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Malnutrition among Patients with Liver Cirrhosis in a Tertiary Care Centre

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ABSTRACT

Introduction: Cirrhosis of the liver is a progressively worsening condition. Nutritional interventions to improve the nutritional status of malnourished patients can significantly enhance prognosis. Traditional methods of nutritional assessment, such as body mass index and waist circumference, are often unreliable. This study aims to find out the prevalence of malnutrition among patients with cirrhosis in a tertiary care centre.

Methods: A descriptive cross-sectional study was conducted in a tertiary care hospital from 01 December 2022 to 01 May 2023 after obtaining ethical approval from the Institutional Review Board. Patients at any stage of liver cirrhosis were included in the study. Patients with hepatic encephalopathy, variceal bleeding, spontaneous bacterial peritonitis, uncontrolled diabetes mellitus, acquired immunodeficiency syndrome, tuberculosis, chronic renal failure, hepatocellular carcinoma, or any malignancy were excluded from the study. Convenience sampling method was used. Data were entered into Microsoft Excel 2016 and descriptive statistical analysis was done using IBM SPSS Statistics version 16.0. Point estimate and 90% confidence interval were calculated.

Results: Among 54 patients with cirrhosis, malnutrition was seen among 22 (40.74%) [29.77%–51.71%, 90% Confidence Interval] according to mid-upper arm muscle circumference, 32 (59.26%) according to triceps skin fold thickness, and 36 (66.67%) as per hand grip strength.

Conclusions: The prevalence of malnutrition among patients with cirrhosis was found to be lower than the studies done in similar settings.

Keywords: *cirrhosis, malnutrition, nutritional assessment.*

INTRODUCTION

Cirrhosis is a late stage of progressive hepatic fibrosis characterized by distortion of the hepatic architecture and the formation of regenerative nodules. In Nepal, alcohol is the most common cause of cirrhosis followed by chronic viral hepatitis.¹ Malnutrition has been reported in 50 to 100 percent of patients with decompensated cirrhosis and at least 20 percent of patients with compensated cirrhosis.²⁻⁵ Malnourished cirrhosis patients have higher

rates of increased rates of septic complications, poorer quality of life, and a reduced life span when compared to those with no malnutrition.^{6,7}

Data on malnutrition in cirrhosis has emerged in recent years. There are limited studies assessing malnutrition in cirrhosis in Nepal. This study aims to find out the prevalence of malnutrition among patients with cirrhosis in a tertiary care center.

METHODS

This descriptive cross-sectional study was conducted on the patients presenting Outpatient Department of the Gastroenterology Unit and the Hepatology Unit of Bir Hospital from 01 December 2022 to 01 May 2023 after obtaining ethical approval from the institutional Review Board (Reference number: 906). Patients at any stage of liver cirrhosis were included in the study. Patients with hepatic encephalopathy, variceal bleeding, spontaneous

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bacterial peritonitis, uncontrolled diabetes mellitus, acquired immunodeficiency syndrome, tuberculosis, chronic renal failure, hepatocellular carcinoma, or any malignancy were excluded from the study. Convenience sampling was used to collect data. The sample size was calculated using the formula:

$$n = Z^2 \times p \times q / e^2 \\ = 1.64^2 \times (0.5 \times 0.5) / 0.12^2 \\ = 47$$

Where,

n = minimum required sample size

Z = 1.64 at 90% confidence interval (CI)

p = prevalence taken as 50% for maximum sample size calculation

q = 1-p

e = margin of error, 12%

The minimum sample size calculated was 47. However, we have included 54 patients in the study.

Informed consent for participation was obtained. Detailed history and physical examination findings data were noted from the participants. Complete blood count, renal function test, liver function test, abdominal ultrasonography, prothrombin time, and INR level data were collected. Cirrhosis of the liver was diagnosed based on clinical, biochemical, and radiological findings suggestive of cirrhosis. Nutritional assessment was done through clinical and anthropometric measurements. Body mass index (BMI) was calculated by dividing body weight in kilograms divided by height in meters squared. Height was recorded in a standing position and weight was recorded with a generic digital weighing scale. Waist circumference was measured with a measuring tape, midway between the lower costal margin and the highest point on the iliac crest.

Mid-upper arm circumference (MUAC) was measured with a flexible measuring tape mid-way between the olecranon and acromion process. Mid-arm muscle circumference (MAMC) will be calculated by using the formula $MAMC = MUAC - (3.14 \times TST)$.⁸ Triceps skinfold thickness was measured halfway between the olecranon and the acromion process using a caliper. Handgrip strength was measured using a dynamometer and recorded as kilogram-force. Three readings were recorded from each arm and an average value was obtained. Cutoffs for detecting malnutrition were: MUAC: <21.55 cm in males, <24 cm in females, Triceps Skin Fold (TSF) thickness: <8.37 mm for males and <13.99 mm for females, Hand Grip Strength (HGS): <34.5 kg for male and <11.94 kg for female.⁹

Data were entered into Microsoft Excel 2016 and

descriptive statistical analysis was done using IBM SPSS Statistics version 16.0.

RESULTS

Among 54 patients with cirrhosis, the prevalence of malnutrition was 22 (40.74%) [29.77%–51.71%, 90% Confidence Interval], according to MUAC. According to TSF, the prevalence of malnutrition was 32 (59.25%). Measurement of HGS showed the prevalence of malnutrition to be 36 (66.66%) as shown in (Table 1).

Table 1. Proportion of malnutrition by anthropometric data and SGA (n= 54).

Anthropometric parameter	n (%)
MUAC	22 (40.74)
TSF	32 (59.25)
HGS	36 (66.66)

The mean age of males is 48.10±11.01 years and of females is 44.8±12.5 years. The mean weight of the patient is 58.13±13.38 kg. Median height meters (IQR) of the patient are 1.58 (1.49±1.63), Median BMI kg/m² is 23.64 (20.41-26.59), mean waist circumference is 91.67±10.34 cm, mean MUAC is 23.33±4.76, Median triceps skin fold thickness mm (IQR) is 10 (7.75-16), median handgrip strength in kg (IQR) is 15.45 (5.50-42.50).

DISCUSSION

In this study, MUAC, TSF, and HGS revealed the prevalence of malnutrition to be 40.74%, 59.25%, and 66.66% respectively which was lower than the study conducted by Houissa et al in which malnutrition was present in 79.5% of patients. Triceps skin fold thickness of less than 60% was found in 72% of patients.⁴ In the study by Sharma et al, HGS had the highest area under curve 0.82 (95% confidence interval (CI) 0.78–0.86) compared to MAMC 0.60 (95% CI 0.55–0.64) and TST 0.65 (95% CI 0.61–0.69).¹⁰

Ciocirlan et al concluded that HGS and SGA were fair predictors of disease severity and 6 months of survival in cirrhotic patients.¹¹ HGS measurement evaluates the muscle activity of the dominant arm. HGS is a simple, non-invasive, rapid, and inexpensive tool to measure grip strength. Alvares-da-Silva et al evaluated 50 outpatients with cirrhosis where HGS was found to have better accuracy to detect malnutrition. HGS also predicted the development of liver-related adverse outcomes when patients were followed for 1 year.¹²

There were a few limitations in this study as it was done in a single center, it had a small sample size, and the findings of our study cannot be generalized to the whole population.

CONCLUSIONS

This study found that the prevalence of malnutrition among patients with cirrhosis was lower than the previous

studies. Nutritional assessment should be an integral part of patient evaluation, especially in patients with cirrhosis.

Conflict of Interest: None.

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Frailty among Elderly visiting the Outpatient Department of Internal Medicine in a Tertiary Care Centre

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ABSTRACT

Introduction: Frailty is a common geriatric condition and is highly widespread among elderly people. There are global challenges to meeting the healthcare needs of the elderly with a rapidly growing elderly population. The aim of this study was to assess the prevalence of frailty among the elderly visiting the Outpatient Department of Internal Medicine in a tertiary care centre.

Methods: A cross-sectional study was done in the Internal Medicine Outpatient Department in a tertiary care centre from 01 March 2024 to 30 April 2024 after obtaining ethical approval from the Institutional Review Board. Convenience sampling was done. Data were collected using Edmonton Frail Scale Acute Care Version by face-to-face interview technique. Data were entered and analyzed in IBM SPSS Statistics version 20.0.

Results: Among 168 elderly patients, 75 (44.64%) [37.12–52.16, 95% Confidence Interval] were found to be frail whereas 93 (55.36%) were not frail (non-frail+vulnerable). After multivariate binary logistic regression analysis, the independent factors of frailty are age (AOR 3.942; CI 1.737-8.950), number of medicines (AOR 9.721; CI 3.408-27.729) and physical activity (AOR 0.233; CI 0.81-0.674).

Conclusions: The prevalence of frailty among elderly people in this study was comparable to similar studies in different settings. The associated factors of frailty were found to be age, physical activity and number of medicines taken in our study. These factors could be taken into consideration while doing health assessment of the elderly.

Keywords: *frail elderly, frailty, frailty syndrome, sarcopenia.*

INTRODUCTION

One of the biggest social transformations of the twenty-first century is the growing number of elderly people.¹ The number is predicted to rise by 2.1 billion by 2050 and 1.4 billion by 2030. This increase is happening at an unprecedented rate, and developing nations may see an acceleration in the next decades.² Frailty is a common geriatric condition and is highly widespread among elderly people.³ In the majority of clinical settings for aged patients, frailty plays a significant role in raising undesirable or poor health outcomes.^{4,5}

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The issue of frailty in the elderly is complex and marked by a vulnerability to environmental and bio-psychosocial stressors, alterations in the body's composition, and functional limitations.⁶ Frailty is associated with disability or increased mortality in the elderly. Many disorders and critical illness are associated with sarcopenia and frailty.⁷

The aim of this study was to assess the prevalence of frailty among the elderly visiting the Outpatient Department of Internal Medicine in a tertiary care centre.

METHODS

A cross-sectional study was done in the Outpatient Department (OPD) of Internal Medicine in Bir hospital, Mahaboudha, Kathmandu, Nepal from 01 March 2024 to 30 April 2024 to identify the status of frailty in elderly. Ethical approval was taken from the Institutional Review Board of the National Academy Medical Sciences (Reference number: 748/2079/80). All elderly people of 60 years and above attending OPD in the Department of Internal Medicine and willing to participate in study were

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included. Sample size was calculated using the following formula:

$$n = Z^2 \times p \times q / e^2$$

$$= 3.8416 \times 0.31 \times 0.69 / 0.07^2$$

$$= 168$$

Where,

n = minimum required sample size

z= 1.96 at 95% Confidence Interval (CI)

p= prevalence of frailty taken from previous study, 31%⁸

q=1-p

e= margin of error, 7%

The minimum required sample size was calculated as 168. A total of 168 patients were enrolled in the study which met the inclusion criteria. Convenience sampling method was done. The patients whose data were incomplete were excluded from the study.

Data was collected using Edmonton Frail Scale Acute Care Version (EFS-AC).⁹ EFS-AC is self-reported consists of nine domains (cognition, general health status, functional independence, social support, medication use, nutrition, mood, incontinence and functional performance) with 3-point rating scale from 0-2. Each item's responses are given either 0, 1 or 2. Total maximum expected score is 17 and minimum is 0. Total cut-off value is divided and measured as pre-frail (0-3), vulnerable (4-5), mild frailty (6-7), moderate frailty (8-9) and severe frailty (10+) according to total score obtained by self-reporting from the respondents. Edmonton Frailty Scale (EFS) and EFS-AC both can be used to find out frailty status in elderly. Whereas EFS is widely used valid and reliable tool among elderly with inter-rater reliability of EFS instrument is 0.77 and internal consistency is good at 0.62.⁹ Nepali translation and back-translation was done by two independent translators after the approval from University of Alberta to use tool. Pretesting was done among 17 (10%) of the sample using EFS. Illiterate elderly respondents felt difficulty in clock drawing. So EFS-AC was used for final sample collection where cognitive and functional domain was assessed by self-report method.

Formal permission was taken from the concerned authority of Bir hospital for the data collection. The objective of the study was explained to respondents as per participant information sheet and informed consent was taken from each elderly respondents. After giving informed consent, their height and weight were measured by the same measurement instrument to calculate the Body Mass Index (BMI). Then data was collected by face-to-face

interview in a separate room. Privacy and confidentiality were maintained by the interviewer and the respondents were also ensured that their information would not be disclosed, and the information will only be used for study purposes solely. Respondents were informed that they can deny or withdraw from study at any point of time as per their free will. Data was collected considering the individual's convenient time. Asterisk(*) sign was used in the OPD paper to indicate already included respondents to avoid repetitions. After data collection, elderly were thanked for providing their valuable time. Everyday 4-5 elderly people were chosen for a face-to-face interview.

Data entry and analysis was done in Statistical Package for the Social Sciences version 20.0. Collected data were analyzed by descriptive statistics and chi-square. Odds ratio was used to find out the association between status of frailty with other variables. Multivariate binomial logistic regression analysis was done to find out independent factors associated with frailty.

RESULTS

In this study, 75 (44.64%) [37.12%–52.16% at 95% Confidence Interval] were frail. Similarly, 105 (62.50%) of elderly were from 60-70 years and 91 (54.17%) were males. Similarly, 144 (85.71%) of elderly people had a known diagnosis. Half of the elderly 84 (50%) could not read and write. A majority 125 (74.40%) of elderly people had taken less than 5 medicines (Table 1).

Table 1. Socio-demographic information of respondents (n=168).

Variables		n (%)
Age (years)	60-70	105 (62.50)
	71-80	48 (28.57)
	81 and above	15 (8.93)
Sex	Male	91 (54.17)
	Female	77 (45.83)
Education level	Can read and write	44 (26.19)
	Cannot read and write	84 (50.0)
	Basic	17 (10.12)
	Secondary	12 (7.14)
	Higher sec	9 (5.36)
	Bachelor and above	2 (1.19)
Diagnosis	Unknown	24 (14.29)

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	Known	144 (85.71)
Number of medicines	< 5	125 (74.40)
	5+	43 (25.60)

Regarding lifestyle, 92 (54.76%) of elderly people had never smoked and 113 (67.26%) of elderly people had not taken any form of alcohol. Only 47 (27.98%) of elderly people used to jog or walk regularly. Most elderly 150 (89.29%) had no history of accident (Table 2).

Table 2. Lifestyle and medication related information of the respondents (n=168).

Variables		n (%)
Smoking status	Never smoked	92 (54.76)
	Current smoker	21 (12.50)
	Past smoker	55 (32.74)
Alcohol consumption status	Always	11 (6.54)
	Never	113 (67.26)
	Past user	19 (11.31)
	Occasional user	25 (14.88)
Do you walk or jog	Yes	47 (27.98)
	No	121 (72.02)
History of accidents	Yes	18 (10.71)
	No	150 (89.29)
BMI	< 18.50	8 (4.76)
	18.50 - 24.99	87 (51.79)
	25.00 - 29.99	64 (38.10)
	30.00+	9 (5.40)
Physical activity	Sedentary	37 (22.02)
	Mild activity	90 (53.57)
	Moderate activity	39 (23.21)

	Vigorous activity	2 (1.19)
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In this study, 93 (55.36%) elderly were not frail (non-frail+vulnerable), and 75 (44.64%) [37.12%–52.16% at 95% Confidence Interval] were frail including mild, moderate and severe status (Table 3).

Table 3. Status of frailty among respondents (n=168).

Variables	n (%)
Non frail (fit) (0-3)	59 (35.12)
Vulnerable (4-5)	34 (20.24)
Mild frailty (6-7)	25 (14.88)
Moderate frailty (8-9)	24 (14.29)
Severe frailty (10+)	26 (15.48)
Overall frailty	75 (44.64)

There was a statistically significant association of frailty with age, marital status (companionship), diagnosis, number of medicines taken, BMI and physical activity. Elderly aged more than 70 were more likely to have frailty than elderly below 70 (COR 5.24; CI 2.709-10.167, p-value< 0.001). Similarly, frailty was more likely to occur among elderly who are single/widow than elderly who live with spouse/family (p-value= 0.001; COR 3.278, CI 1.592-6.749). Likewise, increasing the number of medicines to 5 or more showed frailty to be more likely among elderly (p-value< 0.001, CI 4.64-27.718, COR 11.34). On the other hand, the odds of increased BMI more than 25 decreases the risk of being frail (p-value=0.007; COR 0.423, CI 0.224-0.796). In this study, elderly people with pre-determined or known illness could be more likely to increase frailty (p-value=0.037; COR 2.76, CI 1.036-7.354). The present study shows moderate to vigorous physical activity has decreased the risk of being frail over sedentary to mild physical activity among elderly (COR= 0.144; CI= 0.057-0.367, p-value<0.001) (Table 4).

In multivariate binary logistic regression analysis, the factors associated with frailty are found to be the age, number of medicine and physical activity. Elderly people aged 70 years, or more are more likely to be frail than elderly people, less than 70 years (AOR 3.942; CI 1.737-8.950). Similarly, elderly who take 5 or more medicines are more likely to be frail (adjusted OR 9.721; CI 3.408-27.729, p-value< 0.001). On the other hand, elderly who are involved in moderate to vigorous physical activity are less likely to be frail (AOR 0.233; CI 0.81-0.674, p-value=

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0.007) (Table 5).

Table 4. Association of frailty with selected variables (n= 168).

Variables	Frailty		p-value	COR (CI)
	No	Yes		
	n (%)	n (%)		
Age			0.000	5.24 (2.709-10.167)
<70	65 (73.9)	23 (26.1)		
70+	28 (35.0)	52 (65)		
Sex			0.613	1.171 (0.636-2.156)
Male	52 (57.1)	39 (42.9)		
Female	41 (53.2)	36 (46.8)		
Companion status			0.001	3.278 (1.592-6.749)
Married and live with spouse	78 (62.9)	46 (37.1)		
Single / Widow	15 (34.1)	29 (65.9)		
Diagnosis			0.037	2.76 (1.036-7.354)
Unknown	18 (75)	6 (25)		
Known	75 (52.1)	69 (47.9)		
Number of Medicines			0.000	11.34 (4.64-27.718)
<5	86 (68.8)	39 (31.2)		
5+	7 (16.3)	36 (83.7)		
Alcohol			0.072	1.813 (0.946-3.47)
Never	59 (64.1)	33 (35.9)		
Ever	34 (44.7)	42 (55.3)		
BMI			0.007	0.423 (0.224-0.796)
<25	44 (46.3)	51 (53.7)		
25+	49 (67.1)	24 (32.9)		
History of Accident			0.137	0.474 (0.174-1.289)
Yes	7 (38.9)	11 (61.1)		
No	86 (57.3)	64 (42.7)		
Physical activity			0.00	0.144 (0.057-0.367)
Sedentary to mild	58 (45.7)	69 (54.3)		
Moderate to vigorous	35 (85.4)	6 (14.6)		

COR: Crude Odds Ratio, CI: Confidence Interval, p-value from chi-square test at alpha level of significance<0.05

Table 5. Multivariate binary logistic regression analysis of factors associated with frailty (n= 168).

Variables	Adjusted OR	95% CI		p-value
		Lower	Upper	
Number of medicines	9.721	3.408	27.729	0.000
Age	3.942	1.737	8.950	0.001
BMI	0.479	0.213	1.075	0.074
Physical Activity	0.233	0.081	0.674	0.007

Table 5. Multivariate binary logistic regression analysis of factors associated with frailty (n= 168).

Variables	Adjusted OR	95% CI		p-value
		Lower	Upper	
Diagnosis	0.996	0.291	3.412	0.994
Companion/Living status	1.220	0.968	1.539	0.092

DISCUSSION

This study was done to identify frailty among elderly which has shown 44.6% of elderly had frailty according to EFS-AC. The current finding is similar to the study done in the Saudi population where 40% prevalence was observed.¹⁰ On the other hand, another study done in the Chinese population showed a prevalence of 9.9%.¹¹ A study conducted in seven primary centers in Spain showed prevalence of frailty to be 20.7%.¹² Likewise, a study done in Indonesian population showed prevalence of frailty 25.2%.¹³ Another study done in Nepal showed a higher prevalence of frailty (65%).¹⁴ This discrepancy in the prevalence in our study might be attributed to the acute care setting where most of elderly had known chronic health problems or diseases.

In this study, the association of frailty with age was found to be statistically significant. This finding was supported by studies done in Indonesia and China where being 70 years of age or older was associated with frailty.^{13,15}

Our study showed physical activity to be significantly associated with frailty. Moderate to vigorous physical activity has shown to decrease the risk of being frail over sedentary to mild physical activity among elderly, which is consistent with findings of other studies.^{7,16,17} The decreased instrumental activities in daily life among elderly might be attributed to increase in risk of frailty.

This study showed frailty is more likely to occur among elderly with low BMI in bivariate analysis. In contrast to present finding, study done in Saudi population showed increased BMI has higher risk of frailty among elderly.^{10,18} However, another study showed that higher BMI is

inversely associated with mortality.¹⁹ This contrast findings might be due to differing settings as the present study was done in acute care setting with convenient sampling where most of the elderly were diagnosed and had follow-up appointment.

This study revealed that taking five or more medicines is associated with increased risk of frailty. This finding is supported by study done in Indonesia and China where there was increased risk of frailty with polypharmacy.^{13,15}

With a sensitivity of 77.87% and a specificity of 97.00%, EFS-AC also demonstrated high agreement in determining an individual’s frailty state based on the EFS.²⁰ This study was done in a single acute care setting. Therefore, it lacks representativeness of the diverse population of elderly. Also, the data was collected in medical OPD where most of the seniors attend for the purpose of medical consultation and follow up which might have contributed to over-representation of frailty.

CONCLUSIONS

The prevalence of frailty among elderly people in this study was comparable to similar studies in different settings. The associated factors of frailty were found to be age, physical activity and number of medicines taken. Present findings can further sensitize and emphasize health personnel such as physicians and nurses to address frailty as a part of comprehensive geriatric assessment while providing care to geriatric patients and minimizing negative effects of medical management considering age, polypharmacy and physical activity. Similar studies can be done with representative multi-centric samples for generalization.

Conflict of Interest: None.

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Ilioinguinal, Iliohypogastric and Genitofemoral Nerve Block for Elderly Patients Undergoing Inguinal Hernia Surgery in a Tertiary Care Center

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ABSTRACT

Introduction: Inguinal hernia is one of the common surgical procedures performed. The choice of anaesthesia may vary from general, spinal, and local infiltration to ultrasound-guided regional anaesthesia. Ultrasound-guided ilioinguinal/iliohypogastric nerve and genital branch of the genitofemoral nerve can be blocked precisely providing adequate surgical anesthesia and little variation in hemodynamics in elderly patients. This study aims to study the intraoperative hemodynamic changes in elderly patients who had comorbid conditions and were undergoing inguinal hernia repair under ilioinguinal, iliohypogastric and genitofemoral nerve block.

Methods: A retrospective chart review was conducted to see changes in intraoperative hemodynamics in 88 elderly patients with one or more comorbidities in comparison to the baseline hemodynamics. Systolic blood pressure, diastolic blood pressure, mean arterial pressure and heart rate were recorded every 5 minutes intraoperatively and compared to the baseline values. Students paired t-tests were used to compare systolic, diastolic, mean arterial pressure and heart rate at fixed interval records during the surgery.

Results: The mean age of patients in our study was 70.34 ± 9.33 years. There were no significant changes (p-value less than 0.05) in the systolic blood pressure, diastolic blood pressure, mean arterial pressure and heart rate taken at different time intervals compared to the baseline value.

Conclusions: Ultrasound-guided ilioinguinal/iliohypogastric nerve and genital branch of the genitofemoral nerve can be blocked providing adequate surgical anaesthesia and minimal variation in hemodynamics in elderly patients.

Keywords: *iliohypogastric nerve, ilioinguinal nerve, inguinal hernia, nerve block, ultrasound.*

INTRODUCTION

Inguinal hernia repair is a common surgical procedure.¹ General anaesthesia (GA), spinal anaesthesia (SA), surgical site infiltration, and ilioinguinal and iliohypogastric (IG-IH) nerve block are common anaesthetic choices.¹

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Elderly patients usually have comorbidities involving one or multiple systems. GA have a significant effect on psychomotor skills, attention and memory postoperatively, SA alters the hemodynamics which elderly patients may not tolerate well.^{2,3} IG-IH blocks combined with the genital branch of the genitofemoral nerve (GFN) result in adequate surgical anaesthesia, reduced opioid use, minimal hemodynamic changes, better postoperative pain control, shorter recovery period and reduced cost.^{2,4} The IG-IH nerve lies between the internal oblique muscle and transverse abdominal muscle near the anterior part of the iliac crest and provides a cutaneous sensation of the skin over the inguinal and superomedial aspects of the thigh, genital branch of the GFN enters the inguinal canal via the deep inguinal ring and lies near the spermatic cord.⁵⁻⁷

This study aims to study the intraoperative hemodynamic changes in elderly patients who had comorbid conditions and were undergoing inguinal hernia repair under ilioinguinal, iliohypogastric and genitofemoral nerve block.

METHODS

This is a retrospective chart review of patients who had undergone inguinal hernia repair under ultrasound-guided IG/IH and genital branch of GFN nerve block from May 2016 to April 2018. The inclusion criteria were age greater than 60 years, elective one-sided inguinal hernia repair and one or more comorbidities. Patients with recurrent hernia, patients refusal to undergo a block of IG-IH and genital branch of GFN, those allergic to anaesthetic agents, bleeding dyscrasias and bilateral inguinal hernia repair were excluded. Convenience sampling method was used.

Retrospective analysis for demographic data and hemodynamic changes was done. During the procedure, the past procedure was explained during the pre-anaesthetic checkup visit prior to surgery and informed consent was taken. Standard anaesthetic monitoring was attached. Injection Midazolam 0.03 mg/kg and Fentanyl 1 mcg/kg were given to ease the block procedure. With the use of a linear probe of 8-12 Hz IG and IH nerves were identified and 12-15 ml of 1.5% Lignocaine with Adrenaline were deposited and used the same for the genital branch of GFN and blocked by depositing 5 ml of 1.5% Lidocaine with Adrenaline. Perioperative hemodynamics were charted and analyzed. The adequacy of anaesthesia was checked by pinprick test. Once adequate anaesthesia was achieved, surgery was started.

The IBM SPSS Statistics version 26.0 was used for statistical analysis. The measurement data are expressed as mean ± standard deviation (mean ± SD). Students paired t-test was used for comparison of baseline systolic, diastolic, mean arterial pressure and heart rate with the same variables recorded at every five-minute interval during the surgery. The p value <0.05 was considered statistically significant.

RESULTS

The mean age was 70.34 ± 9.33 years. There were no significant changes (p-value less than 0.05) in the systolic blood pressure (SBP), diastolic blood pressure (DBP), mean arterial pressure (MAP) and

heart rate (HR) taken in 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75, 80, 85 and 90 minutes in comparison to the baseline SBP, DBP, MAP and HR.

In our study the baseline and 90 minutes heart rate were found to be 81.47±8.06 and 80.55±8.23 respectively (Table 1).

Table 1. Comparison of baseline values with intraoperative interval values using students t-test (paired)		
Time	Heart rate (HR) Mean ± SD	p values student's t-test paired.
Baseline	81.47±8.06	
5 minutes	81.40±8.52	0.943
10 minutes	80.87±8.13	0.579
15 minutes	81.78±7.77	0.779
20 minutes	81.01±8.07	0.660
25 minutes	81.76±8.07	0.773
30 minutes	80.97±8.03	0.626
35 minutes	80.65±7.97	0.439
40 minutes	80.99±8.59	0.644
45 minutes	81.35±7.93	0.901
50 minutes	79.97±7.99	0.131
55 minutes	81.13±8.04	0.799
60 minutes	81.94±7.99	0.776
65 minutes	80.39±7.83	0.135
70 minutes	80.38±7.72	0.877
75 minutes	82.75±7.98	0.642
80 minutes	82.34±7.83	0.841
85 minutes	81.49±7.11	0.715
90 minutes	80.55±8.23	0.704

The systolic blood pressure, diastolic blood pressure, and mean arterial pressure were found to be 136.56 ±3.6, 85.84±7.86, 102.75±5.89 at baseline and 134.13±4.06, 85.58±5.31, and 101.76±3.77 at 90 minutes respectively (Table 2).

Table 2. Comparison of baseline values with intraoperative interval values using student's t-test (paired)

Time	Systolic blood pressure (SBP) Mean $\pm$ SD	p value (SBP)	Diastolic blood pressure (DBP) Mean $\pm$ SD	p value (DBP)	Mean arterial pressure (MAP) Mean $\pm$ SD	p value (MAP)
Baseline	136.56 $\pm$ 3.6		85.84 $\pm$ 7.86		102.75 $\pm$ 5.89	
5 minutes	135.98 $\pm$ 4.19	0.228	84.97 $\pm$ 7.10	0.224	101.97 $\pm$ 5.36	0.103
10 minutes	135.64 $\pm$ 3.77	0.965	86.26 $\pm$ 7.34	0.113	102.72 $\pm$ 5.23	0.967
15 minutes	136.27 $\pm$ 3.88	0.537	83.99 $\pm$ 6.38	0.584	101.42 $\pm$ 4.85	0.419
20 minutes	135.49 $\pm$ 3.78	0.537	85.60 $\pm$ 6.91	0.447	102.23 $\pm$ 5.08	0.512
25 minutes	135.81 $\pm$ 3.66	0.241	84.08 $\pm$ 5.91	0.238	101.32 $\pm$ 4.49	0.285
30 minutes	136.24 $\pm$ 3.70	0.483	85 $\pm$ 6.78	0.634	102.08 $\pm$ 4.94	0.724
35 minutes	135.72 $\pm$ 4.08	0.076	84.46 $\pm$ 6.81	0.654	101.55 $\pm$ 4.90	0.087
40 minutes	136.26 $\pm$ 3.72	0.522	85.56 $\pm$ 7	0.052	102.46 $\pm$ 5.11	0.082
45 minutes	136.24 $\pm$ 3.67	0.513	84 $\pm$ 6.4	0.740	101.41 $\pm$ 4.53	0.285
50 minutes	136.31 $\pm$ 3.68	0.806	84.4 $\pm$ 7.04	0.055	101.71 $\pm$ 5.02	0.114
55 minutes	135.38 $\pm$ 3.66	0.983	85.15 $\pm$ 7.55	0.197	101.89 $\pm$ 5.3	0.168
60 minutes	135.76 $\pm$ 3.43	0.179	84 $\pm$ 6.41	0.073	101.36 $\pm$ 4.61	0.074
65 minutes	136.53 $\pm$ 3.56	0.930	84.29 $\pm$ 7.1	0.720	100.44 $\pm$ 12.54	0.082
70 minutes	136.31 $\pm$ 3.76	0.720	85.06 $\pm$ 7.01	0.372	102.14 $\pm$ 5.06	0.067
75 minutes	135.27 $\pm$ 3.84	0.934	86.98 $\pm$ 6.9	0.544	103.08 $\pm$ 4.8	0.235
80 minutes	135.24 $\pm$ 3.72	0.56	87.36 $\pm$ 5.84	0.655	103.32 $\pm$ 4.37	0.958
85 minutes	135.53 $\pm$ 4.06	0.179	88.27 $\pm$ 5.81	0.399	103.57 $\pm$ 4.1	0.567
90 minutes	134.13 $\pm$ 4.06	0.930	85.58 $\pm$ 5.31	0.613	101.76 $\pm$ 3.77	0.427

DISCUSSION

In this study, intraoperative hemodynamic changes in elderly patients who had comorbid conditions and were undergoing inguinal hernia repair under ilioinguinal, iliohypogastric and genitofemoral nerve block were studied. There were no statistical changes in the hemodynamic parameters observed at different times as compared to the baseline values. Anaesthesia was adequate for surgical procedures as suggested by the hemodynamic parameter.

The choice of anaesthesia method can vary from general anaesthesia, spinal anaesthesia, selective ilioinguinal, and iliohypogastric nerve block often combined with genitofemoral nerve for proper surgical anaesthesia.⁸ Changes in cardiovascular physiology associated with ageing and disease reduce cardiovascular reserve and may predispose elderly patients to hemodynamic instability. Both general and regional anaesthesia are

associated with respective side effects in elderly patients. General anaesthesia often results in rapid hemodynamic changes during the induction of anaesthesia and also in postoperative confusion and memory impairment in the elderly. Spinal anaesthesia causes hypotension because of sympathetic blockade with vasodilatation and redistribution of central blood volume to lower extremities and splanchnic beds.⁹

Even though regional anaesthesia has benefits over general anaesthesia, hemodynamic instability due to spinal or epidural can lead to cardiac events. Hypotension is more common, and also more hazardous, in elderly patients, as they may have decreased physiological reserve and compromised blood supply to various vital organs. Various techniques, such as rapid intravenous (IV) crystalloid and vasopressor administration, are in use to attenuate this complication. However, rapid IV fluid infusion of large amounts may be detrimental to elderly patients

with cardiac and respiratory dysfunction.¹⁰ Moreover, ephedrine and vasopressors can lead to serious cardiac side effects like excessive hypertension or tachycardia.¹¹ Sympathetic nervous system activity increases in elderly patients and in those with congestive heart failure. Thus, such patients are at risk of cardiac events if there are larger decrease in systemic vascular resistance, myocardial contractility, and arterial blood pressure compared with young subjects.¹² To avoid the side effects of general and spinal/epidural anaesthesia in elderly patients with comorbid conditions, selective block of ilioinguinal, iliohypogastric nerve in combination with genitofemoral block has become better alternative.

The iliohypogastric nerve, from T12 and L1, provides sensory innervation to the suprapubic and anterior hip region. The ilioinguinal nerve is derived from L1 and follows the inguinal canal. It innervates the inguinal hernia sac, the medial aspect of the thigh and the anterior scrotum or labia.¹³ Ilioinguinal and iliohypogastric nerve block when combined with genitofemoral nerve provides better surgical anaesthesia for inguinal hernia repair.

The use of ultrasonographic guidance in the regional blocks has evolved over time. It results in more frequent successful blocks, shorter onset times, lower volume of local anaesthetics and longer duration of action with fewer side effects when compared with landmark guided block or surgical site local infiltration.

Besides surgical anaesthesia, regional nerve block also offers good postoperative pain relief, early ambulation and discharge. A higher success rate can be achieved by using ultrasound due to accurate placement, and reduced volumes of local anaesthetic agents closer to the nerves.¹⁴⁻¹⁶

The anatomical landmark technique may cause complications even in the experienced hands. Intestinal damage, colon damage and development of subserosal hematoma, temporary femoral nerve paralysis, pelvic hematoma, and quadriceps muscle paresis have been described.¹⁷⁻²² Yilmazar et. al used ilioinguinal, iliohypogastric nerve block for patients undergoing her-

niorrhaphy resulted in a shorter time-to-home readiness, quicker oral intake post-surgery, and no need for recovery room care when compared with the use of spinal anaesthesia.²³ Wilschke in 2006 used ultrasound for ilioinguinal/iliohypogastric nerve blocks in children and had a 100% success rate. This study supports the use of ultrasonography for regional anaesthesia.¹⁴ Yang et al in 2015 also showed that ilioinguinal iliohypogastric nerve block when combined with local infiltration had effectively reduced the pain of patients when pulling the hernia sac reduced the use of additional local anaesthetic drugs, and had higher safety.²⁴ Demicri et al sowed the combination of ultrasound-guided genitofemoral nerve block and ilioinguinal/iliohypogastric nerve block showed better intraoperative comfort and lower consumption of local administered by surgeons, lower postoperative Visual Analogue Scale scores.¹⁵

In this study, we also achieved sufficient surgical anaesthesia with the block and reduced significant changes in the hemodynamics of vulnerable elderly patients. The study provides a glimpse of the anaesthetic use of IG-IH block in our patient population done at our centre. The results can be reciprocated in another centre. However, it requires a detailed multicentric study. There is a possibility that variation in population dynamics in the ageing population and the co-morbid status can show fluctuation in the hemodynamic parameters. Similarly, complication level can be varied as the technique is more operated dependent with variable outcome rates.

CONCLUSIONS

The ultrasound-guided ilioinguinal/iliohypogastric nerve block in combination with the genitofemoral nerve block for inguinal hernia repair minimally alters the hemodynamics of elderly patients and decreases morbidity and mortality related to general or spinal anesthesia-induced drastic changes in hemodynamics.

Conflict of Interest: None

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Utilization of Adolescent-Friendly Sexual and Reproductive Health Services among Adolescents in a Secondary School

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ABSTRACT

Introduction: Adolescents have to face various physical and psychological problems and need proper health services to solve them. Very few adolescents utilize health services from any kind of health facility in Nepal due to socio-cultural taboos on sex. This study aims to find out the utilization of adolescent-friendly sexual and reproductive health services among adolescents in secondary school.

Methods: A descriptive cross-sectional study was conducted among students studying in class 12 of a secondary school after obtaining ethical approval from the Institutional Review Board. A self-administered semi-structured questionnaire was used to collect data. Adolescents aged between 15-19 years, who were present during the time of data collection and who gave consent to take part in this research were included in this study. Convenience sampling method was used. Point estimate and 95% Confidence Interval were calculated.

Results: Among 300 adolescents, 74 (24.67%) [19.8–29.5, 95% Confidence Interval] adolescents had utilized adolescent-friendly sexual and reproductive health services. Among service users, 42 (56.76%) utilized services from the school, the most frequently used service component was counseling on menstrual hygiene 44 (59.46%) and 9 (12.16%) had adequate knowledge regarding adolescent-friendly sexual and reproductive health services.

Conclusions: The findings indicate that one-fourth of adolescents utilized adolescent-friendly sexual and reproductive health services, with counseling on menstrual hygiene being the most commonly used service.

Keywords: adolescent health services, reproductive behavior, school, sexual and reproductive health, school health services, utilization.

INTRODUCTION

Adolescence is the period of physical, psychological, and social maturity from childhood to adulthood. Adolescents aged between 10 and 19 years constitute 18% of the world population, and about 88% live in developing countries.¹ According to the National Population and Housing Census of Nepal, adolescents aged 10- 19 years make up 20% of the total population.²

The adolescent fertility rate is in increasing trend from 81 in 2011 to 88 in 2016 per 1,000 women aged 15-19 years in Nepal. Adolescents are usually shy; and have incomplete knowledge

about pubertal changes, sexually transmitted infections, and HIV/AIDS.³ Lack of knowledge and information about adolescent-friendly health services was one of the most commonly reported barriers to service utilization by adolescents. Despite adolescent friendly health services (AFHS) being provided at public facilities, awareness of such services among adolescents and other community gatekeepers was very low.⁴

This study aims to find out the utilization of adolescent-friendly sexual and reproductive health services among adolescents in a secondary school.

METHODS

A descriptive cross-sectional study was conducted in Shree Viswa Niketan Secondary School, Tripureshwor, Kathmandu, Nepal after obtaining ethical approval from the Institutional Review Board of the National Academy of Medical Sciences (Reference number: 870/2079/80). Data were collected from 20 July 2023 to 03 August 2023. Convenience sampling method was used. Adolescents aged between 15-19 years, who were present during the time of data collection and who gave consent to take

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part in this research were included in this study. Adolescents with incomplete data were excluded from this study. The sample size was calculated using the following formula:

$$n = Z^2 \times p \times q / e^2$$

$$= 1.96^2 \times 0.247 \times 0.753 / 0.05^2$$

$$= 286$$

Where,

n = minimum required sample size

z= 1.96 at 95% Confidence Interval (CI)

p= prevalence of the utilization of ASRH service as reported by a study done in the past, 24.7%⁵

q=1-p

e= margin of error, 5%

Adding a 5% non-response rate, the required sample size becomes 300. A total of 300 adolescent students (15-19 years) studying in grade twelve were taken for the study. Informed written assent and parental consent were taken from participants who were below the age of 18 years. Confidentiality was maintained by not disclosing the participant's information and anonymity was maintained by using a code number instead of name in the questionnaire. A self-administered structured questionnaire was used to collect data. The tool was developed by reviewing literature. It was developed in English and translated into Nepali language and then back translated to the English language to regain its original meaning. The tool consists of three parts: socio-demographic data, knowledge regarding adolescent-friendly sexual and reproductive health services, and utilization of adolescent-friendly sexual and reproductive health services. Utilization status of Adolescent Friendly Sexual and Reproductive Health (AFSRH) Services was measured as utilized and not utilized.

Collected data was checked, reviewed, and organized daily for its accuracy and completeness. Data were entered and analyzed using the IBM SPSS Statistics version 20.0. Point estimate and 95% CI were calculated. Data was analyzed by using descriptive statistics.

RESULTS

Among 300 respondents, 74 (24.67%) [19.8%–29.5% at 95% Confidence Interval] respondents utilized the AFSRH services. More utilized service was counseling on menstrual hygiene which was 44 (59.46%) followed by counseling on sexually transmitted infections including HIV/AIDS 31 (41.89%) (Table 1).

Table 1. Utilization of Sexual and Reproductive Health Services (n= 74).

Variables	n (%)
Type of utilized services*	
Counseling on menstrual hygiene	44 (59.46)
Counseling on STI including HIV/AIDS	31 (41.89)
Family planning counseling	25 (33.78)

Family planning services	18 (24.32)
Safe abortion services	12 (16.22)
Sexual violence	18 (24.32)
Counseling on early marriage and early pregnancy	22 (29.73)
Mental health and psychological support	20 (27.03)
Others (specify)	4 (5.41)
Level of satisfaction towards services	
Dissatisfied	23 (31.08)
Satisfied	51 (68.92)

*Multiple responses

Among service users, 42 (56.76%) of the respondents were taking services from school (Table 2).

Table 2. Information regarding Adolescent Friendly Sexual and Reproductive Health Services among Respondents (n= 74).

Variables	n (%)
Sources of service utilized*	
Health care facility	22 (29.73)
School	42 (56.76)
Medical shop	16 (21.62)
Youth club	8 (10.81)
Others (specify)	9 (12.16)
Experience towards services*	
Services are focused on teenagers	58 (78.38)
Services are sufficient to meet my special needs and problems	19 (25.68)
Services are cost-effective	10 (13.51)
Offer privacy and confidential	10 (13.51)
Environment is embarrassing	8 (10.81)
Experience towards service provider*	
Friendly and polite	48 (64.86)
Respectful and helpful	41 (55.41)
Concerned about your privacy and confidentiality	15 (20.27)
Interested in you and your problems	10 (13.51)
Provided information clearly	33 (44.59)
Level of Knowledge	
Inadequate Knowledge	65 (87.84)
Adequate Knowledge	9 (12.16)

*Multiple response

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The mean age of respondent's was 17.07±0.946 years. Most of the respondent's 50 (67.57%) had nuclear family. Among 74 respondents, female 39 (52.70%) and main source of information regarding AFSRH service was radio/television which was 30 (40.54) (Table 3).

Table 3. Socio-demographic characteristics of the respondents (n= 74).

Variables	n (%)
Age (in years)	
16	23 (31.08)
17	31 (41.89)
18	12 (16.22)
19	8 (10.81)
Sex	
Male	35 (47.30)
Female	39 (52.70)
Family Type	
Nuclear	50 (67.57)
Joint	18 (24.32)
Extended	6 (8.11)
Ethnicity	
Bramin/Chhetri	40 (54.05)
Madhesi	12 (16.22)
Janajati	18 (24.32)
Others	4 (5.41)
Religion	
Hindu	65 (87.84)
Buddhist	7 (9.46)
Muslim	2 (2.70)
Currently living with	
Both parents	54 (72.97)
Single parent	5 (6.76)
Others	15 (20.27)
Source of information*	
Radio/ Television	30 (40.54)
Newspaper	11 (14.86)
Poster/Pamphlet	8 (10.81)
Health worker	20 (27.03)
Teachers	59 (79.73)
Friends	25 (33.78)
Others	11 (14.86)

*Multiple response

DISCUSSION

In this study about one quarter (24.67%) of the adolescents utilized AFSRH services which is similar to the study conducted in Nepal by Napit in Bhaktapur in 2020 where the same percentage (24.70%) of the adolescents utilized AFHS services.⁵ Another study in Ethiopia in 2022 also revealed almost the same result where 23.5% of adolescents utilized sexual and reproductive health (SRH) services.⁶ The study finding is in contrast to a study done in Kathmandu, Nepal by L. Tamang, where about two-thirds (67.05%) of the adolescents utilized AFHS services which was higher than the present study.⁷ The study findings are lower than the study done in Dang District, Nepal by Giri in 2020 where 48.7% of adolescents utilized AFSRH services.⁸ Another contrasting finding shows low utilization of services in Dang district Nepal in 2023 which was 14.8%.⁹ The difference may be due to the study setting. Among service users, majority (68.92%) were satisfied with the services. The finding of this study revealed that female (52.70%) adolescents utilized the AFSRH services more than males (47.30%). This finding was supported by a study conducted in Nepal in 2020 where AFS were more utilized by females.⁵ Females have more SRH-related problems than males which might be the cause of the higher rate of utilization of AFSRH services by females.⁵

In this study majority of the respondents get information regarding adolescent-friendly sexual and reproductive health services from school/teachers (79.73%), another study done in Dang, Nepal showed that the majority of the respondents heard about the services from schools/teachers (78.5%).⁹ Another contrast finding was found in the study done in Lagos, Nigeria where the majority (83.2%) of the respondents first heard about the Youth Friendly Health facilities from parents, guardians, and friends.¹⁰ It might be due to a lack of awareness among the parents in our country.⁹

In this study, more than half (56.76%) of the respondents utilized AFSRH services from school. This finding is different from the findings of another study (mid-western district) of Nepal where 44.13% of respondents reported visiting public health facilities for services.¹¹ This result might be due to school health nurses is providing SRH services from school in the present study. The most frequently used SRH services components were counseling on menstrual hygiene followed by counseling on STIs including HIV/AIDS, family planning counseling, and family planning services. A similar study conducted in Ethiopia showed that the most frequently used SRH services components were counseling, information, and education, followed by Voluntary Counseling and Testing (VCT) and HIV.^{6,12}

CONCLUSIONS

This study revealed that one-fourth of adolescents utilized Adolescent Friendly Sexual and Reproductive Health Services. The most utilized service was counseling on menstrual hygiene followed by counseling on STIs including HIV/AIDS and two-thirds of respondents were satisfied with the services. It would be better to train school health nurse to create awareness among

adolescents in a school about AFSRH services which could help adolescents for the utilization of the services.

Conflict of Interest: None.

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Postnatal Experiences of Mothers during COVID-19: A Qualitative Study

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ABSTRACT

Introduction: Infectious breakdowns are known to cause fear among people. Postnatal women were more vulnerable during COVID-19 outbreak in Nepal. This study aims to explore experiences of the postnatal women during COVID pandemic.

Methods: A retrospective descriptive phenomenological study was conducted among the postnatal mothers attending Out-Patient Department services at Paropakar Maternity and Women's Hospital. Mothers who delivered babies during COVID-19 were included in this study. Purposive sampling method was used. Nine participants were included in the study till data saturation. In-depth interviews were conducted. The data were recorded, translated, transcribed and analyzed using descriptive thematic analysis.

Results: The participants were between the ages of 26-33 years. Slightly more than half; 5 (55.55%) of them had a cesarean section for delivery. Seven major themes emerged from the verbatim obtained as: feeling of fear, development of resilience, feeling of regret, feeling of alone, challenges due to limited resources, internal conflict and could not enjoy the postnatal period.

Conclusions: Feeling fear of infection to the baby, development of resilience and feeling alone were the major experiences of the mothers. Special support for the mothers such as virtual support groups or well-designed packages during the postnatal period could be designed during such pandemic time to enhance the positive experiences of mothers during postnatal period.

Keywords: COVID-19, mothers, pandemic.

INTRODUCTION

Coronavirus Disease-19 (COVID-19) was declared global pandemic by World Health Organization (WHO) in March 11, 2020.¹ The first confirmed case of COVID in Nepal was in 23 January 2020² and the first fatal case was 27 year old postpartum women reported on 16 May 2020.³ Government of Nepal like many other countries, imposed stay-home policy from 24 March to 21 July 2020.⁴ There was a state of health emergency in Nepal with scarcity of hospital beds, oxygen and many other resources.⁵

During the pandemic, countries faced considerable challenges in maintaining high-quality, essential maternal and newborn health services. There was a 200 percent increase in maternal mortality since the lockdown in Nepal as reported on 27 May 2020.⁶

Pregnant and postnatal mothers are at increased risk of developing anxiety disorders and suicidal risk.^{7,8} Very few research have been done on postnatal mothers and their experiences during COVID. This study aims to explore the experiences of postnatal mothers during COVID.

METHODS

This is a retrospective study conducted at outpatient department services at Paropakar Maternity and Women's Hospital. Data was collected between 01 August 2023 to 01 November 2023. Ethical approval for data collection was taken from Institutional Review Board (IRB) of National Academy of Medical Sciences and from IRB of Paropakar

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Maternity and Women's Hospital (Reference number: 1506/2078/2079). Approval for data collection was also taken. The participants included in this study were the mothers who delivered their baby during COVID-19 pandemic; between January 2020 till May 2023.

For the purpose of data collection, the researchers attended the Out Patient Department (OPD) near the immunization clinic of the hospital. The staff of OPD were informed about the study and inclusion criteria for the participants and requested to refer potential participants to the researchers. The mothers who met the inclusion criteria of the study, were referred by the staff of the OPD to the researchers. The mothers were further inquired, and purposive sampling was done; participants from different age groups, cast and culture were included to explore wider experiences of the postnatal mothers. The participants were clearly explained about the research, its objective, their role in the research and their voluntary participation. Informed written consent was taken from each participant. Face to face interview technique was used to collect data. Nine participants were included using the principle of saturation of data. There was data saturation after collecting data from seven participants. Two more participants were included, and no new themes arose. Three mothers meeting the inclusion criteria refused to participate in the study.

A descriptive phenomenological approach was used to explore the experiences of mothers during COVID. This approach guides the researchers to explain the experiences as stated by the participants. The researchers' experiences and pre-conceptualization on the topic needs to be assessed and be aware of the potential bias that might be caused by the description of the experiences.⁹ Those researchers' experiences need to be bracketed. Bracketing refers to holding a researcher's presumption, past experience and understanding of the phenomenon.¹⁰ All the researchers of this study have postnatal experience and have experience of working in the hospital during COVID. However, none of the researchers have postnatal experiences during COVID. So, the researchers were aware that those experiences might cause bias and direct the interview in different directions. Focus was maintained on what the participants said and extract meaning to their saying using the probing questions. Research also suggest not do literature search before data collection and not to develop specific objective as a means of bracketing.¹¹ For this research, literature search on experiences of postnatal mothers during COVID were done only after data collection as a means of bracketing and the in depth interviews (IDIs) were guided by one question "what was your postnatal experiences during COVID?" Probing questions were developed instantly during the conversation and no

specific guidelines were used.

The main guiding question for the in-depth interview was "what was your postnatal experience during COVID?" Several probing questions were added to understand the meaning of their expressions. Each IDI was taken in a separate room near OPD to maintain privacy during data collection. The interviewers (1 researcher and 1 co researcher) and the mother were only present during the interview. Mother's helper and the child stayed outside the interview room and often visited the mother during which the interview was stopped and continued after they left the room. Interviews started with informal conversation, introduction to each other, explaining the use of the recorder and notes to record data, etc. After the participants felt comfortable, the interviews were done, and each interview took about 30 minutes. The interview was recorded using a recorder after taking permission and field notes were also taken to give meaningful interpretation to the verbatims. Participants were explained that the confidentiality of the obtained data will be maintained and used for the purpose of the research only. The data collection was done once only; however, two participants were reached out by the researchers to check on the reflexivity of the transcripts via telephone call. The interview was taken in Nepali and translation, and transcription of the data was done by the researchers themselves.

The data collection was conducted by the researchers themselves, mainly by the principal researcher. She has completed a master's in nursing and has been working as a nursing faculty in a nursing campus for more than ten years and has experience of conducting qualitative research. One of the co-researchers of this study have also completed a master's in nursing and working as midwifery faculty in the same campus while the second co-researcher have also completed a master's in nursing and working in Paropakar Maternity and Women's hospital.

Obtained data was organized using descriptive statistics and thematic analysis. Descriptive statistics such as frequency and percentage were also used to interpret the socio demographic profile of the participants. Two researchers of the team reviewed the transcripts and analyzed the data. The data obtained from the in-depth interview was analyzed using six major steps for conducting thematic analysis such as:

i) familiarization, ii) coding, iii) generating themes, iv) reviewing themes, v) defining and naming themes and vi) writing up. The researchers read the transcripts several times to make themselves familiar with the experiences of the women. Coding of the data was done by the researchers themselves. Themes from the codes were generated. Mutual understanding between the researchers was developed on

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the generated themes. In case of contradiction, research experts were consulted. Generated themes were given names according to the meaning they hold.

Phenomenological research is subjective and very difficult to maintain the rigour or trustworthiness in the research process. Lincoln and Guba¹² four criteria namely: credibility, confirmability, dependability and transferability, was used to maintain rigour in this research. Credibility in research can be maintained by applying proper research techniques and presenting true reflection of the experience of participants. The researcher, being a nurse and working in a similar setting is well oriented to the phenomenon being studied. During the time of interview, participants were informed about the study as well as some of them were reached for member check. Dependability refers to detailed description of the research for future researchers to do similar research. A detailed audit trail of all the decisions taken about the research protocol, data collection and analysis were recorded. Confirmability brings true meaning to the experience of the participants. The researchers with previous experience of conducting similar in-depth interviews were directly involved in conducting interviews. Two independent researchers were involved in coding the data and generating themes. Agreement between the two researchers was sought. In case of disparity, subject experts were also involved to generate the theme. Mutual agreement between the researcher and some of the participants on final interpretation was developed. Transferability is the ability to relate the findings to similar settings. In this research, researchers recruited participants belonging to different ages, culture and caste and explored wider experiences of the postnatal mothers. The number of participants recruited in the research was based on saturation of the data; till no new theme emerged.

RESULTS

The mean age of the participants was 30.5 years. There were about 3 (33.33%) participants belonging to Brahmin/Chhetri and Janjanti cast each. Slightly more than half, 5 (55.55%) had to undergo cesarean section to deliver the baby. Very few of them had delivery related complications; Infection and wound gaping in 1 (11.11%) participant and bleeding in the other 2 (22.22%) was found. The majority of the participants had 1 (44.44%) and 2 (44.44%) children (Table 1).

Table 1. Characteristics of the participants (n= 9).

Characteristics	n (%)
Age (in completed years)	
20-30	5 (55.55)
31-40	4 (44.44)
Caste	
Brahmin/ Chhetri	3 (33.33)
Janajati	3 (33.33)
Madhesi	1 (11.11)
Dalit	2 (22.22)
Type of delivery	
Normal vaginal	4 (44.44)
Cesarean section	5 (55.55)
Complication after Delivery	
Infection and Wound gaping	1 (11.11)
Bleeding	2 (22.22)
No of children	
1	4 (44.44)
2	4 (44.44)
3	1 (11.11)

The qualitative data obtained were organized under different themes which are discussed in detail in this section. The name of the participants is not used, instead the participant number is used after the quotes.

Table 2. Themes of the Study

Themes
Theme 1: Fear during COVID
Theme 2: Development of Resilience
Theme 3: Challenges due to Limitations of Resources
Theme 4: Feeling of Regret
Theme 5: Development of Internal Conflict
Theme 6: Feeling Alone
Theme 7: Could not Enjoy Postnatal Period

Theme 1: Fear during COVID

The predominant response of the participants was fear. The fear was related to outcomes of the pregnancy, the effect the newborn and mother might face with the spread of infection. One of the participants said:

"I was just worried about the baby who was just born and the world was facing the pandemic." (participant 1)

Another participants said:

"All I wanted was the child to be healthy." (participant 2)

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"Immediately after delivery we moved to the village and there was no one who was infected with COVID infection." (participant 3)

Similar expression was given by another participant who said:

"I went to my parent's house which is located outside the valley after delivery. I returned only after COVID was over." (participant 9)

Those participants who stayed in their own home limited the movement of family members outside the home. One of them said:

"Only my husband or father-in-law used to go outside home. Their frequency of going out was limited as much as possible." (participant 4)

"My husband used to go to work and groceries. So, he did not come in close contact with us." (participant 7)

Theme 2: Development of Resilience

Most of the participants developed resilience towards the infection. The primary reason for developing resilience as mentioned by the participants was for the sake of the positive outcome of the baby. One of the mothers said:

"We were limited to our house. People could not visit us. Even the naming ceremony was limited among the family members. But I don't have any complaints. All I want was the baby to be healthy." (participant 1)

Similar statements were given by other participants as:

"I followed all the restrictions during COVID easily. I did not want a problem with the baby's health." (participant 7)

"We did not face problems following the guidelines to avoid contact with the disease. After all, I was doing this for my baby." (participant 5)

Theme 3: Challenges due to Limitations of Resources

Participants were worried that the care for themselves and newborn during postnatal care might be limited due to the limitations of resources and health care facilities. They were worried about the effect it might have on the mother and baby. They used various strategies to overcome the issues. Most of them moved to villages or less crowded areas. There was a limitation on access to health resources due to moving to a new place. Although all of the participants delivered their baby to the health facility, their frequency of visiting the facility was limited. The participants said:

"We moved to the village after delivery. There was no health facility nearby. So, I did not go for follow-ups." (Participant 2)

"My maternal home was far from the health post. Vehicles were not easily available. I always wish, my baby never gets sick." (Participant 1)

Diet is considered a very important part of postnatal care. Participants faced limitations in the food available in the market.

"I am vegetarian. I could not get a sufficient variety of food in my area during the postnatal period. If I were in Kathmandu, I could get all the variety I wanted." (Participant 2)

"My husband used to go to the supermarket and bring whatever was available there. There was no word for food choice." (Participant 4)

Oil massaging for mothers and baby is another very important part of postnatal care. Usually there are people locally trained to provide massages to postnatal mothers and babies. Such people were not invited home for oil massaging with fear of catching infection. In most cases mothers did oil massages to themselves and the baby. These expressions were expressed as:

"I was responsible for taking care of me and the baby. I used to do massage first to baby and to myself." (Participant 7)

"Even the family members did not come in physical contact with us. I was responsible for overall care. I had to apply oil to the baby and myself. It is so trying." (Participant 8)

"There was no one to help me and baby with oil massage. I had to do it twice a day. It was time consuming." (Participant 9)

Theme 4: Feeling of Regret

Participants also had a feeling of regret towards certain decisions they took during COVID. Some of them regretted their decision to move to the village to avoid contracting the disease. One of the participants said:

"After some time, I wanted to come back to Kathmandu. But there was no vehicle available to return." (Participant 5)

Another participant said:

"I lost my father who stopped taking medicine after we moved to a new place. Had we not moved to village he would be still alive, he was just 64." (Participant 2)

A similar statement was given by another participant as:

"My mother-in-law got COVID infection. She was doing most of the household activities and grocery shopping. She even developed diabetes after the infection. I felt it

was all because of me.” (Participant 8)

Theme 5: Development of Internal Conflict

Participants tried their best to make decisions for the good health of their baby. At times they doubt their actions regarding the outcome. One of the participants said:

“It was very difficult for me to decide to stay here or go outside the valley.” (Participant 5)

Other participants said:

“Every time I visited a health center I doubted if it was the right decision. I was increasing the chances of getting infected.” (Participant 7)

“I moved to the village. Simple medicine like cough syrup was not available. I questioned myself about moving to the village with the newborn baby.” (Participant 1)

Theme 6: Feeling Alone

Most of the participants felt alone. They either moved to a new place, leaving other family members and friends behind or were restricted inside their home lacking other social support.

“I moved to my mother’s home. Though she took good care of me and my baby, my husband was not with us.” (Participant 1)

“In the village, we did not know many people. People rarely visited us.” (Participant 3)

“There were very few people paying postnatal visit.” (Participant 4)

“The naming ceremony of the baby was limited to family members only. Many people were upset with us.” (Participant 8)

Theme 7: Could not Enjoy Postnatal Period

The participants were preoccupied with the information related to COVID and its prevention. They were serious about following the technique of isolation, distancing and hand hygiene. Most of the time, it was only the mother and baby together during the period. They could not share this time with others. Postnatal visits to the mother were limited and ceremonies such as baby naming and weaning, which are usually grand family functions, were limited to a few family members. Participants said:

“There were only a few of us during nwaran (naming ceremony). People were angry towards us for not inviting them.” (Participant 4)

“We requested to see the baby from a distance when my relatives came for a postnatal visit and they understood.” (Participant 6)

“When the COVID restrictions were over, we invited all our close ones to celebrate the birth of our baby” (Participant 8)

“Visitors were requested to wear mask and use sanitizer before approaching mother and baby” (Participant 9)

DISCUSSION

Fear of infection was a major concern of the participants in this study. Many participants had relocated to new places to decrease the chances of getting infected. Similar finding is shown in a study done among pregnant women attending Sabzevar University of Medical Sciences in Northeast Iran.¹³ The participants tried to avoid busy places such as hospitals for fear of miscarriage or getting infected. Participants in another study done in Canada expressed their fear towards the rapid spread of the infection.¹⁴ Some of the participants avoided going out of the house and certain members of the family, usually their partner, was responsible to buy things or manage activities outside the house. Participants in this study developed resilience towards infection. This was self-motivated with the feeling to do better for their newborn. So, they were less stressed by the activities they have to follow to limit the transmission of the disease. Similarly, in the study done in Iran among pregnant women, resilience among the women was developed by a WhatsApp group created among pregnant women, midwives and some faculty.¹³ However, the participants in Canada expressed that all those activities that were performed to limit the spread of COVID infection did not allow them to have proper experience of postpartum.¹⁴

Another major finding of this study is the challenges faced by the mothers during the postnatal period due to limitation of the resources. Most of them could not visit the health facility due to relocation after delivery and others decreased frequency of visit due to fear of getting infected. Similar interpretation is presented in the study done in Iran where pregnant women tried to avoid crowded places such as hospitals.¹³ They also felt that they were forced to visit crowded hospitals after the clinics were closed and the needs of the pregnant women were not well addressed by the government during COVID.

This study also showed participants felt regret over their decisions made during COVID. Some of them felt their decision to move outside the valley was wrong. Many participants in this study felt lonely because they had to leave their family members to move to another place or their relatives or friends could not visit them during their postnatal period. Findings from the study done in Iran, also showed that the pregnant women felt lonely because no

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one supported them.¹⁰ Even at home, mother and baby were isolated from the rest of the family to avoid infection, which made them anxious, confused and sad.¹⁵ Another study from Canada also supports the finding. Family members of the participants were missing during hospital stay or visits due to mandatory separation. Some of them even broke public health directives to access support from family members.¹⁴

Participants could not feel relaxed and enjoy motherhood. Usually, postnatal mothers are accompanied by other family members or caregivers, talking to them and caring for both mother and baby. Visitors to mother and baby are very common. The naming ceremony and weaning of the baby are very important in a family after the birth of a child. However, during COVID-19, all those activities were compromised due to fear of getting in contact with the disease to mother and baby. The mothers could not enjoy the important events of their life and some of them lack confidence to care for the newborn, especially the primi-mothers. Similar is the finding in another study where lack of support from partners or family members for breastfeeding was perceived negatively by the mothers.¹⁵

This study also found limitations in care received during postnatal care. The postnatal mothers who were in isolation during COVID taking total care of self and baby. Local postnatal care givers were not invited into the home which increased their exhaustion. Similar findings were identified in another study, lack of support from family members and caregivers left the mothers alone to provide

postnatal care. The mothers felt helpless, confused and sad.¹⁵

CONCLUSIONS

In this study, Experiences of the mothers during COVID -19 were explored using a phenomenological approach. It reveals that the participants had feelings of fear, development of resilience, feeling of regret, feeling of alone, challenges due to limited resources, internal conflict and could not enjoy the postnatal period. Limitations of mothers within their home and decreased contact with family and friends were major causes for negative experiences of the mothers. Development of special health care packages as well as social interaction groups among friends and family, also with health care teams can enhance positive perception of mothers during pregnancy. Further research among a large number of participants is needed for further exploration of the experiences.

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Knowledge and Practice Regarding Anemia Prevention Among Adolescent Girls in a School of Urban Area in Nepal

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ABSTRACT

Introduction: Anemia can occur in the phases of life, but it is more common during adolescence. Poor nutrition among adolescent girls is associated with adverse health problems in future motherhood. Early detection and effective intervention of anemia among adolescent girls improve future productive life. This study aims to determine the status of knowledge and practice regarding anemia prevention among adolescent girls in a school.

Methods: A descriptive cross-sectional study was conducted among adolescent girls in a school, in Kathmandu. Convenience sampling technique was used. The adolescent girls willing to participate were included in this study. A structured self-administered questionnaire was used to collect data. The status of knowledge was scored as adequate (≥ 19.86) and inadequate (< 19.86) as well as the status of practice was scored as good (≥ 9.17) and poor (< 9.17) based on the mean obtained score. Data was analyzed through IBM SPSS Statistics version 20.0.

Results: Among 230 participants, 102 (44.35%) participants had adequate knowledge, and 102 (44.35%) participants had good practices regarding anemia prevention. Among all, 199 (86.52%) participants responded that anemia is a health problem, and 207 (90%) participants responded that they had taken iron and folic acid in the last year.

Conclusions: More than half participants had inadequate knowledge and poor practice regarding anemia prevention. One-tenth of participants responded that they had not taken iron folic acid tablets in the last year.

Keywords: *adolescent, anemia, girls, knowledge.*

INTRODUCTION

Anemia can happen in all phases of life but it is more common during adolescence period.¹ Young women are at particular risk for the development of iron deficiency due to menstrual blood loss.² According to the Nepal Demographic and Health Survey, the prevalence of anemia among adolescent girls is 53.1% in Nepal.³

Adolescent pregnancy with anemia increases maternal morbidity and mortality.¹ Among adolescents, anemia

affects not only present health status but can also have deleterious effects in later life. The rates of low birth weight, prematurity, and neonatal and infant mortality among children born to undernourished adolescent girls are high.⁴ A study revealed that 76% of adolescent girls had average, 17% had good, 5% had excellent and 2% had poor knowledge.⁵ Early detection and effective intervention of anemia among adolescent girls improves future productive life.⁶

Thus, this study aims to determine the status of knowledge and practice regarding anemia prevention among adolescent girls in a school.

METHODS

A descriptive cross-sectional study was conducted among adolescent girls studying in grades nine and ten at Viswa

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Niketan Secondary School, Tripureswor, Kathmandu, Nepal from 3rd to 13th March 2024. Ethical approval was obtained from the Institutional Review Board (IRB) of the National Academy of Medical Sciences (NAMS), Mahaboudha, Kathmandu, Nepal (Reference number. 909/2080/81). Written permission was obtained from the school. A written informed consent form was distributed to adolescents less than 18 years old to obtain permission from the participant's guardian. After obtaining written informed consent from the guardian, informed consent was obtained from all participants before data collection. Convenience sampling technique was used. The adolescent girls who were 14 to 17 years old and willing to participate were included in this study. Participants with chronic illnesses and questionnaires with incomplete responses were excluded from the study. Anonymity of participants was maintained by coding the questionnaire without their information. Data was collected by author and co-authors and confidentiality was maintained by not disclosing participants' information to others.

The sample size was calculated as follows:

$$n = Z^2 \times p \times q / e^2$$

$$= 1.96^2 \times 0.06 \times 0.94 / 0.05^2$$

$$= 86.6$$

Where,

n = minimum required sample size

Z = 1.96 at 95% Confidence Interval (CI)

p = prevalence taken from a previous study, 6%⁷

q = 1-p = 0.94

e = margin of error, 5%

The calculated sample size was 87. However, the sample was adjusted to the finite population of the study setting.

Now,

N=362

$$n_1 = N \times n_0 / n_{0+N-1}$$

$$= 362 \times 87 / 87 + 362 - 1$$

$$= 70.29 + 7 \text{ (10\% for non-response rate)}$$

$$n_1 = 77.29$$

The minimum sample size of the study was 77. However, in this study, 230 samples were taken from grades nine and ten.

Data was collected from the participants in a leisure period and it took about 25-30 minutes. A structured self-administered questionnaire was used to collect data

and it was divided into three parts. The first part of the questionnaire addressed the personal characteristics of participants which contained 10 questions. The second part of the questionnaire assessed knowledge regarding anemia prevention which contained 12 multiple-choice and 6 multiple response questions. The third part of the questionnaire was regarding practice on anemia prevention and out of 15 questions only 11 questions were measurable. A score of '1' was given for correct response and a score of '0' was given for incorrect response for multiple choice questions. Score '1' was given for each correct response in case of multiple response questions. Total knowledge scores were 36 and total practice scores were 11. The status of knowledge and practice was categorized into two statuses based on the mean obtained score. The status of knowledge was scored as adequate (≥ 19.86) and inadequate (< 19.86) as well as the status of practice was scored as good (≥ 9.17) and poor (< 9.17).⁸

Data was analyzed through IBM SPSS Statistics version 20.0. Data was analyzed by using descriptive statistics.

RESULTS

Among 230 participants, 127 (55.2 %) participants were from grade nine. The age of the participants ranged from 14 to 17 years with a mean age of 15 years. Among 230 participants, 144 (62.6%) participants' father education is secondary and higher level. Among all, 27 (11.7 %) participants had a previous history of anemia, and 119 (51.74%) participants had 5 days or more than 5 days of menstrual flow (Table 1).

Table 1. Personal Characteristics of Respondents (n=230).

Age (years)	n (%)
14-15	162 (70.4)
16-17	68 (29.6)
Grade	
Nine	127 (55.2)
Ten	103 (44.8)
The education level of the mother	
No education and basic education	119 (51.7)
Secondary and higher education	111 (48.3)
Occupation of mother	
Homemaker	149 (64.8)
Other than homemaker	81 (35.2)
The education level of the father	

No education and basic education	86 (37.4)
Secondary and higher education	144 (62.6)
Occupation of father	
Business	126 (54.8)
Other than business	104 (45.2)
Previous history of anemia	
Yes	27 (11.7)
No	203 (88.3)
Duration of menstrual flow	
Less than 5 days	111 (48.3)
Equal to or more than 5 days	119 (51.7)

Among 230 participants, 199 (86.52%) answered that anemia is a health problem. Among all, 220 (95.65%) participants said that iron is deficient in anemia and 168 (73.04%) participants said that decreased intake of iron-rich foods causes anemia. Among all, 184 (80%) participants responded by taking adequate iron-rich foods, and 151 (65.65%) participants responded that taking Iron and Folic Acid (IFA) tablets is the preventive measure of anemia. Among all, 219 (95.22%) participants responded that 1 tablet of IFA is given per week. Among all, 111 (43.91%) participants responded that deworming is given two times per year. Only 37 (16.08%) participants responded that citrus fruits enhance iron absorption (Table 2).

Table 2. Correct Response on Knowledge Regarding Anemia Prevention among Participants (n=230).

Variables	n (%)
Anemia is a health problem	199 (86.52)
Hemoglobin is decreased in anemia	105 (45.65)
Iron is deficient in anemia	220 (95.65)
Causes of anemia*	
Decrease intake of iron-rich foods	168 (73.04)
Increase blood loss during menstruation	131 (56.96)
Not fulfilling increased food need in adolescent girls	108 (95.65)
Worm infestation	30 (13.04)
Prevention of anemia*	
Taking adequate iron-rich foods	184 (80)
Taking IFA tablet	151 (65.65)
Maintaining personal hygiene	126 (54.78)
Taking Vitamin C-rich fruits	94 (40.87)

Taking deworming tablet	44 (19.13)
IFA tablets are started at 10-19 years	71 (30.87)
IFA tablets prevent anemia	221 (96.08)
One IFA tablet is given per week	219 (95.22)
IFA tablet is given 26 weeks per year	72 (31.30)
Deworming is given along with an IFA tablet	79 (34.35)
Deworming is given twice a year	101 (43.91)
IFA tablet is given 1 hour after a meal	148 (64.35)
Tea and coffee reduce iron absorption	122 (53.04)
Citrus fruits enhance iron absorption	37 (16.08)

Among 230 participants, 175 (76.09%) participants answered that they had taken green leafy vegetables and 153 (66.52%) participants had taken iron-enriched grains in the last 24 hours. There were 207 (90%) participants who responded that they had consumed IFA tablets in the last year. Among 230 participants, 214 (93.04%) participants responded that they cut nails regularly (Table 3).

Table 3. Reported Practice Regarding Anemia Prevention among Participants (n=230).

Variables	n (%)
Consumption of iron-rich food in the last 24 hours*	
Green leafy vegetables (broccoli, kale and turnip greens)	175 (76.09)
Iron-enriched grains (rice and cereals)	153 (66.52)
Legumes (beans, peas, lentils, or nuts)	113 (49.13)
Poultry (chicken, turkey, and duck, especially liver and dark meat)	59 (25.65)
Meat (buffalo, pork, or lamb, especially liver)	52 (22.61)
Fish (shellfish) and fish oil	30 (13.04)
Frequency of taking iron-rich food	
Daily	114 (49.56)
Once in a week	66 (28.69)
2 times a week	24 (10.43)
More than 3 times in a week	26 (11.30)
Consumption of vitamin C-rich fruit	210 (91.30)
Frequency of vitamin C-rich fruit (n=210)	
Daily	65 (30.95)
Once in a week	73 (34.76)
2 times a week	40 (19.05)
3 times and more in a week	33 (15.71)

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Consumption of IFA tablets in the last year	207 (90)
Consumption of deworming tablets in the last 6 months	182 (79.13)
Hemoglobin has been checked in the last year	139 (60.43)
Washed hands with soap and water after defecation	229 (99.57)
Washed hands with soap and water before taking food	229 (99.57)
Washed fruits and vegetables before taking them	230 (100)
Cut nails regularly	214 (93.04)

*Multiple response

Out of 38 total knowledge scores, the obtained mean knowledge score was 19.86, and 102 (44.35%) participants had adequate knowledge regarding anemia prevention. Out of 11 total practice scores, the obtained mean practice score was 9.17, and 102 (44.35%) had good practice regarding anemia prevention (Table 4).

Table 4. Status of Knowledge and Practice Regarding Anemia Prevention (n=230).

Variables	n (%)
Status of knowledge	
Adequate	102 (44.35)
Inadequate	128 (55.65)
Mean±SD	19.86±5.54
Status of practice	
Good	102 (44.35)
Poor	128 (55.65)
Mean±SD	9.17±1.26

DISCUSSION

The study aimed to determine the status of knowledge and practice regarding anemia prevention among adolescent girls in a school. In this study, 44.35% had adequate knowledge which is similar to another study where 43.3% had good knowledge.⁹ In the present study, 44.35% participants had good practice which is contradicted by another study where 75% of adolescent girls had desirable practice.¹⁰ This might be due to the study being conducted in private schools in contrast to the present setting.

In the present study, 86.52% of participants responded that anemia is a health problem which is contradicted by another study that showed 25.6% of participants felt anemia is a health problem.¹¹ In this study, 95.65% of participants said anemia is caused by decreased iron

which is contradicted by another study that showed 76.7% of participants said anemia is caused by decreased iron in blood.¹² The possible reason might be the difference in a study setting.

In the present study, 80% of participants responded that taking adequate iron-rich foods prevents anemia, 65.65% of participants responded that taking IFA supplementation prevents anemia and 19.13% of participants answered that taking deworming tablets prevents anemia. This finding is contradicted by another study which showed 76.4% of participants felt that increased intake of dietary iron prevents anemia, 78.3% of participants responded that IFA supplementation prevents anemia, and 26.6% of participants responded that deworming prevents anemia.¹² This might be due to a lack of awareness regarding IFA and deworming tablets although it is supplied in the present setting through the IFA supplementation program of the Nepal government.

In this study, 90% of participants responded that they had consumed IFA tablets in the last year and 79.13% of participants responded that they had taken deworming tablets in the last 6 months. The study is contradicted by another study that showed only 2.8% of girls consumed IFA tablets and 3.8% of girls consumed deworming tablets in the past 6 months.¹² This might be due to the implementation of school health programs in the present setting as school nurse distributes IFA and deworming tablets to adolescent girls.

In the current study, 99.57% of participants responded that they cleaned their hands with soap and water before taking food which contradicted another study that showed 97% of girls cleaned their hands with soap before taking food.¹¹ All the participants (100%) washed fruits and vegetables before consuming which contradicts another study that showed 98.6% washed fruits and vegetables before consuming.¹¹ In the current study, 93.04% of participants said that they cut nails regularly (weekly) which is contradicted by another study that showed trimming of nails regularly was done by 76.2% of girls.¹² This might be due to school health nurses conducting awareness programs to the students in the present setting.

The limitation of this study was the use of a convenience sampling technique which limits the generalisability of the study findings. The practice regarding anemia prevention was self-reported and based on memory. So, there is a possibility of recall bias or response bias

CONCLUSIONS

More than half participants had inadequate knowledge and poor practice regarding anemia prevention. Though iron and folic acid (IFA) tablets are provided to adolescent girls in the present setting, one-tenth of participants responded that they had not taken IFA tablets in the last

year. The study would help the school authority to conduct an awareness program regarding anemia prevention. The study would serve as baseline information for future researchers related to knowledge and practice regarding

anemia prevention.

Conflict of Interest: None.

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Gender-Based Violence at One Stop Crisis Management Center of Tertiary Care Centre

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ABSTRACT

Introduction: Gender-based violence is prevalent globally causing disease and mortality. Violence against women is a global public health issue affecting people of all ages and genders. This study aimed to find the prevalence of gender-based physical violence in tertiary care center.

Methods: A descriptive cross-sectional study was conducted in a tertiary care center among gender-based violence cases presenting to the one-stop crisis management center. Data was collected from 14 April 2021 to 12 April 2024 after obtaining ethical approval from the Institutional Review Committee. Convenience sampling method was used. Data was entered into Microsoft Excel version 10 and analysis was done using IBM SPSS version 22.0.

Results: Among 267 cases, female victims were found to be 258 (96.63%) and male victims were 9 (3.37%) in three years. A total of 107 (40.07%) were found to be Brahmin/Chhetri, the second was the Janajati Caste group, which was found to be 104 (38.95%). Physical violence victims were found to be the highest, which was 149 (55.81%).

Conclusions: The prevalence of gender-based physical violence is found to be similar to other similar studies. Gender-based violence is a significant issue in developing nations like Nepal, requiring prioritization of education and awareness, prioritization of medicolegal cases, and strong legislation support for victims, particularly females.

Keywords: *gender-based violence, physical violence, prevalence.*

INTRODUCTION

Physical assault (PA) is a prevalent form of gender-based violence that is also a major global source of disease and mortality, with a higher prevalence in developing and less developed countries. According to several literary works, brain injuries accounted for the majority of morbidity and mortality, with trunk injuries coming in second.^{1,2} Intimate partners or former partners who

commit domestic physical assault against women are the most frequent culprits of violence against women.^{1,3,4} As of Nepal, in eastern Nepal, physical violence is a frequent cause of injuries, with young men being especially vulnerable to it. The usual tools of violence are the fist, the kick, and the blunt instrument.⁵ Despite the issue, most of the research on the subject has been done mostly in developed nations, with little data on emerging countries such as Nepal.

This study aimed to find the prevalence of gender-based physical violence in tertiary health care centers.

METHODS

This was a descriptive cross-sectional study conducted in the One Stop Crisis Management (OCMC) Department of Bir Hospital, Mahaboudha, Kathmandu, Nepal. Data

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was collected from 14 April 2021 to 12 April 2024 after obtaining ethical approval from the Institutional Review Committee (Reference number: 256/2081/82). This study included all the gender physical violence cases presented to the OCMC Department of Hospital. Incomplete and missing data of the patients were excluded. Convenience sampling method was used. The sample size was calculated by using the following formula:

$$n = (Z^2 \times p \times q) / e^2$$

$$= (1.96^2 \times 0.159 \times 0.841) / 0.05^2$$

$$= 205$$

Where,

n= minimum required sample size

Z= 1.96 at 95% Confidence Interval (CI)

p= prevalence taken as 15.9⁶

q= 1-p

e= margin of error, 5%

The calculated minimum sample size was 205. However, 267 cases were included in the study.

Data was taken from the cases record file of OCMC cases presented to the hospital. All the cases were studied individually from the case records.

Data was entered into Microsoft Excel version 10 and analysis was done using IBM SPSS version 22.0.

RESULTS

Among 267, total cases of gender-based violence were found to be 77 (28.84%), 119 (44.57%), and 71 (26.59%) in the years 2078, 2079, and 2080 B.S respectively. The total percentage of male victims in those three years was found to be 9 (3.37%) and female victims were 258 (96.63 %). The maximum percentage of victims in those three years was found to be of the age group 25-34 years which was 108 (40.45%). The maximum number of GBV cases presented in the OCMC department in those three years were from the Brahmin/Chhetri caste group which was found to be 107 (40.07%) followed by the Janajati caste group which was found to be 104 (38.95%) (Table 1).

Table 1. Demographic characteristics of gender-based violence cases (n= 267).

Variables	Years			n (%)
Sex	2078	2079	2080	
Male	2 (0.75)	1 (0.37)	6 (2.25)	9 (3.37)
Female	75 (28.09)	118 (44.19)	65 (24.34)	258 (96.36)
Age (in years)				
15-24	16 (5.99)	20 (7.49)	22 (7.49)	58 (21.72)
25-34	35 (13.11)	48 (17.98)	25 (9.36)	108 (40.45)
35-44	20 (7.49)	37 (13.86)	11 (4.12)	68 (25.47)
45-54	4 (1.50)	8 (3.00)	2 (0.75)	14 (5.24)
≥ 55	2 (0.75)	2 (0.75)	3 (1.12)	7 (2.62)
Caste group				
Brahmin/Chhetri	36 (13.48)	44 (16.48)	27 (10.11)	107 (40.07)
Dalit	10 (3.75)	15 (5.62)	10 (3.75)	35 (13.11)
Janajati	22 (7.49)	53 (19.85)	29 (10.86)	104 (38.95)
Madheshi	0	4 (1.50)	4 (1.50)	8 (3)
Muslims	0	3 (1.12)	1 (0.37)	4 (1.50)
Others	9 (3.37)	0	0	9 (3.37)

Physical violence victims were found to be the highest, which was 149 (55.81%) and the second highest being physical and mental violence combined which was found to be 53 (19.85%). In the categories of presence or absence of disability cases visited in the OCMC department for 3 years,

it was found that the percentage of cases with disability was 14 (5.24 %) and absence of disability was 94.76% (253). The maximum percentage of types of disability was found to be in the category of multiple disabilities, which was 2.25% (Table 2).

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Table 2. Types of violence (n= 267).

Types of violence	Year			n (%)
	2078	2079	2080	
Physical	60 (22.47)	57 (21.35)	32 (11.99)	149 (55.81)
Mental	4 (1.50)	2 (0.75)	15 (5.62)	21 (7.87)
Physical and mental	12 (4.49)	26 (9.74)	15 (5.62)	53 (19.85)
Deprived of rights	0	12 (4.49)	3 (1.12)	15 (5.62)
Sexual	1 (0.37)	10 (3.75)	4 (1.50)	15 (5.62)
Physical and sexual	0	12 (4.49)	2 (0.75)	14 (5.24)

Among 267 cases, 14 (5.24%) had a disability with physical disability of 5 (1.87%), and mental disability of 3 (1.12%) (Table 3).

Table 3. Types of disability (n= 267).

Variables	n (%)
Disability	
Yes	14 (5.24)
No	253 (94.76)
Types	
Multiple disabilities	6 (2.25)
Physical	5 (1.87)
Mental	3 (1.12)

DISCUSSION

The majority of the type of violence in this study was found to be physical (55.81%) and the major disability was found to be multiple disabilities (2.25%) during three years

at OCMC centre which is similar to the study done and a review conducted by Ministry of Health and Population (MOHP) in March 2020⁷, Chaulagain et al⁸, Prachi Verma et al.¹⁰

According to this study, the victims of GBV were found to be female each year (96.36%) during the period of three years which is similar to the study done by Chaulagain et al.⁸ As per this study the maximum number of GBV occurred in the age group of 25-34 years (40.45%) during the period of three years which is similar to study done by Chaulagain et al⁸ but different from a study done by Sugam et al⁵ where the most affected age group was 15-24 years age group.

Regarding the GBV survivors, the majority was found in the caste group of Brahmin/Chhetri group (40.07%) in our study which was similar to the study done by Chaulagain et al⁸ at KAHS but was different from the study done by M Baral⁹ at OCMC of Kaski district where the most GBV survivors were from Dalit caste group.

There are a few limitations in this study. This study includes findings of GBV cases of only three years duration presented at OCMC center. Since this study was conducted in a single center using convenience sampling the results might not be generalized to a larger population. This study analyses only the findings of the standard OCMC records book of Nepal which compromises different subheadings like patterns of injuries, weapons used in GBV and sites of injuries.

CONCLUSIONS

In this study the prevalence of gender-based violence is found to be higher among females. Physical violence victims were found to be the highest in all types of violence. Gender-based violence is one of the major problems in developing nations like Nepal. The education and awareness regarding GBV must be the priority of developing nations like Nepal to decrease the cases of GBV. Nepal government should give priority to medico-legal cases and build strong legislation support for victims. The services provided by OCMC centers must be enhanced to provide psychosocial counseling to all the GBV survivors.

Conflict of Interest: None.

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Handling Stress and Burnout as a Medical Student: An Experience

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ABSTRACT

Stress is a natural human response that prompts us to address challenges and threats. Burnout is the effect of continuous stress. There are many ways to handle them, and preferences depend on the individual. Medical students have to deal with frequent high-stack exams and a demanding academic environment that increases the level of stress and anxiety. Sticking to hobbies, sharing tough times with friends or colleagues, group study, performing relaxing activities like yoga, listening to Lofi, regular exercise, and utilizing time in the best possible way help to deal with burnout. Proper balance diet, timetable, and continuous hard work are necessary in the medical field for academic achievement.

Keywords: anxiety, burnout, coping strategies, medical students.

INTRODUCTION

The practice of medicine is beyond science, which demands knowledge and compassion.¹ Despite being the most demanding path that opens countless doors, it's among the hardest and most challenging. Stress is a natural human response that prompts one to address challenges and threats.² There are two types of stress: acute {"fight or flight"} and chronic {cumulative load of minor stress}.³ Stressors are multiple, among all, at the peak is academic studies. Others are a lack of learning strategy and revision, sleepless nights before exams which are conducted frequently, and heavy workload.⁴ According to ICD-11, "Burnout is a syndrome conceptualized as resulting from chronic workplace stress that has not been successfully managed". In the study, the prevalence of burnout among medical students was 65.9%, and the remaining 12.7%

were exhausted, 11.4% were disengaged and 10.0% were in none of them.⁵

EXPERIENCE

Everything on the first day of medical school was new: new friends, seniors, teachers, and environment. Nervousness was at its peak, but we were excited and overwhelmed at the same time. The first few days were amazing. When we sat in class, we learned unheard-of new concepts and terminologies. Initially, the excitement and anticipation of wearing aprons, visiting practical labs, and getting hands-on experience exploring the human body consumed our days. The paramount chaos of settling into an unknown environment with unknown faces had taken charge, with little room to comprehend other changes. Soon the ritual of starting new routines turned into monotony: study, practical files, assignments, exams, and repeat. On most days, we find it difficult to manage time for ourselves. We used to lose hope as if we wouldn't be able to make it, and sometimes we used to push ourselves to complete tasks at any cost. Many days go rough, making us mentally tired. It takes time to adjust to a new place and new environment, till then those moments turn stressful and nightmare. Stress experienced after entering medical school affected our physical body, mental peace, emotions, and behavior. These led to problems like: ● altered bowel,

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- palpitations, nervousness,
- emotional distress,
- anxiety and panic attacks,
- triggering pre-existing depression and migraine,
- easy fatigue and burn-outs,
- dryness of mouth,
- sleep disturbance.⁶

We were often halted by:

- never-ending bulky content in the medical field,
- frequent high-stakes exams,
- strict attendance rules,
- the pressure to perform well in a demanding academic environment,
- fear of failing exams.

there was 11.4%

This led to high levels of anxiety, depression, and burnout. Exams times are the most stressful and time demanding where we have to cover the whole syllabus in a day gap before the exam. The anxiety before the exam led us to go blank and to state where we felt we remembered nothing. It's the main cause of anxiety attacks among medical students. When a study was conducted to understand the current situation in medical school about stress and its correlation in six medical colleges. The most frequently occurring sources of stress were time pressure (60.12%), fear of failure (52.02%), exam frequency (44.57%), high parental expectation stress (33.22%), and poor support of teachers (33.06%).⁷

ADDRESSING THE SOLUTION

We are aware of the proverb "Where there is a will, there is a way", the same goes for medical students. At every step, there is a challenge that makes us anxious and competition that makes the situation stressful to fit in. But as we face the challenges and go ahead, we learn to cope with everything. Slowly, as we started moving to familiarity with this routine, the monotony set in. Mental and physical health is the most important aspect to consider in the life of medical students. We focused on our health and shifted our eating habits from junk to healthy cooked foods and fruits, doing physical exercise, meditation, and light yoga in the room. During burnout times, we tried relaxing activities like listening to Lofi and talking with family members, friends, or colleagues. Many of us tried learning extra stuff other than studying, for instance, crocheting, painting, playing basketball, and swimming.

Regular exercise and involvement in hobbies are found to increase and boost our self-esteem and release hormones like dopamine, serotonin, oxytocin, and endorphins which are happy hormones.⁸ Furthermore, we regularly went for an evening walk during exam time to get out of daily chaos. Supporting each other and tutoring in a group with a subdivision of topics were the main ways to cover every topic. Moreover, it reduces stress and anxiety on exam days. The best way to reduce stress during exam times is to study regularly. It's handy during exams and useful for long-term memory. We made one of the considerable blunders that many medical students make: bulky study strategies and schedules like completing whole chapters in a day and long hours of study without appropriate breaks in between. We later found it to be one of the leading causes of burnout. Avoid bulky study schedules but instead, prioritize important topics, set realistic goals, learn to allocate time effectively, and break down large tasks into manageable chunks. Many of us fail to seek out help when we are going through rough days, creating a huge impact on mental health in the long run. We must not hesitate to discuss the challenges we are facing with mentors, professors, friends, or family members. Asking for help is never considered as our weakness, but a way of building our new strength. In between the competitive environment of medical school and the amount of time poured into studies, we often spend a lot of time alone having no time to interact with others, making medical school extra stressful.⁹ Nevertheless, there are many ways to bust the stress, for instance: be active, take control of problems, connect with people, spare some time for yourself, avoid unhealthy habits such as relying on alcohol, smoking, and caffeine, work smart rather than working hard and try to be optimistic in every situation.¹⁰ Thereupon, medical students should make an extra effort to connect with peers and family. We should know the importance of a healthy diet, learn how to maintain self-discipline, stick with the schedule, find a relaxing technique that works for us, and good sleep hygiene.

Way Forward

It is common to feel stressed and burnt out as a medical student, which plays a crucial role in determining one's achievement in life. Medical students face an intense curriculum along with long hours of study, struggling to maintain their personal lives. High expectations from family and teachers create the fear of failure and anxiety. Managing stress is key to academic success and overall development. These issues remain throughout life, so one must learn a coping strategy and stress management

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skills. Prepare mentally and emotionally to be strong enough to deal with any kind of situation in life. Anxiety attacks are common during exams, so preparation from the start of the study session and persistent hard work are a must. We must design the study timetable with breaks in between study sessions and rapid recall to minimize the load. Seeking help must be normalized, as it

is a way of building strength and not showing weakness. Therefore, prioritize self-care and mental health along with persistent study habits for success in life.

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