity of Outcomes**		
12.	Assignments and activities were clearly linked to the course objective.	3.105	0.4572
13.	Evaluation criteria were clearly stated	2.852	0.5465
14.	Assignment's submissions were specified and easy to follow	2.867	0.5370
15.	Assessment of academic progress is more accurate	2.576	0.6081
16.	I can manage own learning better in virtual classes	2.581	0.6307
17.	The assignments provided in this class facilitated my learning	2.943	0.4446

Majority of the students agreed with the statements of satisfaction regarding general satisfaction and satisfaction with technology (Table 4).

Table 4: Satisfaction of Students on Technology and General Satisfaction Subscale (n=210)

SN	Statements	Mean	SD
D	**Satisfaction with Technology**		
18	I am very confident in my abilities to use computers	2.752	0.6746
19	The app linked to this course facilitated my learning	2.976	0.4736
20	Font size and layout of the content was consistent	2.852	0.4912
21	The cost of virtual classes is more costly than classroom learning	2.186	0.8633
22	App included for virtual classes are clearly explained	2.986	0.5827
23	Technologies required for the classes are readily available and easily downloadable	2.890	0.5807

24	Use of technology interferes with the ability to accomplish the coursework.	1.55	0.553
25	Chat rooms were effectively used	2.662	0.5746
26	The visual aids used by the instructor were easy to see	2.790	0.6061
27	Satisfied with the quality of the internet	2.162	0.7271
28	Instructor was able to coordinate the learning activities of this course	2.833	0.4751
E	**General Satisfaction**		
29	Very satisfied with this virtual classes	2.433	0.6247
30	Virtual classes meet my learning needs	2.600	0.5804
31	Classes are as effective as face-to-face classroom learning	2.224	0.6652
32	Virtual classes allow me to finish my course more quickly	2.814	0.6177
33	This is an innovative concept and must be encouraged	2.924	0.5819
	Total Satisfaction	93.09	8.81

Regarding student's total satisfaction, 52.9% of students were less satisfied in overall virtual learning and 53.8% were less satisfied with the content delivered (Table 5)

Table 5: Students' Satisfaction on Virtual Learning (n=210)

Variables	Satisfied No (%)	Less Satisfied No (%)
Satisfaction with Content	97(46.2)	113(53.8)
Satisfaction with class interaction	119(56.7)	91(43.3)
Clarity of Outcomes	133 (63.3)	77 (36.7)
Satisfaction with Technology	108 (51.4)	102 (48.6)
General Satisfaction	126(60.0)	84(40.0)
Total Satisfaction	99 (47.1)	111(52.9)

The mean score of student's satisfaction differed significantly in terms of educational level and marital status. There are significant differences in satisfaction scores of Master of Nursing students with B.Sc. Nursing (0.036) and BNS (p=0.005) students (Table 6).

The mean score of students' satisfaction differed significantly in terms of duration of computer use and duration of internet use (Table 7).

There is strong positive co relation between overall satisfactions with satisfaction sub scales which was found statistically significant (Table 8).

Table 6: Difference in Student's Satisfaction among Socio-Demographic Variables (n=210)

Variables	No.	Mean Score	Standard Error	Statistic Value	p value
Age group					
≤25	138	92.37	0.65	1.631#	0.104
>25	72	94.45	1.24		
Education					
MN	28	99.32	2.14	9.447^	<0.001*

BNS	115	91.55	0.73		
B.Sc Nursing	67	93.11	0.98		
Ethnicity					
Brahmin	148	92.99	0.73	0.764#	0.806
Non Brahmin	62	93.32	1.06		
Marital status					
Single	152	92.0921	0.66299	-2.697#	**0.008***
Married	58	95.7069	1.30103		
Residence					
Urban	188	93.2926	0.66312	0.971#	0.333
Rural	22	91.3636	1.23187		
Religion					
Hindu	194	93.1959	0.64986	5.9094#	0.547
Non Hindu	16	91.8125	1.27873		
Mother's Occupation					
Employed	70	93.3000	1.13268	0.243#	0.808
Unemployed	140	92.9857	0.71800		
Father's Occupation					
Employed	166	92.7530	0.67940	-1.078#	0.282
Unemployed	44	94.3636	1.36014		

 # Independent t test ^ One way ANOVA p value significant at ≤ 0.05

Table 7: Difference in Student's Satisfaction among Information Technology Related Variables (n=210)

Variables	No.	Mean Score	Standard Error	Statistic Value	p value
Duration of computer use					
≤5	119	91.91	0.68	-2.229#	0.02*
>5	91	94.62	1.06		
Duration of internet use					
≤5	81	91.60	0.84	-1.948#s	0.05*
>5	129	94.02	0.82		
Type of internet use					
Mobile data	11	90.9	1.97	0.843#	0.400
WIFI	199	93.21	.63		
Gadgets					
Laptop	43	95.02	1.45	1.358^	0.259
Mobile/Tablet	42	92.97	1.05		

Laptop and Mobile	125	92.46	0.81		
Experience of online class					
Yes	52	94.51	1.02	1.350#	0.178
No	158	92.62	0.73		

 # Independent t test ^ One way ANOVA p value significant at ≤ 0.05

Table 8: Relationship between Overall Satisfaction and Satisfaction Subscales (n=210)

Variables	Overall satisfaction score	Satisfaction with content	Satisfaction with classroom interaction	Clarity of outcome	Satisfaction with technology	General satisfaction
Overall satisfaction score	1					
Satisfaction with content	0.591**	1				
Satisfaction with classroom interaction	0.793**	0.383	1			
Clarity of outcome	0.798**	0.359	0.567	1		
Satisfaction with technology	0.737**	0.255	0.452	0.514	1	
General satisfaction	0.746**	0.362	0.420	0.543	0.515	1

*** Correlation is significant at the level of ≤ 0.01 level (2-tailed), r-Pearson Correlation*

DISCUSSION

Virtual learning provides an opportunity to the learner and provider to deliver, and manage both formal and informal learning. This cross- sectional descriptive study conducted in 210 nursing students revealed the mean age of students to be 24.89 (SD=4.71) years, age ranging from 19 to 43 years. This study depicted 56.7 % respondents used both laptop and mobile and 18.1% respondents used mobile for attending virtual classes which is lower than the study conducted in Gandaki medical college (GMC), Pokhara and in India where almost half of the respondents used mobile for pasrticipation in class.[12-13] Likewise, in the present study 94.8% respondents used WIFI but in contrast only 31.6% used in GMC.[12]

The present study also shows that 43.3% and 61.4% of the respondents used more than 5 years of computers and internet respectively. Study conducted among 138 school and college students studying at various parts of India show that 41.6% respondents daily expose more than 2 to 4 hours on e-gadget. Likewise, more than half of the teachers smartly use the available resources for delivering online lectures.[13]

Students scored less mean score in the statements of cost for virtual class and internet issues. Students have to spend more money in buying data packs for taking online classes and good internet facility should be there. Similar issues were there in the finding of other study.[14]

The study shows that more than half (52.9%)

respondents were dissatisfied with virtual learning. This finding is slightly less than the study of Wiam Elshami et.al where, 68.7% were less satisfied.[15] Similar to the finding of the present study, another study also reported 42% dissatisfaction with online learning.[14] However, another study conducted in India showed 67.5% nursing students were extremely satisfied with online learning.[16] Similarly, a study conducted in the United Arab Emirates also shows a higher percentage of the respondents were dissatisfied with online classes during COVID-19 pandemic. [15]

The current study used an independent t-test to compare student satisfaction with demographic variables and technology uses and the result revealed statistically significant differences with education, marital status, duration of computer use and duration of internet use. In the current study, it is found that Master level students, married, those who uses computer and internet for longer period of time were more satisfied with the online delivery of courses. This finding was supported by Mirjeta et.al where graduate, married, residing off campus were more satisfied.[17] However, the findings were contradictory with another study.[15]

Similarly, there was no significant difference in students' satisfaction in terms of previous experience of online class. Similar finding was obtained in a study done in Sharjah. There is a significant positive correlation between the overall satisfaction score with other subscales. All satisfaction subscales have strong positive correlation with the overall satisfaction score. This finding is in line with the study done in Sharjah where significant correlation was found between the overall satisfaction of students with technology ($r = 0.615$, $p = .000$) and interaction ($r = .665$, $p = .000$).[15]

CONCLUSIONS

The study concluded that more than half of the students were less satisfied with virtual learning. Students were more satisfied in technology subscale in comparison to other subscales. There is a significant positive correlation between the overall satisfaction score with other subscales. There is a significant difference in students' satisfaction in terms of education, marital status, duration of computer use and internet use. Master level students were more satisfied than BNS and B.Sc Nursing students. Similarly, married students and those who have been using computers and the internet for more than 5 years were more satisfied.The current study is limited to only one institution of Pokhara Metropolitan City, therefore, it cannot be generalized. Because of the use of structured self-administered questionnaires, students' perception, in depth feelings, real ideas might have been missed in this study which might have significant differences.

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Self-Management Behaviors among Patients with Diabetes Type 2 residing in Pokhara

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ABSTRACT

Introduction: Diabetes is a serious and costly disease that is alarmingly increasing in Nepalese people. Self-care is a personal activity to take care of and maintain of own health and illness and prevention of disease-related complications. The aim of this study was to assess the current status of diabetes self-management behaviors among type 2 diabetes patients.

Methods: This cross-sectional study included 115 subjects attending the medical outpatient department of Manipal Teaching Hospital who were diagnosed with diabetes mellitus type 2. Subjects were conveniently selected and data collection took place from 2016-9-1 to 2016-9-30. The researcher administered the self-reporting Diabetes Self-Management Questionnaire (DSMQ) to collect the data through face-to-face interviews.

Results: The study revealed that 42.6% of participants were between the age group of 51 to 60 years with mean±SD 60.08 years ±10.397 of which 53.9% were female. Among the participants, 54.8 % were having their fasting blood sugar within the normal limit with a mean 141.01mg/dl (±58.78 Standard Deviation) and 66.1 % of participants had good self-management behavior with a mean score of 35.86 (±6.10 Standard Deviation). The study also revealed that the self-management behavior of participants was significantly associated with their educational status ($p<0.05$) and occupational status ($p<0.05$) and there was a mild negative correlation between the self-management behavior of the participants and glycemic control.

Conclusion: The study concluded that self-management behavior was found to be good in two-thirds of participants. Still, integrated knowledge can be tailored to the targeted community for optimum diabetes self-management behavior.

Keywords: Behavior; Diabetes; Self-care; Self-management

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INTRODUCTION

Diabetes is a chronic condition that occurs when blood glucose levels remain above normal limits. This happens if the pancreas does not produce enough insulin (a hormone that regulates blood sugar) or when the body cannot effectively use the insulin it produces. Three out of four people with diabetes live in low- and middle-income countries[1.] Type 2 diabetes is much more common and accounts for around 90% of all diabetes cases worldwide.[2] In 2014, 422 million people in the world had diabetes which is a prevalence of 8.5% among the adult population. The prevalence of diabetes has been steadily increasing for the past 3 decades and is growing most rapidly in low- and middle-income countries.[3] According to Laxy et. al,[4] 19.4 % of study participants reported having a high level of self-management behavior whereas 80.5 % of participants were categorized as having a low level of self-management behavior. Risk factors for hospitalizations in diabetic patients include poor glycemic control, longer diabetes duration, and coexisting morbidity.[5] There

were 50.50% of patients who had uncontrolled FBG (>130 mg/dl) levels and 39% had uncontrolled HbA1c (≥ 7%)levels) in the study of Nepal.[6] Similarly, another study revealed that the Self-management behavior was "good" in 46 %, "fair" in 45 %, and "poor" in 6 % of participants in China.[7] In the previous study of Zambia,[8] most (73.7%) of the participants reported not following the treatment regimen as prescribed (adherence) in contrast to the 52 (26.3%) participants that reported adherence to the treatment they were on. Only a few (13.1%) participants reported blood sugar monitoring at home whereas most (86.1%) of them reported none. The majority (59.6%) of the participants were not involved in any type of regular physical exercise. Hence, factors like rapid urbanization, the increasing elderly population, and lack of self-management knowledge make diabetes an important health issue in Nepal, which necessitates the exploration of diabetes self-care behaviors.[9] The aim of this study was to assess the current status of self-management behaviors among type 2 diabetes patients.

METHODS

This cross-sectional study was conducted in the Medical Outpatient Department (OPD) of Manipal Teaching Hospital situated in Phulbari, Pokhara. The study population was above 30 years adults who were diagnosed with type 2 Diabetes Mellitus (DM) attending the medical OPD. The study was conducted from 2016-9-1 to 2016-9-30 among 115 subjects. To get these samples, Manipal Teaching Hospital was purposively selected and around 300 diabetic patients including newly diagnosed cases came in the Medical OPD for follow-up in the Manipal Teaching Hospital. Among them, 130 subjects were eligible for study on the basis of the inclusion criteria but 15 patients were denied to respond in the study so a total of 115 adults (response rate- 88.46%) who were above 30 years, were diagnosed as DM type 2 for more than one year included in the study. All the OPD cards were checked for sample eligibility for study while they come for registration in Medical OPD. In exclusion criteria, patients having severe conditions of disease, diagnosed as DM type 2 less than 1 year, who were not able to speak, walk, and not able to perform their daily routine activities for the past eight weeks were excluded from the study. The exit interview was done to collect the data. The interviewer-administered questionnaire was used for data collection which was divided into two parts. Part I consisted of demographic information and disease-related information and part II was the self-reporting Diabetes Self-Management Questionnaire (DSMQ)[10] consisting of sixteen structured items to collect the data through face-to-face interviews. The original English version of the tool was translated into the Nepali language and back to the English language again with the help of professional two different bilingual translators. The Cronbach's alpha test was done for internal consistency of the Nepali version of the questionnaire after pre-testing which was 0.823 and the original was 0.839. It was pretested in twelve participants who were excluded from the main study. Questions related to diabetes self-management behavior were asked for each of the four domains glucose management, dietary control, physical activity, and health care use. Out of sixteen items, seven of these items were formulated positively and nine inversely with regard to what is considered effective self-care. All the sixteen items were rated on a scale of zero to three where "0" denotes "does not apply to me", "1" denotes "applies to me some degree", "2" denotes "applies to me to a considerable degree" and "3" denotes "applies to me very much" over the last eight weeks and scoring of the questionnaire involved reversing negatively worded items. If "not required as a part of my treatment" had been marked in an item, it was not used and the scale score computation was adopted accordingly (by reducing the theoretical maximum score by 3 points). The scale allows the summation to a sum scale

as well as estimation of four sub-scale scores where higher scores are indicative of more effective self-management behavior but a cut-off value for scale was not available in the tool for binary outcome categorization. Hence, in this study, participants who scored above the mean score or equal to the mean were categorized as having good self-management behavior and those who scored below the mean were considered as having poor self-management behaviour as the literature suggests.[11] For the glycaemic control, high glucose level was defined with patient fasting serum glucose equal or more than 126 mg/dl or post-prandial serum glucose equal or above 200 mg/dl and Glycated Hemoglobin (HBA1c) equal or above 6.5% as per literature.[12] The value of FBS, PPBS, and HBA1c was taken on the same day of data collection.

Data were processed using the Statistical Package for Social Sciences (SPSS) version 16. Descriptive statistics such as frequency, %age, mean and standard deviation, inferential statistics such as the chi-square test to find the relationship between selected variables and self-management behaviours of participants, and the Pearson' Correlation test was applied to see the relationship between self-management behaviour and glycaemic control among participants in the data analysis. The study was taken with expedited approval (REF No. 1296 dated 3rd June 2016) from the Institutional Review Board of Manipal College of Medical Sciences. The study purpose was clearly explained to the participants and informed written consent was taken from each of them before the data collection.

RESULTS

The study found that 42.6 % of participants were between the age group of 51 to 60 years with a mean of 60.08 years ±Standard deviation of 10.397 of which 53.9 % were female. The majority of participants (71.3%) were from the urban area and 66.1 % were literate which might be due to the majority of the participants being from urban areas. Similarly, most of the participants (94.8%) were currently married and 64.3 % were unemployed (refer to Table 1).

Table 1 : Socio-demographic Information of the Participants (n=115)

Variables	Number	Percent
Age		
30- 40 Years	4	3.5
41- 50 Years	15	13.0
51- 60 Years	49	42.6
Above 60 Years	47	40.9
Mean age ±SD= 60.08± 10.397		
Sex		
Female	62	53.9
Male	53	46.1
Residence		
Rural area	33	28.7
Urban area	82	71.3
Educational Status		
Illiterate	39	33.9
Literate	76	66.1
Marital Status		
Married	109	94.8
Single (widow/widower/ unmarried)	6	5.2
Occupational Status		
Unemployed	74	64.3
Employed	41	35.7

Table 2 depicts that more than half (53%) of participants were diagnosed with DM type 2 for more than 5 years, 69.6 % were treated with oral hypoglycemic drugs and 54.8 % were having their fasting blood sugar within normal limit with a mean of 141.01±58.78 SD and 60.9 % had their postprandial blood sugar level within normal limit with 202.83±87.11 SD. The HBA_{1c} test was done by only 21 participants; among them, 71.4 % had a high level of blood glucose. The high glucose level was defined with patient

fasting serum glucose equal to or more than 126 mg/dl or post-prandial serum glucose equal to or above 200 mg/dl and Glycated Hemoglobin (HBA1c) equal to or above 6.5% (refer to table 2). [12]

Table 2: Disease-related Information of the Participants (n=115)

Variables	Number	Percent
Duration of Illness		
≤5 Years	54	47
>5 Years	61	53
Treatment		
Diet Only	7	6
Oral Hypoglycemic Drugs	80	69.6
Insulin only	7	6.1
Oral +Insulin Injection	21	18.3
Fasting Blood Sugar		
Within Normal Limit (<126mg/dl)	63	54.8
High FBS Level (≥126mg/dl)	52	45.2
Mean ± SD= 141.01±58.78 (mg/dl)		
Post-Prandial Blood Sugar		
Within Normal Limit (<200mg/dl)	70	60.9
High PPBS Level (≥200mg/dl)	45	39.1
Mean ± SD= 202.83±87.11(mg/dl)		
HBA1c Level (n=21)		
Normal	6	28.6
High	15	71.4
Mean ± SD= 8.55±3.45		

Table 3 reveals that 66.1 % of participants had good self-management behavior with a mean score of 35.86±6.10 standard deviation. The minimum score of self-management behavior was 12 and the maximum was 47 (refer to table 3).

Table 3: Level of Diabetes Self-Management Behavior among Participants (n=115)

Variables	Number	Percent
Good Behavior (≥Mean)	76	66.1
Poor Behavior (< Mean)	39	33.9
Mean ± SD= 35.86± 6.10		
Total	115	100

Table 4 shows that the Self-management behavior of participants was statistically associated with their educational status ($p<0.05$) and occupational status ($p<0.05$).

Table 4 : Association of Diabetes Self-Management Behavior with Background variables

Variables	Self-Management Behavior		Chi-square value	*p- value*
	Good No. (%)	Poor No. (%)		
Age				
≤60 Years	45(66.2)	23 (33.8)	0.001	0.981
>60 Years	31(66.0)	16(34.0)		
Sex				
Female	37(59.7)	25(40.3)	2.466	0.116
Male	39(73.6)	14(26.4)		
Marital Status				
Married	72(66.1)	37(33.9)	1.000	0.672 (Fisher)
Single	4(66.7)	2(33.3)		
Residence				
Rural Area	21(63.6)	12(36.4)	0.124	0.725
Urban Area	55(67.1)	27(32.9)		
Educational Status				
Illiterate	19(48.7)	20(51.3)	7.944	0.005*
Literate	57(75.0)	19(25.0)		

Occupational Status				
Unemployed	43(58.1)	31(41.9)	5.896	0.015*
Employed	33(80.5)	8(19.5)		
Duration of Illness				
≤5Years	36(66.7)	18(33.3)	0.015	0.902
>5 Years	40(65.6)	21(34.4)		
Type of Treatment				
Diet +Oral Drugs	61(70.1)	26(29.9)	2.597	0.108
Oral Drugs +Insulin	15(53.6)	13(46.4)		

*Statistically significant ≤0.05; * Significant; Single= includes widow/widower/unmarried*

Table 5 shows that there is a mild negative correlation between the diabetes self-management behavior of the participants and glycemic control which is statistically significant at p=0.00. This implies that if the self-management behavior of the participants becomes good, the blood glucose level is decreased accordingly or there will be good glycemic control (refer to table 5).

Table 5: Correlation between the Diabetes Self-Management Behavior and Glycemic Control (n=115)

Variables	Fasting Blood Sugar	Post-Prandial Blood Sugar
Diabetes Self-Management Behavior	r = -.358**	r = -.380**

***Correlation is significant at the level of ≤ 0.01 level (2-tailed), r-Pearson Correlation*

DISCUSSION

The study revealed the diabetes self-management behavior of 115 patients with Diabetes Mellitus type 2 who were attending Medical OPD for their routine checkups. Self-management or care is very important to maintain their blood sugar level throughout their life and to prevent the complications of diabetes. This study resulted that 42.6 % of participants were between the age group of 51 to 60 years with a mean±SD of 60.08 years±10.397 of which 53.9 % were female. The majority of participants (71.3%) were from the urban area and 66.1 % were literate which might be due to the majority of the participants being from urban areas. Similarly, most of the participants (94.8%) were currently married and 64.3 % were unemployed. Again, this study showed that more than half (53%) of participants were diagnosed with DM type 2 for more than 5 years and 69.6 % were treated with oral hypoglycemic drugs In this study, 54.8 % of participants were having their fasting blood sugar within normal limit with mean 141.01mg/dl (±58.78 SD) and 60.9 % had their postprandial blood sugar level within normal limit with mean 202.83 mg/dl (±87.11 SD) whereas the HBA_{1c} was high among 71.4 % of (n=21) participants with mean 8.55% (±3.45 SD). These findings are nearly similar to the findings of Malesia[13] where the majority (76.1%) of participants had their Fasting Blood Sugar more than 109.91 mg/dl with a mean score of 145.22 mg/dl (±52.97 SD) and those with reported HBA1c results (n=137); 40.9 % had their HBA_{1c} equal to or more than 6.5%. In another study[15], it was found that only around one-third (36.7%) had their blood glucose at a controlled level and others had low glycemic control. Similarly, one study [10] identified that 65.4 % had poor glycemic control with a mean HBA_{1c} of 8.0% (±1.1 SD).

The current study revealed that 66.1 % of participants had good diabetes self-management behavior with a mean score of 35.86 (±6.10 SD). In contrast with this result, two studies finding[16,17] indicated that most of the participants reported a lack of diabetes self-care management behaviors. The result of Gunggu[13] also revealed the total mean score of diabetes self-management was 29.97 (± 7.53 SD) which is nearly in line with the current study. Similar to the result of the

current study, 57.8 % of participants had good practices in self-management in the study of Chaurasia et al[14] whereas 46 % was described as good and 45 % was described as fair in the study of Huang et al.[7] This study showed that the diabetes self-management behavior of participants was statistically associated with their educational status ($p<0.05$) and occupational status ($p<0.05$). This observation is inconsistent with another study where none of the sociodemographic characteristics had a significant relationship with diabetes self-management behaviors in Malaysia.[13] A study done in Nepal[16] showed that the adherence of self-management behavior was associated with an area of residence and duration of diagnosis. Likewise, a study revealed that there was a significant relationship of self-management behavior with age, education, occupation, and duration of diabetes in Nepal[9] and China[7] which is similar to the present study.

The present study showed that there is a mild negative correlation between the self-management behavior of the participants and glycemic control which is statistically significant at < 0.01. This implies that if the self-management behavior of the participants is good, the blood glucose level is decreased accordingly or there will be good glycemic control. But, another study of Iran[17] showed an inverse correlation of self-management behavior with age and a direct relationship with disease duration Likely, a different finding was found showing no significant relationship between diabetes self-management and glycemic control in Oman.[13] The finding of the current study should be considered in line with limitations like self-reported management behaviors might be subjective which might be underreported or over-reported and participants from only one tertiary health care facility were included so generalization is limited.

CONCLUSIONS

The study concluded that overall self-management behavior was found to be good among two-thirds of the participants. Moreover, glycemic control is still unsatisfactory in more than fifty percent of participants and diabetes self-management behavior is inversely correlated with glycemic control among the participants. Still, integrated knowledge can be tailored to the targeted community for optimum diabetes self-management behavior.

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Knowledge on Ethico-legal Aspects of Nursing among Nursing Professionals in Pokhara

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ABSTRACT

Introduction: With the expanding roles and duties of nurses, the legal accountability also increases. Ethics is essential for nurses to deal with the most fundamental human actions like birth, death pain grief etc. Nursing profession is guided by both ethics and legal principles. Aim of this study was to assess the knowledge on ethico-legal aspects of nursing among nursing professionals; to find association between level of knowledge and selected baseline variables and determinants of knowledge of ethicolegal aspects among nurses.

Methods: A cross-sectional descriptive research design was used to collect data from 363 nurses who were selected using proportionate random sampling technique working in different hospitals and academia in Pokhara. Semi-structured self-administered questionnaire was used to collect data from September 2018 to February 2019. The data was entered in Epi-data version 3.1 and was exported to SPSS 16.0 for analysis. Descriptive data was analyzed by using mean, frequency and percentage and Chi square was used to find association between variables. Logistic regression was used to determine predictors of knowledge of ethicolegal aspects among nursing professionals.

Results: The findings showed that only few respondents (11.8%) had adequate level of knowledge, 34.2% had average knowledge and 54% had poor level of knowledge on ethico-legal aspects of nursing profession. Though all of the respondents gained information on ethico-legal aspects from their curriculum, only 14% had information about it from in-service training, 45.2% from work experience, and 29.2% from self- reading. The study significantly associated level of knowledge with the age (p=0.01, x^2=11.6), educational qualification (p=0.00, ^{2}=64.30), professional teaching experience (p=0.01, x^2=32.4) and professional clinical experience (p= 81.5, ^{2}=81.5). Age, educational qualification, years of teaching experience and current position are predictors of knowledge on ethicolegal aspects among nursing professionals. Around 54% of nurses had poor level of knowledge on ethico-legal aspects of nursing.

Conclusions: Hence, the study concludes that the existing knowledge level of nurses lay emphasis on the necessity for updating knowledge of these topics through continuing education, in-service education and awareness programs.

Keywords: Knowledge, Nursing profession, Ethico-legal aspects

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INTRODUCTION

Ethics is the study of good conduct, character and motives which is concerned with determining what is good or valuable for all people. Law on the other hand, is set down by the state or federal government, administrative agencies, or courts, to establish boundaries of behavior for society.[1] As the roles and duties of nurses expand, they must keep up-to-date with rapidly changing and advancing professional knowledge to provide safe nursing care to their clients based on their needs. Furthermore, nurses must be updated with the knowledge on nursing ethics and laws because nurses have to deal with providing services that impact

on human life and health.[2] Nurse has to deal with the most fundamental human actions like birth, death, pain, grief etc. so they are more vulnerable to face ethical and legal issues. Nowadays, legal and ethical problems related to client care are increasing day by day so that, nurses should have adequate knowledge on ethical and legal concepts and issues related to nursing profession in order to protect the nurses and client rights.[3] Nurses are confused to perform required action if they don't have adequate knowledge on legal and ethical aspects. Only limited data are available regarding the knowledge of nurses on ethicolegal aspects and those which are done are also done in single institution. A study in a teaching hospital in Pokhara Nepal revealed that 58.4% of nurses had inadequate knowledge.[2] Another study conducted in a government hospital in western Nepal concluded that 45% had adequate knowledge on ethical aspects and 53% had adequate knowledge on legal aspects.[4] With the above stated reasons put forward, this study is done with the aim to assess knowledge of nurses on ethico-legal aspects in nursing in multiinstitutions including hospitals and teaching institutions. In addition, the objective is also to find association between level of knowledge and selected baseline variables. The findings of the study are expected to bridge the gap in knowledge on ethicolegal aspects among nurses and thereby provide evidence for decision makers so that additional approaches can be implemented to overcome any knowledge discrepancy.

METHODS

This study adopted cross-sectional descriptive design that was carried out from 27th September 2018 to 28th February 2019. Total sample size was calculated using Cochran formula $n= z^2pq/d^2$ and the required sample size of the study was 323 at 95% confidence level and 0.05% allowable error. Non response rate of 20% was added to the calculated sample size and finally the required sample was 387.

This study was conducted among nurses who were selected using proportionate random sampling technique. Firstly, 4 different hospitals and 5 teaching institutions were randomly selected using lottery method. The total number of nurses currently working in selected hospitals and teaching institutions were 571, out of which 15% i.e. 91 were working in teaching institutions and 85% i.e. 480 were working in hospitals. Hence, required number of samples from each hospital and teaching institution were proportionately calculated. Then, 112 nurses from Pokhara Academy of health sciences, 50 from Fewacity Hospital Pvt. Ltd., 159 from Gandaki Medical College Teaching Hospital, 8 from Pokhara Hospital and research center Pvt. Ltd. and 8 nurses from Fishtail Nursing Campus, 8 from Fewacity Institute of Health Sciences, 15 from Pokhara Nursing Campus, 19 from Charak Academy Pvt. Ltd., and 8 from Pokhara University School of Health and Allied Sciences were randomly selected using their identity number.

Data were collected by using self-constructed self-administered questionnaire. Questionnaire consisted of five parts; Demographic Performa, information related to knowledge on ethical and legal terminologies, information related to knowledge on ethical principles, information related to legal safeguards in nursing, information related to knowledge on medico-legal cases. Validity was maintained by doing literature review, peer review, consulting with nurse professionals and experts. Reliability of the instrument was assessed by using split half technique (r=0.8). Pre-testing of instrument was conducted among 37 nurses from Metrocity Hospital Pvt. Ltd who were excluded from the main study. Ethical clearance was obtained from Institutional review committee Pokhara University. After the institutional approval from the institutions and hospitals, researcher visited every nurse individually, then written informed consent was obtained before data collection after stating the objective of the

study assuring their anonymity, confidentiality and withdrawal from their involvement at any time from study wherever they like. Questionnaire were disseminated to the 387 nurses who wished to take part in this study. Finally, only 363 nurses returned back the questionnaire after they completed. Thus, the response rate was 93.79%. After data collection, completed questionnaire from each nurse were coded and were safely kept so that others except the researchers could not access to the information. The collected data was entered in Epi-data version 3.1 and then exported to SPSS 16.0 for further analysis. As per the objective of the study, descriptive statistics (frequency, percentage, mean, and standard deviation) was used to reveal demographic information and knowledge on ethico-legal aspects of nursing and Inferential statistics (Chi- Square test) was used to determine association between knowledge and selected variables. Knowledge related to ethico-legal aspects was categorized in three levels: good, average and poor according to Bloom's cut off point.[5] Level of knowledge were categorized as poor who scored less than 60%, and it is leveled as average who scored 60-79% and nurses who scored 80-100% were indicated as good.

RESULTS

Socio-demographic Characteristics of Nurses

Out of 363 respondents, majority (66.7%) were less than 25 years of age with mean age 27±8.7 years. Regarding education, majority (70.8%) had completed Proficiency Certificate Level in Nursing while majority of the respondents (89%) had less than 5 years of clinical nursing experience and among those engaging in teaching field, 10.7% had less than 5 years. Majority (72.2%) were staff nurses and only 5.5% were Professor/ Associate professor / Lecturer. All of the respondents gained information regarding ethico-legal aspects from nursing curriculum while 14% gained knowledge from in-service training, 45.2% from work experience, and 29.2% from self-reading (Table 1).

Table 1: Socio-demographic Characteristics of Nurses (n=363)

Variables	Frequency (f)	Percentage (%)
Age (in years)		
<25	242	66.7
25-30	77	21.2
> 30	44	12.1
Mean age= 27 ±8.7 years		
Educational Qualification		
Proficiency Certificate Level in Nursing	257	70.8
Bachelor in Nursing (B.Sc./ BNS)	74	20.4
Masters in Nursing (M.Sc./ MN)	32	8.8
Professional Nursing Clinical Experience		
< 5 Years	323	89.0
5-10 years	35	9.6
>10 years	5	1.4
Professional Nursing Teaching Experience		
No Teaching Experience	309	85.1
<5 years	39	10.7
5-10 Years	15	4.2
Current Position		
Stipend staff nurse	35	9.6
Staff nurse	262	72.2
Ward incharge/ supervisor	12	3.3
Nursing Instructor	34	9.4
Professor /Associate Professor/Lecturer	20	5.5
Sources of information on ethico-legal aspects*		
In service training	51	14

Work experience	164	45.2
Self- reading	106	29.2
Nursing curriculum	363	100

The figure 1 illustrates that 11.8% had adequate level of knowledge, 34.2% had average knowledge and 54% had poor level of knowledge on ethico-legal aspects of nursing among nurses.

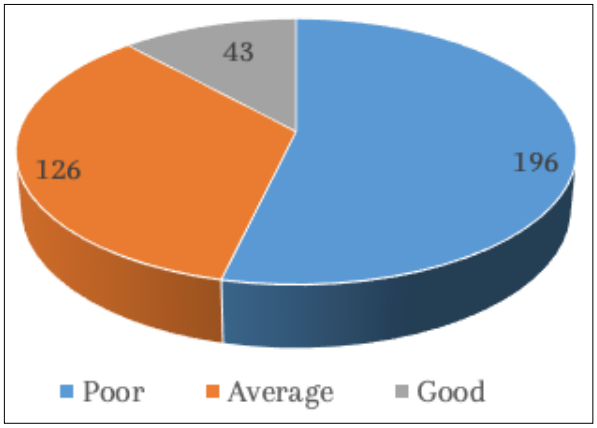

Figure 1: Pie chart showing overall level of knowledge on ethico-legal aspects of nursing

Level of knowledge

Regarding level of knowledge, only 2.5% had good level of knowledge on ethical and legal terminologies. Nearly one fourth (24%) of the respondent had good level of knowledge on ethical principles. Regarding level of knowledge on legal safeguards in nursing, 19.3% had good level of knowledge and 17.1% had good level of knowledge on medico-legal cases in nursing (Table 2).

Table 2: Level of Knowledge on Ethico-legal Aspects of Nursing (n=363)

Variables	Poor	Average	Good
Knowledge on ethical and legal terminologies.	295 (81.2%)	59 (16.3%)	9(2.5%)
Knowledge on ethical principles	238 (65.5%)	38 (10.5%)	87 (24%)
Knowledge on legal safeguards in nursing	206 (56.7%)	87 (24%)	70 (19.3%)
Knowledge on medico-legal cases in nursing	157 (43.3%)	144 (39.7%)	62 (17.1%)

Knowledge was significantly associated with the age of nurses (p= 0.01, x^2 = 11.66), educational qualification (p= <0.00, x^2 =64.30), professional clinical nursing experience (p=0.01, x^2 =0.18), professional teaching experience (p= 0.01, x^2 =31.74), current position (p=0.00, x^2 =39.75) and area of work (p=0.00, x^2 =38.48) (Table 3).

Table 3: Association of Level of Knowledge on Ethico-legal Aspects of Nursing with selected variables (n=363)

Variables	Knowledge score		X^2	df	p-value
	<29	≥29			
Age (in years)					
<25	138	104	11.66	1	0.01*
≥25	46	75			
Educational qualification					
PCL Nursing	165	92	64.30	1	0.00*
Bachelors and Above Level	19	87			
Professional teaching experience					
No	175	132	31.74	1	0.00*
Yes	9	47			
Professional clinical Experience					
< 5 years	165	158	0.18	1	0.01*
≥5 years	19	21			
Current position					
Staff nurse, ward-incharge and matron	178	131	39.75	1	0.00*
Nursing instructor and Professor	66	48			
Area of work					
Hospital	178	131	38.48	1	0.00*

Teaching Institution	66	48

Predictors of knowledge

The knowledge score of the nurses on ethicolegal aspects are dependent on age, educational qualification, years of teaching experience and current position. The regression value shows that with increment of age by 1 year, the knowledge score also increases by 3.15. the age only explains 6% of variance. Educational qualification is the next predictor which explains 26% variance. The regression value shows that in comparison to nurses having PCL in nursing, bachelors level nurses have 7.11 times more knowledge and masters level nurses have 13.58 times more knowledge. Current working position of the nurses explains 16% variance. The regression value shows that when compared to staff nurses, nursing instructor and Professors have 10.06 and 10.07 times more knowledge respectively (Table 4).

Table 4: Predictors of Knowledge on Ethicolegal Aspects of Nursing

Variables	Beta coefficient	R^2	t	p-value
Constant	24.34	0.06	23.47	0.00*
Age	3.15		4.90	0.00*
Educational qualification				
Constant	26.16	0.26	55.21	0.00*
PCL	-			
Bachelors	7.11		7.69	0.00*
Masters	13.58		9.53	0.00*
Teaching experience				
Constant	27.59	0.13	58.74	0.00*
No teaching experience	-			
Less than 5 years	7.20		5.26	0.00*
5-10 years	12.73		5.85	0.00*
Current Position				
Constant	27.13	0.16	53.93	0.00*
Staff Nurse	-			
Stipend nurse	2.32		1.58	0.11
Ward incharge	2.36		0.98	0.32
Nursing instructor	10.06		7.27	0.00*
Professor	10.07		4.51	0.00*

Dependent variable=total score of knowledge

DISCUSSION

The study was conducted to identify the knowledge on ethico-legal aspects of nursing profession among nurses working at different hospitals and colleges of Pokhara Metropolitan city, and determine the extent to which sociodemographic factors of the nurses influence their knowledge of ethicolegal aspects in nursing profession.

In present study, about two third 66.7 percent of the nurses were less than 25 years which is nearly consistent with study carried out by Subedi et al. where majority of nurses were in 20-29 years of age.[6] This finding is also near to consistent with the study conducted by Wangkheimayum which found 79.2 percent belonging to 21-30 years of age.[2]

Findings revealed that 70.8 percent of respondents had completed Proficiency Certificate level in Nursing. This finding is supported by the study done by Wangkheimayum[2], Shrestha[3], Timilsina[4] where majority of respondent 84.2 percent, 70 percent, 64.2 percent had completed Proficiency Certificate Level Nursing respectively.

Present study revealed that majority of the respondents 89 percent had less than 5 years of clinical nursing experience. This finding was supported by the study conducted by Timilsina[4] and Subedi[6] where 65.1 percent and 62 percent had less than 5 years of clinical nursing experience. The lower years of experience indicate that fresh nurses get enrolled in private

sector as well as high turnover of nurses exists in private hospitals. The present study found that only 14 percent of nurses had information regarding ethico-legal aspects by attending in-service training which is similar with the study conducted by Wangkheimayum[2] where 30.68% got information from in-service training. These finding suggests that authorities like National health training centre, Nepal nursing council needs to examine that hurdles and take required action to ensure in-service education regarding legal and ethical aspects to nurses.

In this study, more than half, 54 percent of nurses had poor level of knowledge, 34.2 percent had average knowledge and 11.8 percent had adequate level of knowledge on ethico-legal aspects of nursing profession. This finding is nearly consistent with the study done by Wangkheimayum[2] and Maharjhan et al.[7] Though the findings showed more than 90% had average knowledge in a psychiatric center in India[8] and more than 88.3 percent having average knowledge in community nurses[9], findings done in tertiary care centre in India by Thirunavukarasu et al[10] shows more nurses having inadequate knowledge. The study done in critical care nurses also shows only 10% of the nurses had good knowledge.[11] The finding of this study is contradictory to the study conducted by Timilsina[4], Subedi[6], Rimal[12] where 34.9 percent, 11.3 percent, 12 percent of nurses had poor level of knowledge. Similarly, the finding of another study conducted among nurses at a tertiary care hospital in rural India showed that the majority 78 percent of the participants had inadequate knowledge on law and ethics in Nursing.[13] On contrary, a study conducted in a teaching hospital in Nepal concluded that 45 percent of nurses had adequate knowledge of nursing ethics and law.[3] The discrepancy behind this might be because of more provision of capacity building training and exposure on patient care ethics.

In this study, the level of knowledge was found to be significantly associated with the respondent's age which contrast with the study by Maharjhan[7], Kumar et al[8] and Verghese et al.[11] Factors of professional progression in this study; position, professional qualification, years of experience had significant association on knowledge of nursing ethics and law among nurses which is similar to the findings of study from Nigeria.[14] This study has shown significant association between level of knowledge and current position which contradicts with the findings of Rimal.[12]

Findings reveal that professional experience is significantly associated with level of knowledge whereas, findings of Kaur et al[13] Subedi[6] and Maharjhan[7] showed there was no significant association between nurses' knowledge and duration of experience. But the findings of this study is supported by a study conducted among community nurses in India.[9]

Furthermore, regarding level of education and knowledge, the findings of this study support findings of Kaur et al.[13] and Timilsina[4] where there was significant association. Likewise, the findings of the study were consistent with the study conducted in a psychiatric Centre of Jaipur, Rajasthan, which showed that the respondent's knowledge was significantly associated with professional qualification.[8] On the other hand, findings of present study contradicted with the study conducted by Wangkheimayum[2] which revealed no significant association between the knowledge score and selected variables like age, education, professional qualification and work experience.[2] There was significant association between area of work and level of knowledge in this study which is in line with the findings from the study by Rimal.[12] We further observed that nurses' age, educational qualification, years of teaching experience and current position determined the knowledge of nurses on ethicolegal aspects. Perhaps, majority of the nurses in this study are at junior rank i.e. staff nurse and are likely to be young. It is also sound to theorized that as these nurses move from one rank to another,

they age and they encounter different legal and ethical dilemmas which may increase their knowledge of ethicolegal aspects, as found in Nigeria[14] and Ghana[15]. Furthermore, academic qualification positively determined nurses' knowledge on ethicolegal aspects. Deductively, majority of the nurses had only PCL level of nursing who possess poor level of knowledge. With increasing years of teaching experience, the knowledge seems to be increased. It may be because the nurses involved in teaching repeatedly goes through curriculum that involves legal and ethical aspects while teaching their students. The knowledge of nurses working in hospitals has to be improved by including ethicolegal aspects in in-service education and trainings.

This is a cross-sectional study and this study is not generisable to the whole country or other healthcare professionals. This study further opens the discourse on nurses' knowledge of ethicolegal aspects in Pokhara, Nepal.

CONCLUSIONS

This study concluded that majority of nurses had poor level of knowledge on ethico-legal aspects of nursing profession. Furthermore, age, professional qualification, professional clinical experience, and professional teaching experience were significantly associated with the level of knowledge. In addition, age, professional qualification, years of teaching experience and current position determined the ethico-legal knowledge of these nurses. Nurses need to continually update their knowledge through continuing nursing education, in-service education and trainings so they can be well informed of ethicolegal issues arising in their practices. The teaching of ethicolegal aspects needs to be intensified at colleges as most of the nurses obtained such knowledge from curriculum before entering practice which needs to be further enhanced through workshops, seminars, in-service education and trainings. Extending this study nationwide will be ideal to get wider views and understanding of the issues. Comparative study or studying this phenomenon from clients' perception will be of benefit to the healthcare system.

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Maternal Satisfaction on Health Institution and Technical Aspects of Care during Childbirth in Pokhara, Nepal

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ABSTRACT

Introduction: The satisfaction of mothers is an essential component of quality of maternity care and key determinant of service utilization. This study aimed to assess maternal satisfaction on health institution and technical aspects of care during childbirth in Pokhara.

Methods: A descriptive cross sectional study design was used among mothers having under one child attending Maternal and Child Health Clinic of Pokhara. Systematic random sampling technique was used to select 165 samples. Face to face interview technique with structured interview schedule was adopted. Descriptive statistics were used for data analysis.

Results: Most of the mothers (90.3%) were between the age of 20 and 34 years with mean age of 25.64 ± 4.547 years, 55% belonged to joint family, 98.2% were literate and 60% were homemaker. More than half of the mothers (60%) were multiparous, 90.9% had planned pregnancy, 41.8% had spontaneous vaginal delivery with episiotomy, 93.9% of the new born and 86.7% of the mothers had no complications during childbirth. Most of the mothers (90.3%) were satisfied with technical aspects of care and 72.1% were satisfied with health facility during childbirth. In this study, 83.6% of the mothers had willingness to receive service on next time and 84.2% would recommend the services to family and friends.

Conclusions: It is concluded that most of the mothers were satisfied with technical aspects of care during childbirth. In order to increase satisfaction with health institution cleanliness, waiting time to be seen by health personnel and locker facilities for personal belonging should be improved.

Keywords: Maternal, Satisfaction, Health Institution, Technical Aspects of Care, Childbirth

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INTRODUCTION

Significant progress has been made globally in maternal and neonatal health.[1] Although the maternal mortality ratio was dropped by 38%, approximately 810 women die from pregnancy or child birth related complications around the world every day. Every year about 295,000 women die of causes associated with childbirth, 94 percent in developing countries; more than two third of these deaths occur in Africa.[2] In Nepal the estimated maternal mortality ratio was 170 per 100,000 live births. The Government of Nepal has introduced Aama programme to ensure free service and encourage women for institutional delivery. [3] The Nepal Demographic and Health Survey 2016, shows that 57% of births were delivered in a health facility and 58% of deliveries were attended by a skilled provider.[4] Maternal mortality and morbidity are attributed to poor quality of maternity care.[5] Improving quality of care is fundamental to achieving Universal Health Coverage by 2030.[6]

Satisfaction is the most frequently reported outcome measures for quality of care [7] and women's satisfaction with childbirth is related to the health and well-being of the mother and her baby. [8-9] It is a subjective and dynamic

perception of the extent to which the expected health care is received.[10] The quality of care received by mothers and babies in developing countries is often reported as poor.[11] Assessment of satisfaction with maternity services is crucial and helps in future utilization of service.[12-13] The utilization of the services and positive maternal and neonatal outcomes can be increased by improving quality of services and making them more acceptable to women.[14.]

Studies conducted in Bangladesh, South Australia, Kenya and South Africa revealed the level of satisfaction on delivery care was 92.3%, 86.1%, 56% and 51.9% respectively.[15-18]However, the study conducted in western Nepal showed 83.9%.[19]Another descriptive cross sectional study conducted in western Nepal showed that 45.1 % of mothers were satisfied with the perinatal care. The satisfaction score was lower in the physical environment and highest in privacy maintained.[20] Willingness to return to facility showed a strong association with information received, waiting time, and overall care at facility.[21] In the context of Nepal, the quality of maternity services could be improved by reducing waiting times, managing overcrowding, and giving the mothers adequate time to ask questions.[22]

The safe motherhood programmes are being successfully promoted in Nepal; however, the women's experience, and client satisfaction is less well known.[22] Very few studies have been published. This study is therefore design to assess maternal satisfaction on health institution and technical aspects of care during childbirth.

METHODS

The descriptive cross sectional study design was used to assess maternal satisfaction on health institution and technical aspects of care during childbirth in Pokhara. The sample size was calculated by using Cochrane's Formula [$n = (Zx^2pq)/d^2$]. The calculated sample was 150. Systematic random sampling technique was used. In average 50 clients were received in maternal and child health clinic in a day. The duration of data collection was one month. Every 10^{th} client was a sample. Five clients from each ward were taken. The total sample of the study was 165. The mothers having under one-year child attending maternal and child health clinic of respective ward and had vaginal delivery on hospitals taking safe motherhood services were included in the study. The 33 maternal and child health clinic of Pokhara Metropolitan City were selected. Pokhara Metropolitan City office runs their mobile clinic of maternal and child health services from ward number one to seventeen. Most of the wards belongs to ward number one to seventeen provide service once a month in respective day like ward number one in first day of month. Immunization clinic of ward number eighteen to thirty three are run by health center of respective wards on 4^{th}, 5^{th}, 6^{th} and 7^{th} of every month.

Face to face interview was done by using structured interview schedule which was developed through extensive literature review. Part I included background information, part II included obstetrics characteristics of the mothers and Part III includes scale measuring maternal satisfaction on health facility (8 items) and technical aspects of care (8 items). Satisfaction was measured on five-point Likert scale ranging from very dissatisfied (1) to very satisfied (5). Further 5 point Likert scale was categorized into satisfied and dissatisfied. In satisfied scale very satisfied and satisfied responses were merged and in dissatisfied scale neutral response, dissatisfied and very dissatisfied responses were merged. Overall satisfaction on health facility and technical aspects of care were measured on the basis of mean score.[19] The content validity of the instrument was established by extensive literature review, consultation with subject experts, as well as peer review. The instrument was back to back translated into Nepali and

English language and compared with original version to ensure the equivalence of the instruments. Pretesting of the instrument was done in 10% of the estimated sample of the mothers attending maternal and child health clinic of Waling Municipality of Syangja district and necessary modification had done on the basis of pretesting.

Data was collected after getting written permission from Nepal Health Research Council and Office of Pokhara Metropolitan City. An informed written consent was obtained from each subject prior to data collection and confidentiality was maintained by not disclosing the information and using the obtained information for the study purpose only. The collected data was edited, organized, coded and analyzed using computer package with SPSS software version 16. Data was analyzed by using descriptive statistics. Descriptive statistics i.e., frequency, percentage, mean and standard deviation were computed for the study variables.

RESULTS

Out of 165 mothers, most of the mothers (90.3%) were between the age of 20 and 34 years with the mean age of 25.64 ± 4.547 years. Regarding types of family, 55% belonged to joint family, most of them (87.9%) were Hindu, almost all of them (98.2%) were literate and 60% were homemaker. Majority of the mothers (75.8%) had delivered their babies in government hospital. Most of the mothers had willingness to receive service on next time and recommend to their families and friends which were 83.6% and 84.2% respectively. More than half of the mothers (60%) were multiparous, 90.9% had planned pregnancy, 41.8% had spontaneous vaginal delivery (SVD) with episiotomy, almost all of the new born (93.9%) had no complications, and 86.7% of the mothers also had no complications during childbirth.

Table 1: Maternal satisfaction on health institution during childbirth (n= 165)

Statements	V.S (%)	S (%)	N (%)	D (%)	V.D (%)	Mean ±SD
The cleanliness of health institution	8(4.8%)	97(58.8%)	33(20%)	12(7.3%)	15(9.5%)	3.43±1.019
Provided with clean bed and beddings	6(3.6%)	60(36.4%)	47(28.5%)	37(22.4%)	15(9.1%)	3.03±1.050
You were given a locker to keep personal items.	4(2.4%)	62(37.6%)	59(35.8%)	29(17.6%)	11(6.7%)	3.12±0.953
The toilet and bathroom or showers were clean and accessible.	3(1.8%)	48(29.1%)	18(10.9%)	72(43.6%)	24(14.5%)	2.60±1.109
The waiting time to be seen by health personnel was appropriate.	-	101(61.2%)	30(18.2%)	26(15.8%)	8(4.8%)	3.36±0.917
The service wa s free of cost.	12(7.3%)	142(86%)	9(5.5%	2(1.2%)	-	3.99±0.420

You are provided with transportation allowances or incentives.	11(6.7%)	143(86.7%)	10(6.1%)	1(0.6%)	-	3.99±0.428
You were provided with all necessary medicines and supplies.	7(4.2%)	130(78.8%)	25(15.2%)	3(1.8%)	-	3.85±0.497

SD -standard deviation, VS- very satisfied, S-satisfied, N-neutral, D- dissatisfied, and VD-very dissatisfied.

Most of the mothers were satisfied with transportation allowances and free of cost services which were 93.4% and 93.3% respectively. Among them7.3% were very satisfied with free of cost services and 6.7% were very satisfied with transportation allowances. The mean varies from 3.99±0.428 to 2.60±1.109. It means most of the mothers were satisfied with transportation allowances and few of them were satisfied with cleanliness and accessibilities of toilets and bathroom. The value of standard deviation was higher in cleanliness of toilet and bathroom. It means most of the mothers were dissatisfied with cleanliness of toilet and bathroom (Table 1).

Table 2: Maternal satisfaction on technical aspects of care during childbirth (n=165)

Statements	V.S (%)	S (%)	N (%)	D (%)	V.D (%)	Mean ±SD
Parents/sibling were allowed to stay during labour	3(1.8%)	64(38.8%)	61(37%)	29(17.6%)	8(4.8%)	3.15 ±0.901
You were taught how to breathe in deeply during severe pain and to rest when pain wore off.	7(4.2%)	121(73.3%)	13(7.9%)	24(14.5%)	-	3.67 ±0.774
Received adequate back massage	-	55(33.3%)	53(32%)	46(27.9%)	11 (6.7%)	2.92 ±0.937
Fetal heart rate was monitored regularly.	54(32.7%)	111(67.3%)	-	-	-	4.33±0.471
The health personnel continuously monitored the progress of labour and condition.	31(18.8%)	124(75.2%)	8(4.8%)	2(1.2%)	-	4.02±0.524
Your blood pressure was measured immediately after delivery.	31(18.8%)	124(75.2%)	8(4.8%)	2(1.2%)	-	4.12±0.523

The health personnel assisted you in breastfeeding.	8(4.8%)	122(73.9%)	29(17.6%)	6(3.6%)	-	3.80±0.576
The health personnel assisted you in maintaining personal hygiene/ perineal care.	4(2.4%)	111(67.3%)	32(19.4%)	15(9.1%)	3(1.8%)	3.59±0.764

SD -standard deviation, VS- very satisfied, S-satisfied, N-neutral, D- dissatisfied, and VD-very dissatisfied.

All of the mothers were satisfied with regular monitoring of fetal heart rate. Among them 32.7% were very satisfied with monitoring of fetal heart rate. Most of the mothers (94%) were satisfied with continuously monitored progress of labour and blood pressure measured immediately after delivery. The mean varies from 4.33±0.471 to 2.92 ±0.937. It means most of the mothers were satisfied with continuous monitoring of fetal heart rate. The value of standard deviation was higher in adequate back massage. It means most of the mothers were dissatisfied with back massage (Table 2).

Table 3: Mothers' overall satisfaction on health institution and technical aspects of care during childbirth

Dimensions of care (n=165)	Level of satisfaction		Mean ±SD
	Satisfied	Dissatisfied	
Health facility related satisfaction	119 (72.1%)	46 (27.9%)	26.49±4.10
Technical aspects of care related satisfaction	149 (90.3%)	16 (9.7%)	29.05±3.17

Most of the mothers (90.3%) were satisfied with technical aspects of care and 72.1% of them were satisfied with health facility during childbirth in Pokhara (Table 3).

DISCUSSION

Patient satisfaction is a key part of quality of care they received and important determinant of the choice of health facility and utilization of services in future. However, the concept of satisfaction is complex and poorly defined. In the present study the level of satisfaction with health institution was 72.1% which was similar with the study conducted in Kathmandu Medical College Teaching Hospital.[23]The finding of this study was lower than the previous study conducted in Mid-Western Nepal[19] and Kathmandu[24] which was 91.0% and 94.4% respectively. Another qualitative study conducted in Ghana showed that most of the mothers were satisfied with health institution during their childbirth.[25]

The current study depicted that only 63.6% of the mothers were satisfied with the cleanliness of health institution and 30.9%% were satisfied with the cleanliness and accessibility of toilet whereas the previous study conducted in Paropakar Maternity Women's Hospital showed 78.2% of satisfaction with general cleanliness.[26] This study revealed mean satisfaction score was lowest for cleanliness and accessibility of the toilet which was supported by the facility based survey conducted across 13 districts in Nepal.[22] The finding of the study was lower than the previous study conducted in Ethiopia which revealed 88.7% of the mothers were satisfied

with overall cleanliness of the health institution and 83.3% were satisfied with accessibility and cleanliness of toilets.[27] Similarly, the study conducted by Amdemichael et al.[14] showed that 55.3% of the mothers were satisfied with cleanliness and accessibility of toilet.

The present study reveals that 93.4% of the mothers were satisfied with the transportation allowances, 93.3% were satisfied with free of cost service and 83% of mothers were satisfied with all necessary medicine and supplies. The finding was similar with the previous the study conducted by Panth et al.[19] The finding was also supported by the previous study conducted by Shrestha et al.[26] In this study 61.2% of the mothers were satisfied with waiting time to be seen by health personnel whereas the study done in at Assela Hospital of Ethiopia showed 78.1%.[14] In the current study only 40% of mothers were satisfied with provided bed and bedding whereas another study conducted in Nepal reported 21% of the maternity clients dislike the scarcity of beds and bed linen.[22]

In the current study most of the mothers (90.3%) were satisfied with technical aspects of care. All of the mothers were satisfied with regular monitoring of fetal heart rate. Most of the mothers (94%) were satisfied with continuously monitored progress of labour and blood pressure measured immediately after delivery. The finding was supported by the study conducted by Panth and Kafle, 2017. Regarding health personnel assistance in breast feeding, 78.7% of the mothers were satisfied with the assistance they received during breast feeding. The finding of the study was contrast with the study conducted in Southern Mozambique, which was 49.8%.[28]

CONCLUSIONS

It is concluded that most of the mothers were satisfied with technical aspects of care during child birth. The level of satisfaction was higher with fetal heart rate monitoring, blood pressure measured immediately after child birth, transportation allowances and free of cost services. In order to increase satisfaction with health institution cleanliness, waiting time to be seen by health personnel and locker facilities for personal belonging should be improved.

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Perceived Fear and Anxiety on Covid-19 among Community People: An Online Crosssectional Study

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ABSTRACT

Introduction: The corona virus disease (COVID-19) is pandemic globally since March 11, 2020. People are experiencing fear and anxiety related to COVID-19. The objective of this study was to assess perceived fear and anxiety on COVID-19.

Methods: A web based cross sectional descriptive study was conducted among community people aged above 18years. Data was collected by using previously validated online tools. Data was analyzed in SPSS 16 version. Descriptive statistic (mean and standard deviation, percentages) and inferential statistics chi-square was used to determine association between level of fear with background information and and spearman's correlation was used to find out the relationship between fear and anxiety.

Results: Approximately half (51.3%) of the respondents had high level of fear. However, most of them 95.5% had low level of anxiety. There were significant associations between fear with age, gender, ethnicity, occupation, types of family, follow COVID 19 news. There was significant low positive correlation between fear and anxiety.

Conclusion: Based on the findings, high level of perceived fear was found and most of them had low level of COVID 19 related anxiety. Gender, ethnic group, family type and stay in quarantine were significantly associated with level of knowledge. There was low positive correlation between knowledge, fear and anxiety. This is recommended public awareness on COVID19 should be conducted to reduce fear and anxiety of the community people.

Keywords: Anxiety, COVID-19, Community People, Fear

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INTRODUCTION

The Corona virus disease 2019 (COVID-19) pandemic is highly contagious and affect a large population in the world.[1] During the pandemic different countries equipped and train with health workers, they educate and empower communities to protect themselves and others.[2] The global pandemic results the biggest economic impact, increase morbidity and mortality. It brought both physical and psychological consequences, such as fear and anxiety.[1]

During pandemic period, many public anxieties and stress are elevated. As the COVID-19 is ongoing, a wave of fear and worry in the society has raised. The fear and anxiety are clear so people concerned their health and high risk of death.[3] The COVID-19 consequences led to fear and worries among individuals worldwide. Its pandemic nature has exacerbated fears worldwide.[4]

Individuals who are kept in isolation and quarantine experience significant distress in the form of anxiety, anger, confusion and post-traumatic stress symptoms. A total of 75 % agreed on the necessity of mental healthcare for individuals in the pandemic situation.

More than 80 % of participants felt the need for the professional help from mental health experts'.[1]The elderly adults had high score in fear. The population mean fear score was 18.53. The people with high fear score had good practice of stay home .[5]

It is important to identify the level of fear and anxiety about COVID-19 among different groups. After identification of the level of fear and anxiety, it is easy to plan and implement anxiety prevention programs.

The objective of this study was to assess perceived fear and anxiety on COVID 19 among community people.

METHODS

Descriptive cross-sectional study design was used to find out fear and anxiety related to COVID 19. The target population of the study was both male and female above 18 years who can use internet and can fill up the form in their smart phone/laptop. Online survey was done due to national lockdown or semi lockdown during the study period. Unrestricted self-selected, convenient sampling method was adopted to generate a heterogeneous sample.[6] The sample size was calculated where 80% prevalence was taken, allowable error 5% and 10% non response rate was added.[3]The calculated sample size was 270 .But we took 267 responses. The instrument was developed based on literature review. Structure, self-administered questionnaire was prepared in Google form and sent through various platforms i.e.facebook, messenger and g-mails. Instrument consists of three parts. Part I: Questionnaire related to background information. It consisted age, gender, religion, occupation, education, marital status, family types; sources of information, people live in quarantine and follow Covid news. Part II: Fear of COVID 19 scale was used. It consists of five-point Likert scale. The participants indicate their level of agreement with the statements of a five- item Likert scale. Answers included "strongly disagree," "disagree," "neutral" "agree" and "strongly agree". The minimum score possible for each question is 1, and the maximum score is 5. A total score was calculated by adding up each item score. The higher score the greater the fear of COVID 19.[4]The least score was 7 and maximum score was 35. Scores were categorized as low and high levels of fear based on the mean, which was taken as a cut-off. The scores less than or equal to the mean were considered as low fear and scores above the mean as high fear .[7]

Part III: The corona virus anxiety scale (CAS) was used. It was validated tool developed by Lee. It consists of 5 statements. The properties of the CAS items are Dizziness, Sleep Disturbances, Tonic Immobility, Appetite Loss, and Abdominal Distress. Each item is rated on a 5 point scale, from 0(not at all) to 4(nearly every day) based on experiences over the past two weeks. Elevated scores on a particular item or a high total score (≤9) may indicates probable dysfunctional corona virus related anxiety .Elevated scores on a particular item or a high total scale score (>9) indicate problematic symptoms for the individual that might warrant further assessment or treatment.[8]

Instrument was developed by using digital tools ie GOOGLE form in Google document. The validity of the instrument was established by extensive literature review. Instrument was developed in English version then translated in Nepali (Back-to-back translation) for easy to understand by the respondent. So that data was taken from all the people who can read in Nepali. Reliability was maintained by doing pretesting the instrument.

Before data collection administrative approval was obtained from concerned authority Institutional Review Board of Nepal Health Research Council, Government of Nepal, Ministry of Health Kathmandu (Ref no 910/2020). Respondents were explained the

objectives and purpose of the study in web-based consent form, who agreed to participate in the study, was asked to complete the questionnaire by clicking on the link. Data was collected within eight weeks periods. The time taken to fill the form was 10 minutes. The respondent had right to withdraw from the study at any time. There was no any risk to participants. Anonymity of the participants was maintained at all levels of the study.

After completion of data collection, data was checked for its completeness and consistency. The data was automatically transferred to SPSS (Statistical Package for Social Science 16.0 computer software from excel sheet. Data analysis was done by using descriptive statistics such as mean, frequency, percentage and standard deviation. Inferential statistics i.e., chi-square test was used to determine the association of selected variable with fear and anxiety. Correlation was used to find out relation between fear and anxiety.

RESULTS

The data were analyzed according to the objectives and research questions of the study. Out of 296 responses of online based survey 267 met the study criteria. Among them, 61.4% were at the age of 18-29 years and 50-59 were 4.9%. The mean age of the respondents was Mean±SD(29.12±9.44) Regarding gender, 37.8 % were female and 62.2% were male. Among the respondents 59.1% had passed bachelor level. Regarding the occupation 34.8% were students. The respondents were from various part of Gandaki province and more than half were from Pokhara 67.8 %. Only 20.2 percent were ever lived in quarantine (Table 1).

Table 1: Background Information of the Respondents (n=267)

Characteristics	Number	Percentage
Age		
18-29	164	61.4
30-39	62	23.2
40-49	28	10.5
50-59	13	4.9
Mean±SD(29.12±9.44)		
Gender		
Female	101	37.8
Male	166	62.2
Education		
No formal education	7	2.6
Below SEE or SLC	18	6.7
Grade 11-12	51	19.1
Bachelor	155	58.1
Master/Doctorate	36	13.5
Occupation		
Student	93	34.8
Services	73	27.3
Unemployment	63	23.6
Business	18	6.7
Health Person	11	4.1
Homemaker	7	2.6
Retirement	2	0.7
Residence		
Pokhara	181	67.8
Others	86	32.2
Religion		
Hindu	256	95.9
Buddhist	8	3.0
Christian	2	0.7
Muslim	1	0.4
Ethnicity		
Brahmin	180	67.4
Chhetri	39	14.6
Madhasi	13	4.9
Gurung	11	4.1
Newar	8	3.0
Magar	8	3.0
Dalit	8	3.0
Marital Status		
Married	118	44.2
Unmarried	149	55.8
Ever live-in quarantine		

Yes	54	20.2
No	213	79.8
Follow COVID-19 news		
Not at all	38	14.2
≥Two times	229	85.8

Regarding responses about the fear on Covid-19, 4.1% strongly agreed that they had fear of covid-19, 1.5% felt uncomfortable, 1.9% felt calmly hands, 2.2% afraid of losing their life, 2.6% were anxious,1.5% cannot sleep because they were worrying about getting corona virus and 1.5% expressed their heart races or palpitate when they think about getting COVID-19.The mean score and standard deviation of the fear of the corona virus was 13.94+4.97 (Table 2).

Table 2: Responses about Fear on COVID -19 (n=267)

Items	Strongly disagree (%)	Disagree (%)	Neither agree nor disagree (%)	Agree (%)	Strongly agree (%)
Most fear of COVID-19	81(30.3)	52(19.5)	94(35.2)	29(10.9)	11(4.1)
Uncomfortable	113(42.3)	105(39.3)	30(11.2)	15(5.6)	4(1.5)
Clammy hand	127(47.6)	100(37.5)	22(8.2)	13(4.9)	5(1.9)
Afraid of losing life	103(38.6)	94(35.2)	41(15.4)	23(8.6)	6(2.2)
Anxious	90(33.7)	74(27.7)	60(22.5)	36(13.5)	7(2.6)
Cannot sleep because of worrying about getting corona virus.	83(31.1)	159(59.6)	12(4.5)	9(3.4)	4(1.5)
Heart races or palpitate when think about getting COVID -19	90(33.7)	146(54.7)	15(5.6)	12(4.5)	4(1.5)

The study showed four percent felt dizzy, lightheaded or faint when they read or listening to news about the corona virus. About 4% had trouble falling or staying asleep when they were thinking about the corona virus every day. Only 0.7% felt paralyzed or frozen when they thought about or was exposed to information about the corona virus. Only 0.7% lost interest in eating when they thought about or exposed to information about the corona virus. About 0.4% felt nauseous or had stomach problems when I thought about or was exposed to information about the corona virus every day (Table 3).

Table 3: Respondent's Response on Anxiety (n=267)

Statement	Not at all (%)	Rare (%)	Several days (%)	>7days (%)	Every day (%)
I felt dizzy, lightheaded or faint when I read or listening to news about the Covid-19.	202(75.7)	47(17.6)	10(3.7)	7(2.6)	1(4.0)
I had trouble falling or staying asleep because I was thinking about the Covid-19.	197(73.8)	47(17.6)	15(5.6)	7(2.6)	1(4.0)
I felt paralyzed or frozen when thought about or was exposed to information about the Covid-19.	200(74.9)	41(15.4)	16(6.0)	8(3.0)	2(0.7)

I lost interest in eating when I thought about or was exposed to information about the Covid-19.	206(77.2)	40(15.0)	13(4.9)	6(2.2)	2(0.7)
I felt nauseous or had stomach problems when I thought about or was exposed to information about the Covid-19.	210(78.7)	32(12.0)	12(4.5)	11(4.1)	1(0.4)

Out of total 267 respondents, more than half (51.3%) of the respondents have high levels of fear. And 95.5% of the respondents have low level of anxiety (probable dysfunctional corona virus related anxiety) (Table 4).

Table 4: Level of Fear and Anxiety (n=267)

Fear and Anxiety	Number	Percent
Level of Fear		
Low level of fear	130	48.7
High level of fear	137	51.3
Mean±SD (13.94±4.97)		
Level of Anxiety		
Low level of anxiety≤9	255	95.5
High level of anxiety>9	12	4.5

There was significant association between respondents fear with age, gender, ethnicity, and occupation, Types of family and follow covid19 news (Table 5).

Table 5: Association between Levels of Fear with Background Characteristics

Characteristics	Level of fear		*x*2	p
	Low (%)	High (%)		
Age				
≤40	117(51.8)	109(48.2)	5.591	.018*
>40	13(31.7)	28(68.3)		
Gender				
Male	98(59.4)	67(40.6)	18.697	<.001
Female	32(32.0)	68(68.0)		
Residence				
Kaski	82(45.3)	99(54.7)	2.578	.108
Others	48(55.8)	38(44.2)		
Marital Status				
Married	58(49.2)	60(50.8)	.018	.903
Unmarried	72(48.3)	77(51.7)		
Ethnicity				
Brahmin	105(58.3)	75(41.7)	17.161	<.001
Others	24(30.4)	55(65.6)		
Education				
Below bachelor	28(40.6)	41(59.4)	.087	.094
Above Bachelor	101(52.6)	91(47.4)		
Occupation				
Unemployment	22(35.0)	41(65.0)	6.257	.012*
Employment	108(53.0)	96(47.0)		
Family Types				
Nuclear	53(39.6)	81(60.4)	8.989	.003*
Joint	77(58.0)	56(42.0)		
FollowCOVID19 news				
Not at all	10(26.3)	28(73.7)	8.877	.003*
More than 2 times	120(52.4)	109(47.6)		

**Statically significant at p<.05 2Chi-square*

There was significant moderate co-relation between fear and anxiety (Table 6).

Table 6: Correlations between Fear and Anxiety

Variables	Fear	Anxiety
Fear	-	.465
Anxiety	.465	

***.Correlation is significant at the 0.01 level (2-tailed).*

DISCUSSION

The people experienced fear and anxiety on

Covid19 .The objective of the study was to assess perceived fear and anxiety on COVID 19 among community people.

The present study showed that among the 267 respondents, more than half (51.3%) had high level of fear which is in lined with studies done in Bangladesh and Peru. The level of fear was 59.24% towards COVID 19.[5,9]It is contradicted with the study done in Indian residence.[7] This was a significantly higher number of the study population reported low fear 54.8%. This study showed the mean score and standard deviation of the fear of the corona virus 13.94±4.97. This was contradicted with the study done in Bangladesh and India where the mean fear score was 19.4 and 18±5.68respectively.[10,7] This study shows female participate 68% has high level of fear this is in line with the study done in Bangladesh where the female had high score.[5]

The findings showed the most of 95.5% of the respondents had low level of anxiety which indicates probable dysfunctional corona virus related anxiety. This finding is in line with study done in Turkey which showed the people were not very anxious about the outbreak.[11]But the study in Nepal showed that 5.9% had extreme level of anxiety.[12]

There was significant association between fear and age, ethnicity, occupation, types of family and follow Covid-19 related news. Similarly, The fear score is significantly associated with gender and age this is supported by the findings of different studies where female display high level of fear .Women's were more afraid and suffering from COVID fear and anxiety.[5,9]The present study showed older people were afraid of COVID 19.There were fear , anxiety, different emotional disturbance in old aged people. They may be afraid of social isolation, fear of uncertainty and different economic problems.[10]similarly, the people from the nuclear family showed higher fear than joint family.

The fear was significantly low with the people who follow the COVID -19 news more than two times a day. But it was found different in one study where more exposure to different media result to more fear.[14]From this study we can express that communication may be helpful for community people to follow government safety guidelines. The clear and right messages from media help to decrease fear from the community people.

A fear of becoming infected by COVID 19 increases the level of anxiety. There was significant low positive correlation between, fear and anxiety (r-.465, p-<0.001). This showed that fear is related to increase anxiety and there was low positive correlation between fear and anxiety. Similarly, past researcher had found there were moderate to strong correlation between fear and anxiety.[13, 15] Fear and anxiety have a great role for improving public wellbeing and mental health. There were fear and anxiety related to future career, work and different social adjustments, job stress. The respondents were afraid of future carrier and increase anxiety.[16]

CONCLUSIONS

The present study revealed that there is high level of fear and low level of probable dysfunctional corona virus related anxiety among the respondents. Similarly, the level of fear is significantly association with age, gender, ethnicity, occupation family types and follows Covid19 related news. There is weak positive correlation between fear and anxiety. This showed that there is a role of fear to increase the level of anxiety of the community people.

These results may help policy makers and healthcare workers to manage maladaptive levels of fear and anxiety related to the corona virus. The findings of the study may provide baseline data for future researcher. The limitation of this study was that it may limit the generalizability of results to a wider

population. This study used an online survey with a convenience sample through the networks of the researchers and disseminated through different social media platforms (Face book, messenger, mail etc.). As a result, there is a possibility of bias. These results recommends that future studies should be focused on information on fear of COVID-19 and post cases about physical signs, mental health, and quality of life issues related to COVID 19. For better generalization larger study will be done. The qualitative study will be effective to find out the real live experience of the respondents regarding fear and anxiety.

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Online Game Addiction among Secondary Level Students of Selected Schools at Kathmandu District

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ABSTRACT

Introduction: Game addiction is an emerging problem worldwide which significantly impairs an individual's ability to function in various life domains over a prolonged period of time. Thus the study aimed to assess prevalence of online games addiction among secondary level students.

Methods: A descriptive cross sectional study was conducted among 100 samples of grade 9 and 10 using non probability purposive sampling technique. Data was collected using structured questionnaire.The collected data was analyzed via descriptive and inferential statistics with the use of Statistical Package for Social Science (SPSS) 16 version.

Results: Majority (66%) of respondent belong to age group 13-15 years (mean ±SD=1.34±0.47) comprising 55% male.About89% of the respondents had wireless internet connection and 67% of respondents had personal mobile. About three quarter (74%) of the respondents used mobile phones to play online games, 49% of respondents play action/adventure types of online games and 38% of the respondents play PUBG. Evening was the preferred time to play online games comprising 44% and 47% of respondents play online games for 1–3 hours. Majority of the respondents (90%) play online game for entertainment.The findings revealed 16% had game addiction, 84% were normal gamers and was significantly associated with age (p=0.040), gender (p=0.037) and grade(p=0.014)of the students with chi-square test.

Conclusion: The study findings concluded that online games addiction is present among students. Therefore, measures to increase awareness regarding effects of excessive use of online games addiction to physical and mental health should be implemented.

Keywords: Addiction; Internet; Online games; Students

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INTRODUCTION

The WHO officially recognized gaming disorder as mental health condition adding the disorder to the ICD-11.[1] From 2014 to 2020 there is global increase of video gamers from 1.8 billion to 2.6 billion and the amount of time spent playing videogames has increased from 5.1 hour per week in 2011 to 6.5 hour per week in 2017.[2,3] Internet use in the world reached to 51% of total population with an increased use of online games, than other aspects of education and health.[2]

Prevalence of online gamers is 8.5% in American youth, 5% in Australian youth,1-2% in German.[3] Excessive gaming causes same effects as substance abuse and cortical abnormalities beside this also lead to anxious of social situations, poor concentration and sleep quality, depression, interpersonal problems,

self-harming behavior, drug addiction, aggression, low academic achievement and behavioral problems.[4,5]

In India, with 50 million downloads, there are 33 million active PUBG users. Serious public health problems of PUBG addiction is a matter of major health concern in India.[6] Another study shows there are 300 million online gamers in India.[2] In Nepal, studies show use of internet for playing online games are 7.3% and 32.6%.[9-10]Also, parents and school frequently complains that online games was affecting their children's studies and making them more aggressive and replacing other daily life activities like job, social life, family events and normal daily functioning.[7,8]

In Nepal, a study conducted in 6 colleges of Kathmandu district out of 422 students 7.3% use internet for playing online games.[9] Another study found, out of 236 students 32.6% played online games.[10] Online games are freely accessible in Nepal. Therefore, parents and school had frequent complaining that online games was affecting their children's studies and making them more aggressive.[7]Thus, this study aimedto assess the prevalence of online games addiction among secondary level students.

METHODS

Descriptive cross sectional research design was used to find out the online games addiction. The study was conducted among secondary level students studying in class 9 and 10 of Excel Public School and ShishuNikunja Secondary Schoolof Kathmandu district. The total sample calculated for the study was 100 and non- probability purposive sample was used to get the sample. Those students who are playing online games for at least 6 months and both boys and girls were included in the study. The structured questionnaire was used to collect the data. The questionnaire consists of information related questionnaire and 7-item standard tool for gaming addiction i.e.Game Addiction Scale for Adolescent wasused for game addiction. The 7-item Gaming Addiction Scale (GAS)[11,12] is a brief instrument based on DSM criteria to assess gaming addiction. The seven items in the GAS are rated using a five-point Likert scale ranging from 1 (*never*) to 5 (*very often*). A higher score on the GAS indicates more problematic use of online gaming.In this study,polythetic form 2 (Polythetic partial GAS) was adopted. In this tool, those who scored ≥ 3i.e. sometimes or more on the items4,5,6 and 7 were defined as polythetic gamers (excessive gaming) and those who score <3 i.e. "sometimes" were referred as normal. The Cronbach's alpha for GASA was found .82 to .87.[11]

The ethical approval was obtained from Institutional Review Committee of Scheer Memorial Adventist hospital.Written permission was taken from concerned authority of selected schools of Kathmandu District. GASA tool was openly available to use while conducting research[12.] Confidentiality was maintained by not disclosing the identification of the respondent. Purpose of the study was clearly explained to the respondents before the data collection.

The data was collected online via Zoom app using Google form.Firstly, students were asked verbally, if they are engaged in different types of online games. Then, only those students were selected who responded to have involved in different types of online games for more than 6 months.The assent from the parents was taken by contacting with college and administration and students. Then consent and clear instruction was given to the participants to fill the Google form. Each participant was given 30 minutes to fill the form. The data was collected by researcher herself.

All collected data were reviewed and checked immediately after the data collection for its completeness, consistency and accuracy. Data was edited, organized and coded accordingly.

Statistical Package for Social Science (SPSS) version 16 was used for the data analysis. Descriptive statistics (mean, frequency, standard deviation and percentage) was used to for socio-demographic data and inferential statistics (chi square test) was used to identify the association of socio- demographic data with online game addiction.

RESULTS

Table 1: Socio Demographic Characteristics of the Students (n= 100)

Variable	Number	Percentage
Age		
13-15	66	66.0
16-17	34	34.0
Mean ± SD: 1.34±0.476		
Gender		
Male	55	55.0
Female	45	45.0
Ethnicity		
Dalit	3	3.0
Disadvantaged janajati	29	29.0
Disadvantaged non Dalit Terai caste groups	3	3.0
Janajatis	19	19.0
Upper caste groups	46	46.0
Religion		
Buddhist	20	20.0
Christian	3	3.0
Hindu	77	77.0
Grade		
9	40	40.0
10	60	60.0
Living with		
Alone	4	4.0
Friends	1	1.0
Relatives	1	1.0
Family	94	94.0

Majority (66%) of respondent belong to age group 13-15 years mean ±SD of 1.34±0.476 and more than half were male (55%). Regarding ethnicity, nearly half of the respondents (46%) were upper caste groups, majority of the respondents (77%) were Hindu. The students studying in grade 10 accounts 60%. Most of the respondents (94%) live with their family (Table 1).

Table 2: Information regarding Gaming and Internet (n=100)

Variables	Number	Percentage
Internet connection		
Wireless	89	89.0
Mobile data	11	11.0
Availability of mobile		
Personal	67	67.0
Father's mobile	12	12.0
Mother's mobile	15	15.0
Siblings mobile	5	5.0
Neighbor's mobile	1	1.0
Device used to play		
Mobiles	74	74.0
Computer	17	17.0
Gaming consoles	3	3.0
Tablets	6	6.0
Types of games played		
Racing/Sport Games	31	31.0
Action/Adventure Games	49	49.0
Educational Games	14	14.0
Others	6	6.0
Online games commonly played		
PUBG	38	38.0
Fortnite	13	13.0
Clash of clans	9	9.0
Free-fire	30	30.0
Others	10	10.0
Daily online games playing time		
Morning	6	6.0
Afternoon	24	24.0

Evening	44	44.0
Night	26	26.0
Duration for playing online games		
1 hour or less	39	39.0
1 hour – 3 hour	47	47.0
3 hour – 5 hour	9	9.0
More than 5 hours	5	5.0
Reason to play online game		
Entertainment	90	90.0
Stress relief	9	9.0
Knowledge	1	1.0

Majority (89%) of respondents had wireless internet connection at their home and more than half (67%) of respondents had personal mobile. About three quarter (74%) of the respondents used mobile phones to play online games, nearly half (49%) of respondents play action/adventure types of online games and 38% of the respondents play PUBG. Evening was the preferred time to play online games comprising 44% and nearly half (47%) of respondents play online games for 1 hour 3 hours. Majority of the respondents (90%) play online game for entertainment (Table 2).

Table 3 : Prevalence of Online Game Addiction

Variables	Frequency	Percentage
Polythetic gamers	16	16.0
Normal gamers	84	84.0

Table 4 portrays that 84% of respondents were normal gamers and 16% of respondents were polythetic gamers.

Table 4: Responses on Online Game Addiction

SN	Statements	Never	Almost never	Sometimes	Often	Very often
	How often during the last six months...					
1	Did you think about playing a game all day long?	51(51%)	9(9%)	32(32%)	**7**(7%)	1(1%)
2	Did you spend increasing amounts of time on games?	33(33%)	24(24%)	33(33%)	9(9%)	1(1%)
3	Did you play games to forget about real life?	63(63%)	15(15%)	16(16%)	5(5%)	1(1%)
4	Have others unsuccessfully tried to reduce your game use?	46(46%)	14(14%)	26(26%)	10(10%)	4(4%)
5	Have you felt bad when you were unable to play?	67(67%)	16(16%)	14(14%)	2(2%)	1(1%)
6	Did you have fights with others (e.g., family, friends) over your time spent on games?	31(31%)	24(24%)	35(35%)	8(8%)	2(2%)
7	Have you neglected other important activities (e.g., school, work, sports) to play games?	67(67%)	17(17%)	12(12%)	2(2%)	2(2%)

Table 5 : Association of Online Games Addiction with Selected Socio Demographic Variables

Variables	Addicted gamers	Normal gamers	Test value	p value
Age				
13-15 years	7(10.6%)	59(89.4%)	4.202[a]	0.040*
16-17 years	9(26.5%)	25(73.5%)		
Gender				
Male	5(9.1%)	50(90.9%)	4.341[a]	0.037*
Female	11(24.4%)	34(75.6%)		
Grade				
Class 9	2(5%)	38(95%)	6.002[a]	0.014*
Class 10	14(23.3%)	46(76.7%)		
Internet connection at home				
Yes	14(15.7%)	75(84.3%)	0.044[b]	1.000
No	2(18.2%)	9(81.8%)		
Own personal mobile				
Yes	12(17.9%)	55(82.1%)	0.551[a]	0.458
No	4(12.1%)	29(87.9%)		
Device for playing online games				
Mobiles	11(14.9%)	63(85.1%)	0.273[b]	0.756
Others	5(19.2%)	21(80.0%)		
Types of online games played				
Action/adventure	8(16.3%)	41(83.7%)	0.008[a]	0.930
Others	8(15.7%)	43(84.3%)		
Daily online games playing time				
Day	6(20%)	24(80%)	0.510[b]	0.554
Night	10(14.3%)	60(85.7%)		
Preferred time for playing online games				
3am-5pm	7(13.2%)	46(86.8%)	0.654[a]	0.419
5pm-3am	9(19.1%)	38(80.9%)		
Duration for playing online games				
< 3 hours	12(14%)	74(86%)	1.914[b]	0.231
>= 3 hours	4(28.6%)	10(71.4%)		
Reason for playing online games				
Entertainment	13(14.4%)	77(85.6%)	1.620[b]	0.198
Others	3(30%)	7(70%)		

**p -value significant at ≤ 0.05, [a] chi-square [b] fisher's exact*

Table 5 indicates that there was significant association (p≤0.05) between age, gender and grade of the respondents.

DISCUSSION

In this study the prevalence of online games addiction and its predictors, we considered Polythetic Game Addiction Scale for Adolescents which showed that 16% of adolescents were addicted gamers and 84% were normal gamers which are similar to the study conducted by Witteket. al.[13]in Norway (2016) where 12.6% were addicted gamers and 87.4% were normal gamers. In contrast other study revealed the prevalence of addicted gamers accounting 31.2% when apolythetic approach was used by Moustafa et al., (2020) and the study conducted byRohilla (2018) found 62.35% were normal gamers and 37.64% were addicted gamers.[11]Unlikely, some studies showed lowcomprising 3.50% and 5%respectivelyUndavalli et al in India (2020) and Rajab et al in Saudi (2020)]. However the study results show different outcomes and this could be due to various reasons. First of all, the GAS score was viewed as the polythetic score by the authors, because in the DSM-5 the symptoms of internet gaming disorder should have been present for at least three months, while Lemmens et al. suggested that all sevenitems must occur at least sometimes in the last six months in order to indicate video game addiction[14].Secondly, in our study, only online video games were considered, where as other studies consider both online and off line video games in which the prevalence is 37.46% and 37.64% respectively which is greater than this study.[11,15]

In this study 74% of respondents use mobile phone to play online games which was consistent with the study conducted in India where, 73.9% respondents use mobile phones to play online games.[16]Similarly, it was inconsistent with the study conducted by Taechoyotin et al, (2020) in Thailand where 86.8% respondents use smart phones to play online games.[17]This study revealed 89% respondents have internet connection at home which was consistent with the study conducted by Karaca et al, (2020) in Turkey where 89.7% respondents have internet connection at home[18]. Almost half (49%) of respondents played action or adventure types of games in the present study whereas the study by Ayhan and Cavus (2015) documented 20.7% of respondents play action or adventure types of games.[19] However, the study of Chupradit et al, (2019) identified 65.9% of respondents prefer action games.[20] The study found 38% of the respondents most commonly played PUBG which was inconsistent with the study conducted by Richie et al (2020), where70.9% most commonly played mobile legend among university students.[21]

The present study identified 32% of respondents preferred to play online games between 5pm to10 pm which was contradictory with the study conducted by Verecio (2017), 54.7% of respondents play online games between 5pm to 10pm. In this study 47% of respondents play online games for 1– 3 hours which was conflicting with the study conducted by Verecio (2017) revealing 77.7% of respondents play online games for 1– 3 hours.In this study 90% of respondents play online game for entertainment purpose which was inconsistent with the study conducted by Verecio (2017) 51.5% play for entertainment.[22]

In this study there was significant association between selected demographic variables i.e., age (p=0.040), gender (p=0.037), grade (p=0.014) which was inconsistent with the study conducted by Yarasani et al. (2018) in India, showed significant relation with gender of respondents but not with other variables.[16] Also, other studies Moustafa et al, (2020), Khan and Muqtadir (2014) found significant association with gender[23.] Surprisingly, the percentage of game addiction is high among females in this study compared to male which contradict with other studieswhich showed that 2.12% male students are more addicted

than 1.71% female students [25] and prevalence of games addiction was found to be 7.7% in boys and 7.2% in girls.[25] Likely other study concluded male students were found more addicted to online games than female.[26]

CONCLUSIONS

The study concluded that 16% of adolescents were addicted gamers. Age, gender and educational level of students were significantly associated with addiction to online games.So, this study recommends planning and implementing awareness activities regarding effects of playing excessive online games to physical and mental healthto the students.

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Stress, Anxiety and Depression among Adolescents

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ABSTRACT

Introduction: Stress, anxiety and depression are common during adolescence. Emotional aspects of adolescents are most of the time neglected, undetected and untreated of this study was to assess the stress, anxiety and depression of adolescent students.

Methods: Cross-sectional descriptive study was conducted among adolescent students studying in public secondary school of Pokhara Metropolitan City via probability multistage sampling. Descriptive statistics, chi-squared test and spearman's co-relation was used for data analysis.

Rsults: Result showed prevalence of stress, anxiety and depression were (51.3%, 68.3% and 45.3%) respectively. Level of stress was normal (48.7%) , mild (31.2%) , moderate (16.5%) , severe (3.1%) and extremely severe (0.5%). Level of anxiety was normal (31.7%), mild (14.5%), moderate (28.1%), severe (11.6%) and extremely severe (14%). Level of depression was normal level (54.7%) , mild (18.9%) , moderate (17.9%) , severe (5.6%) and extremely severe (2.9%). Factors associated with: (stress was living with other than own parents, employment of mother.), (anxiety was sex and living with other than own parents.), (depression was ethnicity, living with other than own parents, family support system.).

Conclusions: Prevalence of stress, anxiety and depression were high among adolescents. Living with other than own parents, employment of mother, poor family support system were major factors of stress, anxiety and depression.

Keywords: Stress, Anxiety, Depression, Adolescents

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INTRODUCTION

Adolescence is the phase of transition from a "child" into an "adult." While there are many factors that significantly affect adolescents, ones who have been often overlooked is mental health and well-being.[1]. Mental health conditions account for 16% of the global burden of disease and injury in people aged 10–19 years. Globally, depression is one of the leading causes of illness and disability among adolescents.[2].

In United State of America, "7.1 percent of children aged 3-17 years have diagnosed anxiety and 3.2 percent of children aged 3-17 years have diagnosed depression"[3]. In 2015, there were 362 million adolescents in the South East Asian Region, With an overall mortality rate of 102,1,00,000 adolescents. The leading causes of mortality were self-harm (suicide)[4]. The prevalence of mental disorders was 7.3 percent among children aged 13-17, with prevalence in urban metros nearly double (13.5%) that of rural areas (6.9%) in India[5].

In Nepal, 6.4 million adolescents are aged 10-19 Central bureau of statistics[6]. There are 18 outpatients mental health facilities available in the country, of which none are for children and adolescents only[7]. It is very horrible that only 1 in five adolescents with mental health problems receive proper mental health treatment[8]." A study conducted among

adolescents of Pubic School of Kathmandu shows that prevalence of stress, anxiety, and depression was 27.5 percent, 56.9 percent and 41.6 percent respectively[9].

There are very few studies on adolescent mental health in Nepal. It is crucial to assess the Stress, Anxiety and Depression among adolescents it may help in early identification of stress and anxiety as well as help to reduce of the problem and prompt treatment of depression. Thus researcher interested to identify stress, anxiety and depression among adolescents.

METHODS

Cross-sectional descriptive study design was used for the study to gather information of the stress, anxiety and depression among adolescents in selected public schools of Pokhara Metropolitan City. Probability multistage sampling was adopted for the data collection. Sample size was calculated by using Cochran's formula. Final sample size was 413. Structured self administered questionnaire was used to collect the data. The questionnaire includes Part I socio-demographic information of respondents (question no 1 - 10) , Part II DASS-21 (statements 1-21)[10] and Part III MSPSS (statements 1-12)[11]. For establishing reliability of the tool, pre testing was done in 10 percent adolescent students studying in Narayani Secondary school Chitwan.

Data were collected for four weeks after getting ethical approval from the Institutional Review Committee (IRC) of Tribhuwan University, Institute of Medicine. Administrative approval for data collection was taken from different schools of Pokhara Metropolitan City by submitting the letter from Pokhara Nursing Campus. Written informed consent was taken from each student before data collection. Data were edited, coded and entered into the software Epi-Data 3.1 and exported to SPSS-16 version for further analysis. Descriptive analysis was used to assess the level and prevalence of stress, anxiety and depression, inferential statistics (Chi-square test) was used to find out the association of stress anxiety and depression with selected variables. Spearman rank correlation was used to assess the relationship among stress, anxiety and depression scores.

RESULTS

Socio-Demographic Characteristics of the Respondents

This study demonstrates that 50.6 percent of the respondents were of age ≥14 years. The minimum age was 12 years and maximum age was 19 years while mean age was 14.77±1.173. Regarding sex nearly half 55 percent respondents were female. 37.8 percent respondents were upper caste groups followed by relatively advantaged janajatis (30.3%) and Dalit (30.3%). Majority of the respondents (85.5%) were Hinduism. 83.5 percent were living with parents. Almost all 91.8 percent respondents parents were spouse staying together (Table 1).

Table 1: Socio-Demographic Characteristics of the Respondents (n=413)

Characteristics	Number	Percentage
Age (in years)		
<14 years	204	49.4
≥ 14 years	209	50.6
(Mean age± SD=14.77±1.173 years)		
Sex		
Male	186	45.0
Female	227	55.0
Ethnicity		
Upper caste groups	156	37.8
Relatively advantaged Janajatis	125	30.3
Dalit	125	30.3
Disadvantages Janajaties	3	0.7

Disadvantaged non Dalit Terai caste groups	2	0.5
Religious minorities	2	0.5
Religion		
Hinduism	353	85.5
Buddhism	35	8.5
Christianity	23	5.5
Muslim	2	0.48
Living Status of Respondent's		
Parents	345	83.5
Relatives	58	14.0
Domestic worker	10	2.4
Marital Status of Respondents Parents		
Spouse staying together	379	91.8
Widowed	14	3.4
Separated	13	3.1
Divorce	7	1.7

Socio-Demographic Characteristics of the Respondents Parents

In this study 28.1% respondent's mothers were secondary school completed and 32.4% respondent's fathers were secondary school completed. Regarding occupation, 57.0% respondent's mothers were homemaker while 36.5% respondent's fathers were non-governmental employee (Table 2).

Table 2: Socio-Demographic Characteristics of the Respondents Parents

Characteristics	Number	Percentage
Educational Status Of Respondent's Mother (n=407)		
Cannot read and write	90	22.1
Can read and write	317	77.9
Can read and write (n=317)		
No formal schooling	22	6. 9
Less than primary education	52	16.4
Primary school completed	73	23.0
Secondary school completed	89	28.1
High school completed	56	17.7
College university completed	23	7.3
Post graduate degree	2	0.6
Educational Status Of Respondent's Father (n=405)		
Cannot read and write	41	10.1
Can read and write	364	89.9
Can read and write (364)		
No formal schooling	9	2.5
Less than primary education	45	12.4
Primary school completed	66	18.1
Secondary school completed	118	32.4
High school completed	74	20.3
College university completed	46	12.6
Post graduate degree	6	1.6
Occupational status of Respondents Mother (n=407)		
Homemaker	232	57.0
Self employed	100	24.6
Governmental employee	20	4.9
Non –governmental employee	45	11.1
Students	10	2.5
Occupational status of Respondents Father (n=405)		
Homemaker	4	1.0
Self employed	142	35.1
Governmental employee	56	13.8
Non –governmental employee	148	36.5
Students	55	13.6

Level of Stress, Anxiety and Depression among Adolescents

This study illustrates 31.2% had mild, 16.5 percent had moderate, 3.1 percent had severe and only 0.5 percent had extremely severe level of stress. In anxiety level 14.5% had mild, 28.1% had moderate , 11.6% had severe and 14.0% had extremely severe level of anxiety. In depression 18.9% had mild, 17.9% had moderate, 5.6% had severe and only 2.9% had extremely severe level of depression (Table 3).

Table 3: Level of Stress, Anxiety and Depression among Adolescents (n=413)

Level	Stress		Anxiety		Depression	
	Number	Percentage	Number	Percentage	Number	Percentage
Normal	201	48.7	131	31.7	226	54.7
Mild	129	31.2	60	14.5	78	18.9
Moderate	68	16.5	116	28.1	74	17.9
Severe	13	3.1	48	11.6	23	5.6
Extremely Severe	2	0.5	58	14.0	12	2.9

Association between Level of Stress with Socio-Demographic Characteristics of Respondents and Support system

This study depicts the analysis of association between level of stress and socio-demographic factors. Respondents who lived with others than own parents (p=0.003) and whose mothers were employed (p=0.009) had significant association with stress There were insignificant association between age, sex, ethnicity and marital status of parents (Table 4). There was statistical significant association between stress and friend support system (p=0.043) among respondents. There were insignificant association between stress and family support system (p=0.470) and other support system (p=0.172) (Table 5).

Table 4: Association between Level of Stress and Socio-Demographic Characteristics of Respondents (n= 413)

Characteristics	Stress		Total n(%)	X^2	P Value
	Normal n(%)	Mild to Very Severe n(%)			
Age					
10-14	97(47.5)	107(52.5)	204	0.202	.653
15-19	104(49.8)	105(50.2)	209		
Sex					
Female	103(45.4)	121(54.6)	227	2.189	.139
Male	98(52.7)	88(47.3)	186		
Ethnicity	142(50.5)	139(49.5)	281	1.225	.268
Privileged	59(44.7)	73(55.3)	132		
Underprivileged					

Living With					
Parents	179(51.9)	166(48.1)	345	8.674	.003*
Relatives/Domestic worker	22(32.4)	22(32.4)	68		
Marital Status of parents					
Spouse staying together	186(49.1)	193(50.9	379	0.307	.579
Divorced/separated/widowed	15(44.1)	19(55.9)	34		
Employment of mother (n=407)					
Emploed	67(40.6)	98(59.4)	165	6.755	.009*
Unemployed	130(53.7)	112(46.3	242		
Empoyment of father (n=405)					
Emploed	169(48.8)	177(51.2)	346	0.002	.965
Unemployed	29(49.3)	30(50.8)	59		
Education of mother (n=407)					
Can not read and write	41(45.6%)	160(50.5%)	90	0.443	.506
can read and write	157(49.5%)	160(50.5%)	317		
Education of father (n=405)					
Can not read and write	23(56.1)	18 (43.9)	41	0.949	.330
Can read and write	175(48.1)	189(51.9)	364		

Test Statistics: x2Pearson"s Chi Square Test, p value significant at ≤ 0.05 level.*

Table 5: Association between Level of Stress with Support System (n=413)

Characteristics	Stress		Total n (%)	*x*2	p-Value
	Normal n(%)	Mild to very Severe n (%)			
Family support system					
Low Support	12(41.4)	17(58.6)	29	1.511	.470
Moderate Support	40(44.9)	49(55.1)	89		
High Support	149(50.5)	146(59.5)	295		
Friend support system					
Low Support	9(36.0)	16(64.0)	25	6.289	.043*
Moderate Support	44(40.7)	64(59.3)	108		
High Support	148(52.9)	132(47.1)	280		
Other support system					
Low Support	13(41.9)	18(58.1)	31	3.521	.172
Moderate Support	28(40.0)	42(60.0)	70		
High Support	160(51.3)	152(48.7)	312		

Test Statistics: x2Pearson"s Chi Square Test, p value significant at ≤ 0.05 level.*

Table 6: Association between Level of Anxiety and Socio-Demographic Characteristics of Respondents (n=413)

Characteristics	Anxiety Normal n(%)	Mild to very severe n(%)	Total n(%)	p- Value
Age				
10-14	65(31.9)	139(68.1)	204	.951
15-19	66(31.6)	143(68.1)	209	
Sex				
Female	60(26.4)	167(73.6)	227	.011*
Male	71(38.2)	115(61.8)	186	
Ethnicity				
Privileged	93(33.1)	188(66.9)	281	.380
Underprivileged	38(28.8)	94(71.2)	132	
Living with				
Parents	117(33.9)	228(66.1)	345	.031*
Relatives/Domestic worker	14(20.6)	54(79.4)	68	
Marital status of parents				
Spouse staying together	119(31.4)	260(68.6)	379	.640
Divorced/separated/widowed	12(35.3)	22(64.7)	34	
Employment of mother (n=407)				
Employed	44(26.7)	121(73.3)	165	.103
Unemployed	83(34.3)	159(65.7)	242	
Employment of father (n-405)				
Employed	113(32.7)	233(67.3)	346	.744
Unemployed	18(30.5)	41(69.5)	59	
Education of mother (n= 407)				
Can not read and write	17(18.9)	73 (81.1)	90	.015*
Can read and write	110 (34.7%)	203 (65.3)	317	
Education of father (n=405)				
Can not read and write	11(26.8)	30 (73.2)	41	.446
Can read and write	119 (32.7)	245 (67.3)	364	

Test Statistics: x2 Pearson"s Chi Square Test, p value significant at ≤ 0.05 level.*

Table 7: Association of Level Depression and Socio-Demographic Characteristics of Respondents (n=413)

Characteristics	Depression		Total n(%)	*x*2	p-Value
	Normal n(%)	Mild to Very severe n(%)			
10-14	108(52.9)	96(47.1)	204	0.516	.473
15-19	118(56.5)	91(43.5)	209		
Sex					
Female	115(50.7)	112(49.3)	227	3.354	.067
Male	111(59.7)	75(40.3)	186		
Ethnicity					
Privileged	164(58.4)	117(41.6)	281	4.705	.030*
Underprivileged	62(47.0)	70(53.0)	132		
Living with					
Parents	200(58.0)	145(42.0)	345	8.930	.003*
Relatives/Domestic worker	26(38.2)	42(61.8)	68		
Marital status of parents					
Spouse staying together	211(55.7)	168(44.3)	379	1.681	.195
Divorced/separated/widowed	15(44.1)	19(55.9)	34		
Occupation of mother (n=407)					
Employed	137(56.6)	105(43.4)	242	1.028	.311
Unemployed	85(51.5)	80(48.5)	165		
Occupation of Father (n-405)					
Employed	28(47.5)	31(52.5)	346	1.614	.204
Unemployed	195(56.4)	151(43.6)	59		
Education of mother (n=407)					
Can not read and write	39 (43.3)	51(56.7)	90	5.859	.015*
Can read and write	183(57.7)	34(42.3)	17		
Education of father (n=405)					
Can not read and write	23(56.1)	18(43.9)	41	0.11	0.915
Can read and write	201(55.2)	163(44.8)	364		

Test Statistics: x2Pearson"s Chi Square Test, p value significant at ≤ 0.05 level.*

Table 8: Association between Level of Depression with Support System (n=413)

Characteristics	Depression		Total n(%)	*x*2	p-value
	Normal n(%)	Mild to very severe n(%)			
Family Support system					
Low Support	10(34.5)	19(65.5)	29	8.993	.011*
Moderate Support	42(47.2)	47(52.8)	89		
High Support	174(59.0)	121(41.0)	295		
Friend Support system					
Low Support	10(40)	15(60)	25	4.956	.084
Moderate Support	53(49.1)	55(50.9)	108		
High Support	163(58.2)	117(41.8)	280		
Other support system					
Low Support	11(35.5)	20(64.5)	31	5.017	.081
Moderate Support	39(55.7)	31(44.3)	70		
High Support	176(54.4)	136(43.6)	312		

Test Statistics: X2Pearson"s Chi Square Test, p value significant at ≤ 0.05 level.*

Association between Level of Anxiety and Level of depression with Socio-Demographic Characteristics of Respondents

There was significant association between sex, living status of respondents and educational status of parents with anxiety (Table 6). There was significant association between ethnicity, with whom respondents are living and educational status of mother with depression (Table 7).

Association between Level of Depression with Support System

This study shows there was significant relationship of depression with family support system (Table 8).

Relationship between total Stress, Anxiety and Depression Scores Of Respondents

This study reveals that there was weak positive relationship between total stress , anxiety and depression score of respondents. It was found to be correlated with each other i.e. Spearman's rank correlation value was 0.367 (p = <0.05) for stress and anxiety, 0.487 for depression and 0.380 for anxiety and depression (Table 9).

Variables	Stress	Anxiety	Depression
Stress	1	0.367**	0.487**
Anxiety		1	0.380**
Depression			1

DISCUSSION

Present study examined the level of stress, anxiety and depression of adolescents and associated factors among 413 adolescents who participated in study.

This study exhibited overall prevalence of stress was 51.3 percent cause may be hormonal change, giving high priority to education. This finding is comparable with similar study conducted in different countries like 43.8 percent in India[12] . The variation in prevalence may be due to different coping abilities and perception of stress.

This study revealed 48.7 percent respondents had the normal level of stress; 31.2 percent had mild, 16.5 percent had moderate, 3.1 percent had severe and only 0.5 percent respondents had extremely severe level of stress. There was significant association between stress and respondents who lived with others (p=0.003) than with their parents. It is in line with the study conducted in Zimbabwe[14].

Current study exhibited the significant association between employment of mother and stress (p=0.009). This is in line with the study conducted in India. The significant result was found on stress and the parents working patterns (p<0.001)[12]. It might be when parents are working, and children do not get much time to discuss their problems may creates stress among them.

This study revealed 68.3 percent prevalence rates of Anxiety. This finding is comparable to a study conducted in different countries like 86.5 percent in India[13], 66.2 percent in Saudi Arabia[15] and 60 percent in Maharashtra India[16].

This study showed 31.7 percent respondents had normal state of anxiety. 14.5 percent had mild; 28.1 percent have moderate, 11.6 percent had severe and 14.0 percent had extremely severe level of anxiety. There was significant association between sex and anxiety. It is supported by the study conducted in Vietnam, found the female students have three times more likely to have anxiety in comparison to male[17]. The study conducted in Iran showed that prevalence of anxiety was more common to women compared to men (41.9 vs 36.7%)[18]. It might be due to concept of gender discrimination, either facing or witness to domestic violence.

This study showed significant association of anxiety with respondents who lived with others than own parents (p=0.031). It may be due to lack of love and support. There was significant relationships mother education with anxiety. This is in line with the study conducted in Finland on Social determinants of mental health shows main risk factors for mental disorders were parents' short education; (OR) 1.23 (1.09 to 1.38)[19].

This study showed the prevalence of depression was 45.3 percent. It is comparable with studies in other countries like 41.1 percent in Vietnam[17], 65.53 percent in India[21]. The difference in finding might be due to variations in availability of mental health services.

This study demonstrates 5.6 percent was severe, and 2.9 percent had extremely severe level of depression. Findings displayed respondents representing from the underprivileged ethnic background had significant association with depression (p=0.003). This is supported by the study conducted in united state. It showed that depression was significantly more prevalent among African Americans than among Whites (OR=0.62; 95% CI=0.49) and occurred with similar frequency among Hispanics (OR=0.92; 95% CI=0.61)[22]. Elevated depression rates among minority individuals were largely associated with greater health burdens and lack of health insurance, factors amenable to public policy intervention. In contrast a study conducted in Malaysia showed there was no significant association between race and depression (p-0.056). The difference in findings may be due to different government rules and facilities[23].

Respondents who lived with others than own parents have significance association with depression. It is supported by study conducted in Turkey as the relationship between parent's status (alive,dead, together,separated) has significant association with childhood depression[24].

Respondents with low family support system have significant association with depression. Reviewed article conducted in China shows that poor family relationship, lack of parental care due to divorce or migration of parents are the factors predisposing adolescence depression[25].

It might be due to hostile and rigid parenting, poor parental relationship.

Present study revealed the weak positive relationship between total stress score and total anxiety score and total depression score of respondents. It was found to be correlated to each other i.e. Spearman's rank coefficient value was 0.367, 0.487 and 0.380 for stress, anxiety and depression respectively. This indicated that when stress was more, anxiety level was also going up and depression level was also increased simultaneously. The similar findings were found in study conducted in India as significant positive correlation was found between all three variables i.e. stress, anxiety and depression at < 0.01 level of significance[26].

CONCLUSIONS

This study finding concludes that the prevalence of stress, anxiety and depression among adolescents is in alarming condition. Living with other than own parents, employments of mother, being female, poor family support were major factors for contributing conditions. There is weak positive co-relation between stress, anxiety and depression. Early identification of mental health problems in adolescent by routine mental and psychological screening program need to conduct. Psychological counseling for adolescents and students friendly academic environment seems to be crucial health interventions to decrease adolescent mental health problems.

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Family Planning Methods Preferred by Service Seekers at Western Regional Hospital, Nepal

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ABSTRACT

Introduction: Family planning (FP) is one of the priority programs of the government of Nepal. This research aims to identify the preferred method of family planning by services seekers at Western Regional Hospital, Pokhara.

Methods: Three years of retrospective data were retrieved from archives of maternal and child health section of Western Regional Hospital and analyzed to correlate their choices for FP methods in terms of demographic variables. The data of 501 family planning service seekers (FPSS) were analyzed using SPSS version 22.

Results: The finding revealed that 347 females and 154 males, received permanent family planning services. The age group of the females seeking the FP services ranged from 20 to 45 years and male ranged from 24 to 54 years. The most preferred family planning method by females was Bilateral Tube Ligation (46.9%) followed by Minilap (22.4%) and the method most preferred by men was non scalpel vasectomy (NSV-30.7%). There were greater number of FPSS from Brahmin/Chhetri ethnicity (44.1%) followed by Janjati (37.8%) and Dalit (11%). Among FPSS, about 60% lived in rural areas. Most of the female FPSS were house maker (69%). Only13% of the FPSS had tried temporary FP services before. The study has shown the significant association between age, education, occupation, ethnicity, residency of FPSS with the choices of permanent method of family planning.

Conclusion: The majority of the FP service seeker were females, whereas the most preferred method of FP among female service seeker was bilateral tube ligation and that for male was nonscalpel vasectomy. Majority of the service taker were from Brahmin and Chhetri community and the number of FPSS from Madhesi and Muslim ethnicity were very minimal. Significant association was found between demographic variables and permanent family planning methods.

Keywords: FPSS, Bilateral tube ligation, Mini-lap, no-scalpel vasectomy, unsafe sex.

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INTRODUCTION

Family planning (FP) has medical, social and economic impact in families and communities. Planned and small family may directly help in reducing poverty[1]and increasing quality of life. Investments used in family planning can enhance maternal and child health. Modern FP methods, have been shown to be highly effective means of preventing unintended pregnancies and increase child survival[2]. FP also prevents high-risk pregnancies resulting in reduction in maternal mortality and improvement in women's health and wealth of family.

Availability and utilization of FP service can strengthen and improve the quality of life of peoples. FP brings significant health and other benefits that includes independency and empowerment of women in society, better opportunity for education for children, appropriate or sustainable population growth and economic development for countries. A study concluded that when the gap between

two children is less than two years, the infant mortality rate rises 45% higher than it is when births intervals are 2-3 years and it accelerates up to 60% higher than it is when birth are four or more years apart[3]. The median age at first child birth among rural Nepalese women has been reported to be less than 21year[4]. Short intervals between pregnancies can induce of various health disorder in mother[5] and child.

Family planning (FP) is one of the priority programs of the government of Nepal which was started in the decade of 1950s. The major objectives of the FP are to assist women and couples to plan the number of children and maintain healthy intervals between births through contraception or voluntary sterilization. Nepal family planning (FP) is primarily a government-funded program. Additionally, several non-governmental organizations and government agencies support government initiatives[6]. The FP, considered is a component of reproductive health package and essential health care services of the government of Nepal. Government, social media, non-governmental organizations, and private sectors provide information and services related to FP[6].

An estimated 3,188,000 women used modern methods of contraception in 2019 in Nepal[7]. Every year, about 300,000 girls enter the active reproductive phase and remain fertile up to 45 to 50 years[8]. This age of fertility often makes them vulnerable to the risk of multiple and unplanned pregnancies. Nepalese women and society as a whole are aware and women who are household heads are more open to family planning options than those who are not the household heads[9].

Number of factors such as educational status, living children, spouse education, occupation, health status, caste/ ethnic culture, can affect the use and preference of contraception among peoples of reproductive age. In a study, injectable method has been shown to be the most preferred by married women followed by the condom and oral contraceptives pill[10]. Use of condom was preferred by 83% of peoples living with HIV in Kathmandu[11].

Family planning contributes in improving children's health and ensuring that they have access to adequate food[16], clothing, housing, and opportunities for educational advancement [16,17] at cost-effective investments. Demographic and health survey 2016 showed that presence of 1-2 sons has strong association to use of sterilization method of FP[12]. The survey further illustrated that couple with daughters only and one son with daughters had higher preference to use temporary methods. Recent study in South Asia[13] revealed that permanent methods of FP were preferred compared to temporary methods.

Western Regional Hospital (WRH) is the largest hospital that provides several medical and surgical facilities in Gandaki province of Nepal. It provides different types of permanent and temporary family planning services for both male and females. The study was conducted in WRH Pokhara in order to identify the status of FPSS in terms of various demographic and background variables. The finding of this study is expected to help planners and practitioners on identifying target people who might need more awareness about FP related issues.

METHODS

Family Planning Center of Western Regional Hospital in Gandaki Province provides various FP services to the people. Family planning service seekers (FPSS) from all over the province and beyond visit the hospital for these services. Secondary data were collected from the official records of the FPSS seeking counseling and service on FP in years 2015, 2016, and 2017. The parameters studied included gender (female and male), ethnicities (Brahmin/Chhetri, Dalit, Janjati, Madhesi, Muslims, and others), residences (Rural and urban), number of living children (females and males), sexual practices (safe and unsafe

sex) and literacy level (illiterate FPSS who could not sign their documents; literate who through informal education could read and write; those who have primary, secondary, higher secondary or above).

For convenience, the FPSS were categorized into broad non-overlapping groups such as 'Janjati' that includes various indigenous groups; 'Brahmin/ Chhetri' include the large caste group; 'Dalit" include several groups who are struggling to overcome oppression based on caste system; "Madhesi' is a term for indigenous people living in the plains; 'Muslim' is a minority religious group in Nepal; and the minor indigenous and ethnic minorities not included by the above broad categories are included as 'other groups'.

Data of the FPSS who underwent permanent operations during camps, visited out-patient department (OPD) and used temporary methods were analyzed. The temporary methods included hormonal treatments such as pills, DEPO, implant, and non-hormonal methods such as Intra-uterine contraceptive device (IUCD) and condom.

The practice of safe and unsafe sex was compared against age, literacy level, and ethnic and other backgrounds. The literature on the FP programs conducted by the hospitals and international FP related organizations and policy documents of the government of Nepal were reviewed.

The work was carried out under institutional review committee (IRC) norms and identities of FPSS were kept confidential throughout the study and in the publications. All measures were taken, and ethical guidelines of the IRC were followed to maintain the confidentiality of the FPSS personal information. Only statistical data were used and personal information of the FPSS like name and address or other identification numbers were shaved off from all analyses. Only the records of the FPSS who had consented to use their non-identifying information were used in the analysis. All data were statistically analyzed using the SPSS 2020. chi-square test was applied to see the relationship between certain demographic variables and choice of FP methods.

RESULTS

Data of 501 FPSS who received services of the family planning center in three Fiscal Years (FY) of Nepal ,2072/073 (2015), 2073/074 (2016) and 2074/075 (2017) were analyzed.

The study showed male Family planning service seekers (FPSS) were the highest (44.2%) in FY 2074/075, which was on increasing trend, and female FPSS were the high (42.2%) in FY 2073/074. More than two third (69%) of FPSS were female. The mean age of female FPSS was 30 years and male FPSS was 36 years. More than two third (69.5%) of male FPSS belonged to the age group of 31-40 years whereas female belonged to the age group of 20-30 years (62.2%). On analysis of educational status, it was found that most of the FPSS were educated; 42.2% completed their secondary education and 40.3% of them had accomplished their higher secondary education. About 69% of female FPSS were house maker whereas 26.6% of FPSS were engaged in business. Majority of FPSS (male 65.6%, female 44.1%) were from Brahmin/Chhetri ethnic group followed by Janajati (male- 19.5%, female- 37.8%). More than half (54.5%) of the male FPSS were from urban area whereas about 60% of the female FPSS were from rural areas. All of the FPSS were married (Table 1).

Table 1: Socio-demographic Status of the FPSS (N= 501s)

Socio-demographic Variables	Male	Percentage (%)	Female	Percentage (%)
Year of Visit (FY)				
2072/073	35	22.7	73	21
2073/074	51	33.1	148	42.2
2074/075	68	44.2	126	36.3
Age Group				
21-30	18	11.7	216	62.2
31-40	107	69.5	125	36
41 years and above	29	18.8	6	1.7
Educational Status				
Illiterate	2	1.3	8	2.3
Literate	6	3.9	30	8.6
Primary education	20	13	78	22.5
Secondary education	65	42.2	140	40.3
Higher secondary education and above	61	39.6	91	26.2
Occupational Status				
House maker	0	0	239	68.9
Farmer	21	13.6	33	9.5
Teacher	24	15.6	19	5.5
Service provider	33	21.4	24	6.9
Business	41	26.6	27	7.8
Others	35	22.7	5	1.4
Ethnicity				
Dalit	15	9.7	38	11
Janajati	30	19.5	131	37.8
Brahmin/Chhetri	101	65.6	153	44.1
Others	8	5.1	25	7.2
Residency				
Urban	84	54.5	140	40.3
Rural	70	45.5	207	59.7

Mean age ± SD of female FPSS: 30±4.6, minimum age-20years, and maximum age-45 years
Mean age ± SD of male FPSS: 36±5.02, minimum age-24years, and maximum age-54 years
Female FPSS: 69%, Male FPSS: 31% Marital status of FPSS: married (100%)

Table 2 depicts majority (66.3%) had 2 living children at their home where as only 2.2% had only 1 child. 57.3% of the FPSS had only one living male child. 9.2% of FPSS who does not had male child were seeking FP method. Forty eight percent of the FPSS had only one female living child.

Table 2: Status of Living Children among FPSS (N= 501)

Variables	Frequency	Percentage (%)
Number of Living Children		
1 child	7	2.2
2 children	332	66.3
3 and above children	158	31.5
Number of Living Male Children		
Does not have male children	46	9.2
1 male child	287	57.3
2 male children	148	29.5
3 and above female children	20	4
Number of living female children		
Does not have female children	125	25
1 female child	240	48
2 female children	103	20.5
3 and above female children	33	6.5

Out of total, only 12.9% of FPSS used temporary method before the use of permanent FP method. Most (87.3%) of the FPSS have unsafe sex before the use of permanent FP method (Table 3).

Table 3: Previous FP Method Status of the Client among FPSS (N= 501)

Variables	Frequency	Percentage (%)
Client who used temporary FP method previously	65	12.9
Client having unsafe sex before the use of permanent FP method	437	87.3

Among permanent FP method users, 46.9% of the respondents used BTL, followed by NSV (30.7) and minilap (22.4%) (Table 4).

Table 4: Permanent Family Planning methods seek by the service seekers (N= 501)

Family Planning Method used by the client	Frequency	Percentage (%)
BTL	235	46.9
Minilap	112	22.4
NSV	154	30.7
Total	501	100

There is significant association between choice of permanent FP method and age group, educational status, occupational status, ethnicity, residency of the respondents (*p* value <0.05) (Table 5).

Table 5: Association of FPSS with Demographic Variables

Characteristics	Frequency (%)		X^2 value	p- value
	BTL/Minilap	NSV		
Age				
Below 30 years	216 (62.2)	18 (11.7)	101.517	0.000*
Above 30 years	131(37.8)	136 (88.3)		
Educational Status				
Secondary and below	256 (73.8)	93 (60.4)	8.420	0.004*

Above secondary	91 (26.2)	61 (39.6)		
Occupational Status				
House maker	239 (68.9)	0 (0)	200.075	0.000*
Other than house maker	101 (31.1)	154 (100)		
Ethnicity				
Brahmins/Chhetri	153 (44.1)	101 (65.6)	18.861	0.000*
Others	194 (55.9)	53 (34.4)		
Residency				
Urban	140 (40.3)	84 (54.5)	8.135	0.004*
Rural	207 (59.7)	70 (45.5)		
Number of Living children				
2 and below	233(67.1)	110 (71.4)	0.718	0.397
3 and above	114 (32.9)	44 (28.6)		

DISCUSSION

In this study, male Family planning service seekers (FPSS) were highest (44.2%) in FY 2074/075, which was on increasing trend, and female FPSS were high(42.2%) in FY 2073/074. More than two third (69%) of FPSS were female. The mean age of female FPSS was 30 years and male FPSS was 36 years. More than two third (69.5%) of male FPSS belonged to the age group of 31-40 years whereas female belonged to the age group of 20-30 years (62.2%). Regarding educational status, most of the FPSS were educated and completed their secondary education by 42.2% and higher secondary education by 40.3% respectively. About 69% of female FPSS were house maker whereas 26.6% of FPSS were engaged in business. Majority of FPSS (male 65.6%, female 44.1%) were from Brahmin/Chhetri ethnic group followed by Janajati (male- 19.5%, female- 37.8%). More than half (54.5%) of the male FPSS were from urban area whereas about 60% of the female FPSS were from rural areas which indicates more females from rural areas and more males from urban areas have received family planning services. That applies to both the Brahmin/Chhetri and Janjati men. Compared to rural females, fewer urban females have taken services. The study revealed most (87.3%) of the respondents have unsafe sex before the use of permanent FP method.

This study showed that the family planning service seeking age for females was lower than for males. Female FPSS age between 20 and 45 years took to family planning services while the male aged between 24 to 54 years. This finding is in agreement with the report of United Nations, department of economic and social affairs which states that women of reproductive age from 15-49 years are using contraceptive methods worldwide[15].

All the FPSS who took the services were married and had at least 1 child. There were more families with no girl child than the number of families with no male child. It may reflect the effect of son preference as reported by some studies.[11, 20] There is a need to further study for detail elaboration.

It was found that 30.7% of subjects (100% of male) used NSV method. It may be due to the fact that NSV is effective, and safe with low complication and has greater patient compliance[9,18]. Among the females, 46.9% (67 % among female) selected BTL and 22.4% (33% among women) took Minilap service. The BTL was more common than Minilap among the female FPSS.

This study revealed that the respondents who had only one male child (57.3%) were using FP methods whereas FPSS with single female living child were also using FP methods in significant numbers (48%). The findings support the study where FP method users having 1-2 children are using permanent sterilization.[12]The general fertility age of Nepalese women is 16 to 49 years[10,19]. All the couples with children preferred permanent methods of birth control.

This study revealed significant association between choice of permanent FP method and age group, educational status, occupational status, ethnicity, residency of the respondents (p value <0.05). The finding also supported in the study where occupation, ethnicity was significantly associated with use of contraception and contradict that "no of living children"[10].

CONCLUSIONS

The Study concluded that the most preferred permanent family planning methods among service seekers at Western Regional Hospital, Nepal are BTL and Minilap in female and NSV in male. More female are using permanent family planning method than male. Clients up to fifty four years are taking family planning services. Only few of Family planning service seekers used temporary family planning method previously. Age, education, occupation, ethnicity and type of residency are associated with the selection of different method of family planning. The finding of this study is expected to help planners and practitioners on identifying target people who might need more awareness of FP related issues such as safe sex, family planning methods available etc. Service seekers who were using temporary family planning methods were unable to include in the study due to unavailability of adequate data.

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Perceived Risk Behaviors and Barriers to Utilization of Sexual and Reproductive Health Services among Higher Secondary School Girl Students

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ABSTRACT

Introduction: Adolescents comprising one of the most vulnerable groups for acquiring STI and pregancey related complications. Yet their utilization of sexual and reproductive health care services are least to minimum.

Methods: A descriptive cross-sectional study adopting Mixed Method with Triangulation of data was used to collect data among the higher secondary school girl students of Biratnagar Sub-Metropolitan City. Self-administered questionnaire was administered to 229 students for quantitative part and 24 respondents participated in a group of six for a total of four Focus Group Discussions. Independent Sample Kruskal-Walis Test and Independent Sample Mann-Whitney U-test were used to reveal the association between the dependent variable and independent variable. Thematic Content analysis was used for qualitative data.

Results: The mean score of correct identification of risk behavior for STI was 7.31 of the totals 10. The respondents reported disagreement with the provision of youth friendly SRH services (aggregate mean score was 3.48). The major barriers to utilization of SRH Services expressed by the adolescents were being ashamed/ afraid to share problem, afraid to meet someone they know at the health facility, no feasibility of time, perception of inefficient health personnel, behaviors of health personnel, lack of adequate information about sexual and reproductive health, diseases and services available.

Conclusion: This study concludes that the students have fair risk perception but there is minimal utilization of Adolescent SRH Services. There was significant association between the perception regarding SRH services and the permanent residence (P-value = 0.031) and education faculty (P- value = 0.012) of the respondents.

Keywords: Adolescents, Risk behaviors, SRH Services, Barriers to utilization

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INTRODUCTION

Adolescents and young adults (15–24 years old) make up only 25% of the sexually active population, but represent almost 50% of all new acquired STIs.[1]

The chances of having STIs, teenage pregnancy and unsafe abortions are much higher among adolescents.[2] The younger (adolescent) girls, are particularly vulnerable because they face the risks of premature pregnancy and childbirth and maternal conditions are the top cause of mortality among girls aged 15-19 globally.[3]

According to United States' Centers for Disease Control and Prevention, risky sexual behaviors

include having sex at an early age (16 years or younger), having multiple sexual partners or non-regular partners, having sex while under the influence of alcohol or drugs, and unprotected sexual behaviors (not using any condoms or contraceptives).[4]

A review article on SRH status among young peoples in Nepal: opportunities and barriers for sexual health education and services utilization describes that Rising age at marriage has now opened a window of opportunity for pre-marital and unsafe sexual activity among young people in Nepal which creates risks of unwanted pregnancy, STIs/HIV and AIDS. Several socio-economic, demographic and cultural factors have been identified as encouraging factors for risk taking behaviors among young people.[5]

National Adolescent Health and Development Strategy was formulated in 2000 to address the problems and strive for the holistic development of the adolescents which comprises one quarter of the whole population of Nepal.[6] The National Adolescent Sexual and Reproductive Health (ASRH) program was piloted in 2009 and is implemented since 2011 in various public health facilities.[7]

The utilization of SRH Services in Nepal is among the least in Asia (33%) and most adolescent women experiencing an STI or STI symptoms do not get care from a health facility.[8] In Nepal Unmet need for family planning for girls in the age group 15-19 is 42% and unsafe abortion is the cause of up to 20-27% of maternal deaths in hospitals which is significantly higher than the global average of 13% despite the legalization of abortion in 2002.[9]

The Sustainable Development Goal (SDG) aims at ensuring gender equality and empowerment of all women and girls and a crucial step for its achievement is by providing universal access to sexual and reproductive health care services;[10] the utilization of which in turn depends on the perception of the individual towards the health services.[11]

Thus, this study aims to assess the Perception regarding Risk Behaviors and barriers to Utilization of SRH services among Girl higher secondary school students.

METHODS

A cross-sectional design complemented with triangulation of data was used to collect data among high school Girl students at Biratnagar, Nepal. A two-stage random sampling procedure was used select 20% of the higher secondary schools of Biratnagar sub-metropolitan city and then based on the prevalence (27%) of a study conducted in Mozambique 229 students were selected from those school.[12] The quantitative data were collected using a pre-tested, paper-pencil, self-administered questionnaire. Qualitative data were collected by conducting focus group discussions among six respondents in each school through nested sampling. The analysis produced the proportion of adolescents who perceived themselves at risk of STI and those who perceive that adolescent friendly health services are available. The qualitative information offers contextual understanding of the issues. The whole study was conducted in 2016 AD-2017 AD and the duration of data collection was one month. The study was approved by the Ethical Review Committee, BPKIHS. Written Consent obtained from the principal of the selected school and verbal consent from the respondents for recording the session of Focus Group Discussion (FGD). For descriptive analysis frequency, percentage, mean and standard were used. Non-parametric tests Independent Sample Kruskal-Walis Test and Independent Sample Mann-Whitney U-test were used to reveal the association between the dependent variable (perceived risk behaviors and perceived barriers to utilization of SRH services) and independent variable (socio-demographic variables). Thematic Content analysis for qualitative data.

RESULTS

Out of toral, majority of the respondents (44.1%) were of the age group 17 years. Majority of the respondents (74.7 %) lived in urban area and (65.9%) within 30 minutes from health facility. Majority of respondents (72.1%) belonged to nuclear family and (55.5%) were of Brahmin/ chhetri ethnicity. Majority of the respondents (69%) were of Science faculty (Table 1).

Table 1: Socio-Demographic Variables (n=229)

Characteristics		Percentage
Age (Years)		
15	6	2.6
16	87	38.0
17	101	44.1
18	33	14.4
19	2	0.9)
Permanent Residence		
VDC	58	25.3
Municipality, sub-metropolitan, metropolitan	171	74.7
Distance of Health Facility		
30 min	151	65.9
30 min	78	34.1
Family Type		
Nuclear	165	72.1
Joint	59	25.8
Extended	5	2.2
Monthly Income		
15000	98	42.7
>15000	131	52.3
Ethnicity		
Brahmin/Chhetri	127	55.5
Dalit/ Madhesi Dalit	29	12.7
Newar	19	8.3
Janajati	37	16.2
Muslim	4	1.7
Kirat	13	5.7
Faculty of study		
Science	158	69
Commerce	71	31

Related to Perception regarding Risk Behaviors and barriers to Utilization of Sexual and Reproductive Health services among Girl higher secondary school students

Information and Knowledge about Sexually Tr ansmitted Infections

Among the eight types of STI been asked Human Immuno Deficiency Virus was the most commonly heard STI as reported by 89.5% of the respondents followed by Syphilis 76.4%. Majority of the respondents i.e. 60.7% and 59.0% of the respondents reported Media (TV, radio, computer, mobile) and Newspaper, Journals, Books respectively as the major source of information about STI. The findings were consistent with other studies conducting in developing countries[13] but in United States where teen girls ages 15 to 19 seek information about SRH issues primarily from family and friends (36%), websites (28%), or health care providers (21%) which implies the difference in social make-up and efficiency of health care workers.[14]

Among the modes of transmission of STI 88.6% of the respondents knew that STI is transmitted through sexual intercourse and 78.6% responded STI can be transmitted through blood transfusion.

Commonest treatment/management facility reported was hospital reported by 80.2% of the respondents and least was Marie Stops center while the latter is the only facility providing Adolescent Friendly Services in Biratnagar till the date of data collection. The qualitative report of the FGD also provided insight that

distribution of the condoms, provision of health awareness programs by the students of various health disciplines and INGO/NGOs were the various prevention or management options known to the respondents. All of the respondents in the FGD agreed that they prefer to go to a private clinic in case if they do have any problem as they believed that privacy is maintained in private clinics while the services provided in the government facilities are inefficient. Consistent with a study conducted in Mumbai.[15]

About one third of the respondents 31% did not know that STI is preventable while only 69% were knew that STI is preventable.

Identification of Risk Behaviors

The respondents have Fair better Risk perception of STI (Mean score of the correct identification of risk behavior for STI was 7.31 of the totals 10) which is consistent with a study conducted in China.[16] In FGD majority of them expressed "Consumption of alcohol during sex, not using condoms during sex, having sex with infected person may increase the chance of getting infected with STI". ID 12

Perception of being at Risk

Respondents ever had any sexual contact where 86.5% of the respondents reported they never had any sexual contact, only 3.5% of the respondents reported positively and 23 respondents did not answer to the question; consistent with the findings of Adolescents involvement in sexual activity and underreporting in Asia by Guttmacher Institute.[17]

Majority (37%) of the respondents who had ever been involved in sexual activity reported of being at high risk.

But in aggregate the respondents disagree to be at risk of STI with a mean score of 3.03 out of 5 in Likert Scale.

Nearly half i.e., 49.8% of the respondents reported that Girl are higher risk of getting infected with STI than male and Young people/ adolescents and adults, 75.1% are more at risk of getting infected with STI.

Availability of Adolescent Friendly SRH Services

There is a Disagreement with the provision of youth friendly SRH services (aggregate mean score is 3.48). All of the respondents in the FGD agreed that they prefer to go to a private clinic in case if they do have any problem as they believed that privacy is maintained in private clinics while the services provided in the government facilities are inefficient; coherent with the findings of a study conducted among adolescents in India.[15]

*"We get better care at the private hospitals, these days government hospitals do not provide efficient care, they even do not respond well when asked any questions..."*ID18

"It is better to go to private clinics as they maintain privacy of the matters" ID1

Opinion about Barriers to SRH

Similar to the findings of studies conducted in West Badewacho Woreda, Hadiya Zone, South Ethiopia[18] there is agreement at the presence of barriers in the provision of SRHservices (Aggregate mean score is 2.73). The major barriers pointed in FGD were:

Ashamed/afraid to share problem

The Quantitative findings were 34.5% agreement and 18.3% Strong agreement.

Similar opinion at FGD "Firstly they are ashamed, they are afraid that their privacy will be disclosed or will not be maintained...."ID 5

"...they feel shy to go to health center and say that I have such type of disease, they are afraid" ID9

Afraid to meet someone they know

The Quantitative findings were 31.9% agreement and 19.7% Strong Agreement.

Similar opinion at FGD *"In our Nepali Society it will be awkward if they happen to meet someone they know while going for services. It is even awkward to talk to doctors as they are adolescents..."* ID 6

No feasibility of time

Institutions are open during school hours- 46.7% of the respondents reported agreement and 20.5% reported strong agreement.

Similar opinion at FGD *"We are afraid of being diagnosed any serious disease. As well we do not have time, need to bunk the school..."*

Perception of inefficient health personnel

Health professionals are not competent- 11.4% reported Strong Agreement and 19.7% reported agreement while 28.8% of the respondents reported disagreement.

Similar opinion at FGD *"...in some hospitals semi-educated, Inexperienced doctors are present, we should not share our problems with them, we should only share our problems with qualified doctors"* ID6

Behaviors of health personnel

About 13.5% reported Strong Agreement, 28.4 % reported agreement and 32.8% report disagreement. Similar opinion at FGD *"...these days government hospitals do not provide efficient care, they even do not respond well when asked any questions...after we share our problems and go for checkup, but the doctors must not be talking with disrespect or be harsh, should talk in a friendly way..."*ID 3

Lack of adequate information about SRH diseases and services

Not knowing it is any type of disease/infection were 35.8% agreement, and 14.8% strong agreement. Not knowing the seriousness of the condition as the barrier to utilization of SRH services the responses were 42.8% agreement and 14.4% strong agreement; about 32.8% of the respondents reported disagreement and 31.4% agreement to the statement don't know where the services are available. These findings were consistent with the findings of a cross-sectional study conducted in Nepal.[19]

Similar opinion at FGD *"mainly adolescents do not know about the health services, even if they are infected, they are unknown of the symptoms and place of treatment..."* ID 24

Other barrier to utilization of SRH services is lack of money 34.1% reported agreement and 10.0% reported strong Agreement, social stigma as 29.7% of the respondents agree and 20.5% of the respondents strongly agree and 19.2% agree and 17.0% Strongly Agree Health institutions do not address the SRH problems of adolescents.

Suggestions to decrease the gap in utilization of SRH services among the youth and adolescents

The opinions for increasing the utilization of SRH Services presented were consistent with findings of other studies.[13,20]

Maintenance of Privacy

Similar opinion at FGD *"The services should be easily available and privacy should be maintained..."* ID 5

Adolescent Friendly services

Similar opinion at FGD *"there should be separate hospitals, clinics for the adolescents, it should be easily accessible, and services should be separate for male and Girl clients..."* ID 15

Flexibility in timing of service

Similar opinions at FGD *"Full time service should be provided, friendly and respectful for the adolescents..."* ID 18

"... should also be open on Saturdays" ID 4

"... should be open even after school hours..." ID 1

Availability of health service providers: Efficient and Preferably of same gender

Healthcare professionals with the same sex were preferred by the majority of the adolescents.

Similar opinion at FGD *"Girl doctors should be available, there should be health personnel in the primary health institutions of the villages"* ID 4

Association of Dependent and Independent Variable

Table2: Association of Dependent and Independent Variable (n=229)

Dependent Variable	Independent Variable			Not Significant
Knowledge and Information to Sexually Transmitted Infections	Education faculty of the respondents (*P-value= <0.01)* *	Distance of health facility *(P- value = <0.001)* *	Ethnicity of the respondents (*P-value= <0.001)* **	Age, Permanent Residence, Marital Status, Type of family
Identification of perceived risk sexual behavior	Education faculty of the respondents (*P-value= <0.001)* *	Permanent residence of the respondents *(P-value= 0.025)* *	Type of family the respondents belong (P- value= 0.033) **	Age, Distance of health facility, Marital Status, Ethnicity
Perception regarding Sexual and Reproductive Health Services	Permanent residence of the respondents (*P-value = 0.031)* *	Education faculty of the respondents (*P- value = 0.012)* *		Age, Marital status, Type of family, Ethnicity

** = Independent Sample Mann-Whitney U-test*
*** = Independent Sample Kruskal-Walis Tesst*

Table 2 shows the association between the knowledge, identification of perceived risk behaviors and perception regarding SRH Services with the various independent variables. There is highly significant association between the information to sexually transmitted infections and education faculty of the respondents (P- value = 0.000). There is also significant association between the information to sexually transmitted infections and distance of health facility (P-value = 0.008) and as well with the ethnicity of the respondents (P- value = 0.001). It shows highly significant association between the identification of perceived risk sexual behavior and the education faculty of the respondents (p- value = 0.000). It also depicts that there is significant association between the perceived risk behavior and the permanent residence of the respondents (P-value = 0.025) and as well with the type of family the respondents belong (P- value = 0.033).

There is significant association between the perception regarding SRH services and the permanent residence of the respondents

(P-value = 0.031) and as well with the education faculty of the respondents (P- value = 0.012) The findings were consistent with the findings of other studies.[21,22]

CONCLUSIONS

This cross-sectional mixed type of study concludes that though the students have fair risk perception there is minimal utilization of Adolescent SRH Services. The knowledge regarding SRH was significantly low among students of Dalit/Madhesi Dalit ethnic groups, those of commerce faculty and those whose residence are more than 30 min distance from health facility. The risk perception of students of science faculty, belonging to nuclear family and residing in municipality or sub-municipality was higher than rural students. There is a call for action to the stakeholders and health personnel from the mass of Girl youth of eastern Nepal for the delivery of respectful, efficient, resourceful, inclusive and flexible and peer based SRH services thus fulfilling Nepal's commitment of International Conference on Population and Development.

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Cardiac Disease in Pregnancy: Challenge for the 21st Century

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ABSTRACT

A big challenge for pregnancy has been the cardiovascular health. Pregnancy related deaths is higher in women having cardiac disease due to the increase cardiac risk factors with advancing age and increasing the cases of rheumatic heart disease. The purpose of this study is to review the published articles and recommend the information regarding cardiac disease in pregnancy and its management. Systematic search of peer- review publications had been done through PubMed and Google Scholar. Among the many articles 21 relevant articles has been selected and reviewed for the study and significant finding has been organized and concluded.

Increasing cardiac disease during pregnancy has been challenge for the low resource countries. Despite significant risk, most of the problems can be treated if identified earlier. Women having sever cardiac disease need close supervision of multidisciplinary speciality team, to prevent maternal and neonatal complication.

Keywords: Cardiac disease in pregnancy; rheumatic heart disease; multidisciplinary speciality team

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INTRODUCTION

Incidence of heart disease in pregnancy is increasing because of several factors: (a) the increase in the number of women with congenital heart disease reaching childbearing age: (b) advancing age of women who want to become mother and (c) increased in risk factors, such as diabetes mellitus, hypertension, pre-eclampsia and multi-fetal pregnancies[1,2]. In some cases, these diseases may be the cause of exacerbation of pre-existing conditions that the pregnant woman may already have. In other cases, the pregnant women may face the development of a new disease process caused by complex hormonal changes and physiology of pregnancy[3]. Mild dyspnea, systolic murmurs, jugular venous distention, tachycardia, dependent edema and mild cardiomegaly on chest x-ray are the symptoms typically occur during normal pregnancy, and these may also result from a heart disorder[4]. Thus it is a challenge for the clinicians to identify which of these symptoms are physiologic and which are pathologic[5] Cardiovascular disease is not only the disease of developed countries, but it is equally affecting developing countries. A big challenge of developing countries to face with these diseases is the lack of resources and research study[6].

Approximately, 1% to 4% cardiovascular disease has been estimated to be present in pregnancies[1]. Based on a data, an estimate is that at least 0.2% of pregnancies have complications with cardiac disease[4]. There is 0.8 % prevalence of cardiac disease in pregnancy in India and most of the women (71%) were in Class I and II New York Heart Association (NYHA) and 10.3% were in Class IV[7]. Another study in Nepal has revealed that 0.6% with mean age of 20 to 30 years were to have cardiac disease during pregnancy and delivery. Prevalence rates reveled as 89% acquired heart disease, 9% congenital heart disease and 2% arrhythmic heart diseases[8].

Around 15-52% of cardiac abnormalities in pregnancy are diagnosed for the first time during routine antenatal check-ups[9]. Intervention is recommended before pregnancy in patients with mitral stenosis and valve area < 1.0cm[2,10]. In these studies, majority (66.6%) of the women delivered vaginally and most common complications experienced by them were anemia (46.2%) and congestive cardiac failure (19.6%)[7].

The obstetric complications like pre-eclampsia, anemia, preterm labor, fetal growth restriction further worsen the outcome and complicate the management of pregnancy with cardiac disease. Pregnancy related complications that complicate the heart disease is ignored in the rural setup and patients rarely seek proper early care[11]. Although there is a significant risk involved with such pregnancies, one can successfully treat the majority of these incidents if early detection and careful follow-up are a part of routine care.

METHODS

The review article is based on the systematic search of 21 articles of the last 10 years in PubMed and Google scholar. They were original articles, review articles and other general articles, listed in the references. After reviewing those articles concluding information had been taken for the study. The findings were categorized in terms of introduction, pathophysiology, high risk conditions, classification of maternal cardiovascular risk based on world health organization and New York Heart Association; management, prevention and complication.

PATHOPHYSIOLOGY

Pregnancy is a dynamic process which is correlated to significant physiological changes in the cardiovascular system to meet the increased metabolic demands of the mother and fetus[12]. Peripheral vasodilation leading to a decrease in systemic vascular resistance is thought to be the first cardiovascular change associated with pregnancy[5,10]. Uterine contractions, positioning, pain, anxiety, exertion, hemorrhage and uterine involution cause significant hemodynamic changes during labour and post-partum[10]. Plasma volume and cardiac output increase of 40 to 50% above baseline at 32 weeks of gestation. Increase in cardiac output happens with increase in stroke volume in the first half of pregnancy and gradual increase in heart rate. Such changes starts as early as 5 weeks gestation and become maximal between 28 and 34 weeks, and remains constant until term[5,4]. Maternal position also affect the hemodynamic profile of mother and fetus. Supine position put pressure of gravid uterus on inferior vena cava lead to decrease venous returns and fall in stroke volume and cardiac output[12].

Thus, pregnancy put stress on the cardiovascular system, often causing known heart disorders to worsen. Mild heart disorders may first become evident during pregnancy. In labour there is further increase in cardiac output by 15% in the first stage of labour and 50% in the second stage[5,4]. Cardiovascular stresses return to their pre-pregnancy levels several weeks after delivery[4]. Above mentioned physiological changes in labour may complicate pregnancy such as cardiomyopathy, congenital heart diseases, and valvular disease[5].

HIGH RISK CONDITIONS

The etiology of cardiovascular diseases during pregnancy is variable, and it is dependent on the underlying pathology involved. Here are descriptions of some common cardiovascular disease of pregnancy and their etiologies.

Cardiomyopathy: Peripartum cardiomyopathy (PPCM) is a disorder of unknown etiology in which heart failure occurs due to left ventricular dysfunction. It occurs in late pregnancy or early in the puerperium, and can be suspected when a woman complains of increasing shortness of breath on lying

flat or at night and the cause is still unknown. The predisposing factors of cardiomyopathy are viral myocarditis, abnormal immune response to pregnancy, abnormal response to the hemodynamic stress of pregnancy and cytokine-induced inflammation and malnutrition[13]. If the pregnant and post-partum women has unexpected and persistent dyspnea, tachypnea and tachycardia; they have to be investigated further for the identification of the risk factor.

Coronary artery disease: The causes of ischemic heart disease in pregnant women is similar to that of non-pregnant women. Risk factors which expose these individuals to ischemic heart disease include hypertension, hyperlipidemia and hypertriglyceridemia, diabetes mellitus, obesity, smoking, and immobility[14].

Pregnancy-associated myocardial infarction: The same risk factors which exist for coronary artery disease also exist for pregnancy-associated MI. However, pregnancy increases this risk by 3 to 4 fold. Certain medical conditions and complications of pregnancy further increase this risk[12].

Valvular heart disease: It is the most common condition that affects childbearing women. Rheumatic heart disease is a main problem in developing countries due to lack of advanced medical facilities[15]. Most of the women tolerate valvular disease well during pregnancy, however high risk conditions such as severe mitral stenosis or aortic stenosis can lead to maternal mortality and morbidity.

Pregnancy is hyper-coagulable state, increasing concentration of coagulation factors, fibrinogen and adhesiveness of platelet including decreasing fibrinolysis, associated with increased risk of thromboembolism[4,5].

World Health Organization Classification of Maternal Cardiovascular Risk

According to WHO classification of maternal cardiovascular risk, women having mild pulmonary stenosis, patent ductus arteriosus, mitral valve prolapsed, repaired simple atrial of ventricular septal defect and patent ductus arteriosus, and these factors have only 2.5 to 5% chances of having maternal cardiac event rate[16]. Those women are under the categories of very low risk so need counselling and can go in local hospital for checkup and delivery however once or twice visit to specialist is recommended (WHO I classification)[10,15].

Women having unoperated atrial or ventricular septal defect, repaired teratology of fallot, supra ventricular arrhythmias, turner syndrome without aortic dilatation have small increased risk of maternal mortality or moderate increase in morbidity. Maternal cardiac event rate of those women is 5.7 to 10.5% so they need counselling so they can go for care and delivery in local hospital but minimum follow up visits to specialist is recommended during pregnancy is once in each trimester (WHO II classification)[10,16].

In WHO classification II to III, women having mild left ventricular impairment (EF > 45%), hypertrophic cardiomyopathy, Marfan syndrome without aortic dilatation, and aorta syndrome without aortic dilatation, and aorta <45mm in aortic disease associated with bicuspid aortic valve, and repaired coarctation have moderate increased risk of maternal mortality or moderate to severe increase in morbidity. Those women have 10 to 19% rate of having cardiac event so counselling is required and they should visit referral hospital for pregnancy and delivery services. They should visit once or twice a month during pregnancy for follow up[10,15,16].

In WHO classification III, the classification corresponds to the women having moderate left ventricular impairment (EF 30-45%),

previous peripartum cardiomyopathy without any residual left ventricular impairment, mechanical valve, systemic right ventricle, fontan circulation, cyanotic heart disease, moderate mitral stenosis, severe asymptomatic aortic stenosis and ventricular tachycardia. In this condition there is significantly increased risk of mortality or severe morbidity. There is 19 to 27% of having maternal cardiac event so expert counseling is required and should visit for specialized services of pregnancy and cardiac disease monthly or bi-monthly[10,15,16].

In WHO classification IV, the classification corresponds to the women having pulmonary arterial hypertension, severe systemic ventricular dysfunction (EF <30%), previous peripartum cardiomyopathy with any residual left ventricular impairment, severe mitral stenosis, severe symptomatic aortic stenosis, moderate or severe decrease right ventricular function an severe aortic dilatation with any complication. Mother's cardiac event rate is 40 to 100% so pregnancy is contraindicated (should be terminated). In this situation patients should visit monthly the expert center of pregnancy and cardiac disease[10,15].

New York Heart Association's classification

Risk of maternal or fetal death due to heart failure is high only if symptoms occur during mild exertion (NYHA class III) and during minimal or no exertion (NYHA class IV)[11].

According to NYHA classification Class I indicate no symptoms and no limitation in simple physical activities. Class II indicates, mild symptoms (mild shortness of breath and/or angina) and slight limitation during ordinary activity. Class III reveled marked limitation in activity due to symptoms and comfortable only at rest and Class IV represent severe limitations or experiences symptoms even while at rest[18].

MANAGEMENT

Cardiac disease is found to remain undiagnosed in most of the cases. This situation may result in cardiovascular decompensation during pregnancy, at the time of delivery, or immediately post-partum. Possible management tasks in this situation are: early risk assessment, regular monitoring for deterioration, planning of delivery, and surveillance for deterioration in the immediate post-partum period[12].

All women with cardiac or aortic diseases who wish to plan pregnancy should access timely pre-pregnancy counseling. Informed maternal decision-making is crucial and there is clear need for individualized care, where consideration should be focused not only on medical condition but also on the emotional and cultural context, psychological issues and ethical challenges. Patients with high-risk or contraindication for pregnancy and necessity of careful planning for pregnancy should be discussed earlier[12]. Such an exercise of proper pregnancy planning has resulted in an effectiveness of > 80% is associated with a favorable outcome[17]. Cardiovascular assessment should be carried out in every antenatal visit. Blood pressure and pulse rate and rhythm are important parameters that can be used to identify the fluid volume overload. Existence of pulmonary edema should be ruled out if the murmur sound is heard during auscultation[12,18].

Low molecular weight heparin (LMWH) is drug of choice for the prevention and treatment of venous thromboembolism in all pregnant women[10]. If patient is taking anticoagulant, warfarin should not be provided in the first trimester because of the embryopathy, so heparin should be provided. During second and third trimesters until 36 weeks, it is recommended in low dose (warfarin <5mg/day)[10]. Similarly, aspirin is safe to use during pregnancy for the women with bio-prosthetic heart valves[9].

In pregnant women on LMWH or unfractionated heparin (UFH), it is recommended to perform weekly anti- Xa level monitoring or activated partial thromboplastin time (aPTT) monitoring with dose adjustment[14]. Oxygen saturation should be checked periodically when the patient is suffering from cyanotic heart disease. Women with structural congenital heart disease should be advised for fetal echocardiography in 2nd trimester. Delivery management should be planned in between 32 to 34 weeks of gestation, and it should be planned to be carried out by multidisciplinary team. The plan should address the questions like (a) who will supervise the labor, (b) whether cesarean section is appropriate, (c) is bearing down is advisable, and (d) is uterotonic needed to prevent post-partum hemorrhage[18].

The aim of intrapartum management is to reduce cardiovascular stress. For this, epidural anesthesia and assisted vaginal delivery is usually preferred. However, cesarean section is necessary only for obstetric indications[18].

For the women at high risk of thromboembolism, it is recommended to change LMWH to UFH at least 36 hours prior to delivery and stop the UFH infusion 4-6 hours prior to anticipated delivery and aPTT should be normal before regional anesthesia[19]. However for the women at low risk of thromboembolism during pregnancy with therapeutic LMWH, induction or cesarean section is recommended to be performed 24hours after the last dose of LMWH. Breastfeeding is not recommended in mothers who take antiplatelets agents other than low-dose aspirin[10].

PREVENTION

For the prevention of cardiovascular risk, women who habitually engaged in aerobic activity or who are physically active before pregnancy can continue their activities during pregnancy and during postpartum to reduce the risk of the health conditions, such as, gestational diabetes, hypertension, atherosclerosis, which are related to cardiovascular disease in pregnancy[20].

COMPLICATIONS

Complications related to cardiac disease in pregnancy include; weight gain during pregnancy, pre-eclampsia, preterm birth, intrauterine growth restriction, hemorrhage, placental abruption, gestational diabetes, progressive heart failure and maternal or fetal death[21].

In this way, early detection and timely intervention of cardiac condition is very crucial during pregnancy and labour to prevent the mild to fatal consequences to the women, fetus and newborn.

CONCLUSIONS

Increasing the number of women with congenital heart disease, advancing age of pregnant women and increase risk factors are related to cardiac disease in pregnancy. Around half of cardiac abnormalities diagnose during routine antenatal check up. Among the diagnosed women, majority of women had acquired heart disease and majority delivered vaginally. Despite significant risk, majority of their problems can be treated if early detected and follow-up. Due to lack of resources, developing countries are facing terrible challenge to face such situations. However, now a days it is in deceasing trend due to improved health care facilities and surgical intervention.

Early detection and timely intervention of cardiac problems. is very crucial for the survival of the mother and her baby. Women having severe cardiac disease need to stay under close supervision of cardiologist and obstetrician and not severe disease can manage in local and referral hospital for treatment.

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Introduction of Journal of Nursing and Health Sciences Nepal

The Journal of Nursing and Health Sciences Nepal (JNHSN) is an official publication of Pokhara Nursing campus, IOM, TU. The journal is a peer reviewed, published annually and invites articles from different areas of nursing and health sciences.

Objective of the Journal

The main objective of the journal is to serve as a portal by documenting the research activities which encourages scientific paper writing and dissemination of the information.

Scope of the Journal

The publication in the journal covers original research articles, case reports and review articles related to nursing and health sciences.

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2. Poudel A, Sharma C, Gautam S, Poudel A. Psychosocial problems among individuals with substance use disorders in drug rehabilitation centers, Nepal. Substance abuse treatment, prevention, and policy. 2016 Dec;11(1):1-0.DOI: 10.1186/s13011-016-0072-3

Book: Print

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