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# Nurses' nutritional care practice and associated factors for hospitalized surgical patients; the case of referral hospitals in Bahir Dar City, Ethiopia

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## Abstract

**Background** The prevalence of malnutrition in hospitalized patients continues to be high across countries, including Ethiopia. Although Nurses have key role to provide nutritional care, their practice is unknown in Ethiopia.

**Objective** we aimed to assess nurses' nutritional care practice and associated factors for hospitalized surgical patients in Bahir Dar city.

**Methods** An institution based cross-sectional study was conducted among 422 nurses in Bahir Dar City referral hospitals from February 1 to March 1/ 2023. Participants were selected by trained data collectors using simple random sampling. Data was collected using structured, self-administered and pre-tested tool and entered into Epi-info 7 & exported to SPSS version 23 for analysis. Multiple binary logistic regression used to identify factors and p-value of < 0.05 used to determine significant association with 95% CI odds ratio.

**Result** In this study, 410 of 422 nurses were participated. Overall, 143 (35%) 95% CI: 30.5, 39.8) of nurses had good practice on the nutritional care. Female nurses (AOR = 2.69, 95% CI, 1.62, 4.44), nutrition guidelines (AOR = 2.59, 95% CI, 1.52, 4.39), physician order (AOR = 1.82 95% CI, 1.11, 3.00), experience sharing with peers (AOR = 1.74, 95% CI 1.05, 2.87) nurse to patient ratio < 1:5 (AOR = 1.75, 95% CI, 1.01, 3.02), were positively associated with their practice. But, poor knowledge (AOR = 0.50, 95% CI, 0.30, 0.83), and unfavorable attitude (AOR = 0.51 95% CI, 0.30, 0.84) were negatively associated with their practice.

**Conclusion** The practice of nurses in nutritional care was low. Gender, access to nutritional information sources, physician orders, nurses to patient ratio, knowledge, and attitude of nurses were factors associated with their practice. Therefore; training, guideline access, experience sharing, and increasing nursing staff is crucial to provide optimal nutritional care for hospitalized patients.

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**Keywords** Referral hospitals, Nursing practice, Nutritional care

## Introduction

Surgery increases metabolic rate and catabolic reactions that result in muscle tissue breakdown, decreased energy supply, and prolonged recovery. In these cases, providing nutritional support is crucial to improve anabolism [1, 2]. Additionally, prolonged fasting is the main nutrition related problem in surgical patients. Hospital malnourishment could be related to operation-related fasting like prolonged preoperative fasting and intra-operative dietary interruptions [3]. In preoperative care, nothing should be taken orally from midnight to the day of surgery to ensure an empty stomach and prevent aspiration [4]. However, misunderstanding of nothing per oral (NPO) time and repeated canceled operations can lead to prolonged fasting.

A recent systematic review and meta-analysis revealed that the prevalence of malnutrition was 47% in surgical patients [5]. Unmet nutritional needs in surgical patients complicate postoperative recovery and result in poor response to medications [6]. Evidence found that 55.6% of hospitalized adult patients were malnourished in referral hospitals of Amhara region [7]. Hospital malnutrition is associated with longer length of stay, increased morbidity and mortality, high readmission rates, costs, and poor quality of life [8, 9]. Malnourished patients are more expensive compared with well-nourished patients [10] that can have high burden for health care system, families and caregivers.

In Ethiopia, hospitals provide three-meal services daily for inpatients. The provision of high quality meal services require coordination of nursing staff, management and nutrition personnel [11]. However, referral hospitals in Ethiopia, lack nutrition/dietetics professionals to identify, prevent and treat malnutrition for hospitalized patients. Thus, nurses have an important role in this care [9] due to their holistic care role, greatest patient contact and continuous overview of the patients' care needs.

Nurses must assess each patient's capacity to eat within 24 h after admission, develop individualized nutrition care plan, assess patient's mealtime, encourage and help patients in maintaining oral hygiene, and effectively manage periods of prolonged fasting [12]. This might help patients to maintain or improve their nutritional status and contribute to positive hospital experiences.

Although nutritional support is an essential part of surgical care [13], it is neglected in clinical practice. The study done in public hospitals' at intensive care unit in Addis Ababa found that only 46.2% of nurses practiced good nutritional care [14]. Previous studies found that nurses experienced difficulties to practice good nutritional care due to competing work priorities, lack of

knowledge, physicians' low focus on nutritional care, poor hospital conditions [15–18], lack of nutrition guidelines [14], poor documentation and communication of nutritional information were barriers in nutritional care practice [19]. On the other hand, nurses having nutrition training and the presence of nutrition guidelines and protocols improved the nutritional care practice [14]. Although Nurses' role is pivotal in nutritional care; their practice is unknown in Ethiopia. Therefore, this study was aimed to assess nurses' nutritional care practice and associated factors for hospitalized surgical patients in Bahir Dar city, Ethiopia.

## Methods and materials

### Study design, period and area

An institution-based cross-sectional study was conducted in Bahir Dar City referral hospitals from February 1 to March 1/ 2023. The referral hospitals in Bahir Dar city are Tibebe Ghion Specialized Hospital (TGSH) and Felege Hiwot Comprehensive Specialized Hospital (FHCSH). Both Hospitals have practiced elective and emergency surgery services. In addition, these hospitals provide meal services daily for hospitalized patients. During the study period, the total of 700 nurses was working in Bahir Dar city referral hospitals. The nurse to patient ration varies depending to the site they allocated. Eg in ICU 1: 2 and other wards 1:5 – 1:10.

### Source and study population

The source population was all nurses who are working in referral hospitals of Bahir Dar city. The study population was all nurses who have chance of annual rotation to surgical wards in the study area.

### Sample size determination and sampling technique

To determine the sample size, a single population proportion formula was used. The sample size of the study is determined by considering a 95% confidence interval, 5% margin of error, and 50% proportion as follows:

$$\begin{aligned}n &= (Z_{\alpha/2})^2 * P(1 - p) / (d)^2 \\&= 1.96 * 1.96 (0.5 * 0.5) / (0.0025) \\&= 384 \text{ Plus } 10\% \text{ non-response rate} \\&= 422\end{aligned}$$

Simple random sampling was used to select study participants. To select the study participants, first, the list of all nurses was taken from each referral hospital nursing director offices. Proportional allocation was done for each hospital and each working ward/unit. Of all nurses in Bahir Dar city referral hospitals, 422 nurses were

selected randomly by lottery method, using the nursing list as a framework.

### **Inclusion and exclusion criteria**

All nurses in referral hospitals of Bahir Dar city in the study period were included. Nurses on annual and maternity leave, seriously ill and nurses who are not eligible for annual rotation to surgical ward (neonatal nurses, pediatric nurses) were excluded from the study.

### **Operational definitions**

**Knowledge:** Nurses who scored the mean value or more were considered as having good knowledge and those who scored less than mean value were considered as having poor knowledge.

**Attitude:** Nurses who scored the median value or more were considered as having a favorable attitude and those who scored less than the mean were considered as having unfavorable attitude.

**Practice:** Nurses who scored the mean value or more were considered as having good practice whereas; those who scored less than the mean value were considered as having poor practice.

### **Data collection instrument**

A structured self-administered questionnaire was used. The questionnaire that measures nutrition care practice adapted from literatures [20, 21]. The questionnaire prepared in English version. It has four sections: part 1: the Socio-demographic, occupational and environmental related data (23 items); part 2: the practice related questions (12 items); part 3: the knowledge related questions (11 items); and part 4: the attitude related questions (11 items) were used that have 4-point likert scale; 1: strongly disagree, 2: disagree, 3: Agree, 4: strongly agree.

### **Data collection procedure**

Data collectors were provided the questionnaire for all selected nurses based on the list of nurses in each department after obtained informed consent. After respondents complete their responses, data collectors received each questionnaire. Respondents who refused to respond, incomplete response & not return the questionnaire were taken as non-response.

### **Data quality control**

Four professional nurses collected data after taking one-day training. A pre-test was conducted on 38 nurses at Addis Alem hospital to check the consistency and clarity of the questionnaire and few modifications were made to the questionnaire. The collected data were checked manually for completeness and consistency daily by the supervisor and principal investigator. Face validation was

done by nutrition expert and Cranach alpha was computed to check the reliability of items ( $\alpha = 0.82$ ).

### **Data management and analysis**

Data were checked manually for completeness and consistency of responses. Then it was entered into Epi.info, version 7 and exported into SPSS version 23.0 software for further cleaning and analysis. Frequencies, percentages, mean and median scores were computed to summarize variables. To identify the association between dependent and independent variables, bivariable and multiple logistic regression analysis was applied. Variables that have a p-value less than 0.2 in the bivariable binary logistic regression analysis were entered to multiple binary logistic regression analysis. A p-value less than 0.05 were considered as statistically significant. A statistical association was interpreted by using 95% CI with adjusted odds ratio. Multicollinearity was checked using variance inflation factor (VIF) and the model fitness was tested by using the Hosmer-Lemeshow goodness of fit test and it was fitted ( $p = 0.629$ ). The result was presented using tables, graphs, and text.

## **Result**

### **Socio-demographic characteristics of participants**

In this study, 410 of 422 nurses were participated with the response rate of 97%. Of the study participants, 224(54.6%) were females and the mean age of the participants was  $29 \pm 4.4$  years. Most of the participants 371(90%) were Orthodox, 266(68%) had less than 5 years' experience and 382(93%) had first degree education level (Table 1).

### **Working environment related characteristics of the study participants**

Only 63(15%) of the respondents took training on nutrition. More than half of the study respondents' working areas have no separated room for nutritional care, nutrition assessment, and treatment guidelines. About 307 (75%) of respondents work with nurse to patient ratio greater than 5 patients per nurse (Table 2).

### **Knowledge and attitude of nurses towards nutritional care for surgical patients**

In this study, only 152 (37%), and 232(56%) of nurses have good knowledge, and favorable attitude towards nutritional care of surgical patients, respectively.

### **Practice of nurses towards nutritional care for surgical patients**

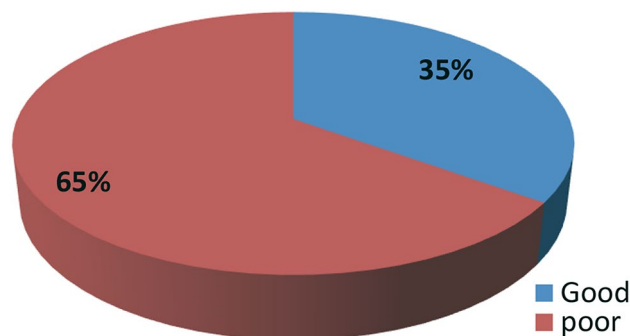
In this study, 143 (35% (95%CI: 30.5, 39.8)) of nurses have good practices towards nutritional care of surgical patients (Fig. 1).

**Table 1** Socio-demographic and education background characteristics of participants

Variable		Frequency	Percent
Gender	Male	186	45.4
	Female	224	54.6
Age	< 30	315	76.8
	≥ 30	95	23.2
Religion	Orthodox	371	90.5
	Muslim	29	7.0
	Others	10	2.5
Marital status	Single	169	41.2
	Married	226	55.1
	Divorced	13	3.2
	Widowed	2	0.5
Education level	Diploma	20	4.9
	First Degree	382	93.2
	Master's degree	8	2.0
Profession	Compressive nurse	357	87.1
	Surgical nurse	6	1.5
	Emergency and critical care nurse	11	2.7
	Clinical nurse	36	8.8
Education program	Regular	275	67.1
	Extension	135	32.9
Graduation institution	Government	302	73.7
	Private	108	26.3
Work experience	< 5 years	266	64.9
	≥ 5 years	144	35.1

#### Factors associated with nurses' practice towards nutrition care of surgical patients

In multiple binary logistic regression analysis, sex, reading nutrition books, physician order, experience sharing with peers, nurse to patient ratio, and knowledge of nurses and attitude of nurses were significantly associated with nurses' nutritional care.

**Fig. 1** Nutritional care Practice among nurses for surgical patients in Bahir Dar city referral hospitals

Female nurses were more than 2 times more likely to have a good practice on the nutrition of surgical patients (AOR=2.69, 95% CI, 1.62, 4.44) compared with male nurses. Nurses who received nutrition care orders from the physicians were nearly twice (AOR=1.82, 95% CI, 1.11, 3.00) more likely to have good practice than their counterparts. Similarly, nurses who read nutrition guidelines were about 2.6 times (AOR=2.59, 95% CI, 1.52, 4.39) more likely to have a good nutrition care practice compared with the counterparts. Nurses who had nutrition information sharing experience with their peers were nearly two fold (AOR=1.74, 95% CI, 1.05, 2.87) more likely to have good nutritional care practice compared with the counterparts. Nurses having a nurse to patient ratio less than 1 to 5 were 1.8 times (AOR=1.75, 95%CI, 1.01, 3.02) more likely to have good nutrition practice compared with greater than 1 to 5 ratio. Nurses who had poor knowledge were 50% (AOR=0.50, 95% CI, 0.30, 0.83) less likely to have good nutrition practice for surgical patients compared with nurses having good knowledge. Similarly, nurses who had unfavorable attitude were 48% (AOR=, 95% CI, 0.51, 0.30) less likely to

**Table 2** Working environment and educational background related characteristics of study participants in Bahir Dar City Administration referral Hospitals North West Ethiopia

Variable		Frequency	Percent
Current working hospital	FHCSH	233	56.8
	TGSH	177	43.2
Nutrition training		15	3.7
Presence of nutrition assessment tools		148	36.1
Presence of separated room to treat malnutrition		168	41.0
Physicians order nutrition for patients		220	53.7
Presence of nutrition guideline		120	29.3
Using internet to search nutritional care evidence		191	46.6
Read nutrition guideline within one year		206	50.2
Read nutrition journal within one year		69	16.8
Sharing knowledge with peers about nutritional care		164	40.0
Nurse to patient ratio	1–5	103	25.1
	> 5	307	74.9

Note: FHCSH: Felege-Hiwot Comprehensive Specialized Hospital, TGSH: Tigrbe Ghion Specialized Hospital

**Table 3** Bivariable and multiple binary logistic regression analysis of factors associated with nurses' practice of nutritional care for surgical patients in Bahir Dar City referral hospitals

Variable		Practice		COR(95% C.I.)	AOR (95% C.I.)
		Good	Poor		
Gender	Female	87	137	1.47(0.97, 2.22 )	2.69 (1.62, 4.44 )*
	male	56	130	1	1
Working hospital	FHCSH	69	164	0.58 (0.38, 0.88)	0.88 (0.51, 1.53)
	TGSH	74	103	1	1
Presence of nutrition assessment materials	Yes	68	80	1	1
	No	75	187	0.47 ( . 37, 0.83 )	1.23 (0.73, 2.07)
Separated room for malnutrition treatment	Yes	74	94	1	1
	No	69	173	0.51 (0.34, 0.78 )	1.45 (0.86, 2.45)
Doctors order nutrition support routinely	Yes	95	125	2.24 (1.47,3.42)	1.82 (1.11, 3.00)*
	No	48	142	1	1
Using internet to search nutritional care evidence	Yes	77	114	1	1
	No	66	153	0.63 ( 0.38, 0.83 )	0.85 (0.51, 1.43 )
Read nutrition guideline within one year	Yes	94	112	2.65 (1.74,4.05)	2.59 (1.52, 4.39)*
	No	49	155	1	1
Read journal within one year	Yes	29	40	1	1
	No	114	227	0.69 (0.38, 0.86 )	0.91 (0.45, 1.84)
Read nutrition book within one year	Yes	64	100	0.57 (0.38, 0.86 )	0.77(0.45, 1.32 )
	No	79	167	1	1
Experience sharing with peers	Yes	98	133	2.19(1.43, 3.36)	1.74 (1.05,2.87)*
	No	45	134	1	1
Number of patients per nurse	1–5	95	125	2.24 (1.45, 3.62)	1.75 (1.01, 3.02)*
	≥ 5	48	142	1	1
Knowledge of nurse	Poor	71	187	0.42(0.29, 0.66)	0.50, (0.30, 0.83 )*
	Good	72	80	1	1
Attitude of nurse	Unfavorable	45	134	0.45(0.35, 0.77)	0.51( 0.30, 0.84 )*
	Favorable	98	133	1	1

\*  $P < 0.05$ : significantly associated, COR: Crude odds ratio AOR: Adjusted Odds ratio

practice good nutritional care compared with nurses who had favorable attitude (Table 3).

## Discussion

Nurses play a pivotal role to ensure adequate nutritional care for the patient at the bedside. Despite the increasing number of malnutrition cases in hospitals, the role of nurses in nutritional care is generally neglected in clinical practice [22]. Our study aimed to assess nurses' nutritional care practice and associated factors in surgical patients at referral hospitals of Bahir Dar city.

Nearly one-third of nurses practiced good nutritional care for surgical patients. This suggests that most nurses provide less nutritional care service. This implies that surgical patients who require nutritional support may not obtain it, which increases the risk of malnourishment, poor recovery and complications. Furthermore, it can have a significant effect on the healthcare system, families, and caregivers.

The finding of this study was lower than the study conducted in Egypt [23] and Addis Ababa [14]. This could be explained by the difference that our study was conducted in all wards of the hospital, where nurses have the

opportunity of annual rotation to surgical ward. Whereas, the studies in Addis Ababa and Egypt were conducted only in critical care units (ICU) that might have better nutritional care practice. In fact, the ICU has a low nurse-to-patient ratio, which might have a lower workload to practice good nutritional care. Additionally, the Egyptian study was include nurses that have at least one year of experience who might have better skill in nutritional care. Furthermore, it could be due to the lack of knowledge, and shortage resources in our set up. Evidence found that lack of resources in clinical setting hinder nurses nutritional care practice for patients [17].

However, our finding is higher than the study done in Scandinavia [24]. This may be attributed to the difference in study period and data collection method. In contrast to our study, which employed a printed questionnaire and was conducted face-to-face, the Scandinavian study used mail to gather data, which may result in participants didn't completely understand its' purpose.

Female nurses had good nutritional practices for surgical patients compared to males. This might be due to cultural practice unlike males; females have better meal preparation and feeding experience. The order



of nutrition intervention by staff category was found to be a factor in nutrition practices. Orders from doctors showed better implementation tendencies. This could be related to nurses' personal attitudes to professional categories. This is supported by evidence that physicians' lack of focus on nutritional care compromised nursing staff's nutritional practices, resulting in suboptimal nutritional intervention [17]. It has its own limitation in helping patients that could lead poor clinical outcome. It is better that nurse to see both the order and patients' condition to help them than consider a person who ordered the intervention.

Nurses who read nutrition guidelines were provide good nutritional care compared with the counterparts. This is consistent with the study done in Addis Ababa [14]. In addition, practice sharing experiences with colleagues have provided good nutritional care practice compared with the counterparts. It is true that if everyone reads updated guidelines and participates in experience sharing, they can update themselves and understand the adverse consequences of malnutrition. Thus, they may practice better nutritional care on their patients timely and be active participants in information sharing with other staffs.

In facilities or work units with a relatively low nurse-to-patient ratio, nutritional support for surgical patients was relatively appropriate. This is supported by the American Nurses Association that optimal nursing staff is crucial to improve the quality of patient care [25]. This might be related to nurses' workload and inadequate time to read and perform nutritional care for patients. If nurses are busy with many tasks, they may not be effective in helping the patients as per the standard. They may not also read more on the program to update themselves [11].

Nurses with poor knowledge were unable to practice adequate nutritional care for hospitalized surgical patients which are supported by similar studies [26–29]. This implies that if less knowledgeable people are involved in nutrition care, the quality of services can be compromised which might result in poor patient outcome. In the same line, nurses' with unfavorable attitude had negative effect on the practice of nutritional care. This is supported by similar study in Tanzania [30]. This implies that despite having good knowledge, the attitude of nurses is also important to provide good nutritional care practice.

#### Limitation and strength of study

As a limitation, this study was conducted in a single city and cannot be generalized to other parts of the country. There may be some bias in terms of recall and response. However, it is the first study in Ethiopia that provides new insights into nutritional care practice, which may be the strength of the study.

#### Conclusion and recommendations

In this study, nurses' nutritional care practices for surgical patients' were found to be low. Gender, reading nutrition guidelines, orders from physicians, experience sharing with peers, and nurse to patient ratio, knowledge, and attitude had statistical association. Based on our findings, the following recommendations are forwarded:

It is better if hospital managers in collaboration with other concerned offices access information sources like nutrition guidelines in hospitals. It is also crucial to improve staffs awareness on nutritional support programs through short term training, peer education/experience sharing/, brushers, posters and mass media. Overcoming the nurses' workload by increasing the number of nurses and mix-up more experienced and less experienced nurse can support program performance. Nurses need to help patients based on their dietary need and the request ordered. Researchers need to conduct qualitative study by include physicians and hospital managers.

#### Abbreviations

AOR	Adjusted Odds Ratio
BDU	Bahir Dar University
BMI	Body Mass Index
BW	Body Weight
CI	Confidence Interval
COR	Crude Odds Ratio
FHCSH	Felege Hiwot Comprehensive Specialized Hospital
GI	Gastro Intestinal
ICU	Intensive Care Unit
LOS	Length of Stay
TGSH	Tibebe Ghion Specialized Hospital
USA	United States of America

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#### Author contributions

A.E.: were made the conception and design of the study, analysis, interpretation of data, drafting the article, M.A. and K.E.: revising it critically for important intellectual content; A.E., G.B., Y.T., S.T., M.A., T.A., H.B., W.T.: involved in analysis and interpretation of data, G.K., O.M., S.M., A.G.: involved in the field work for data collection. All authors read and approved the final manuscript.

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#### Data availability

No datasets were generated or analysed during the current study.

#### Declarations

##### Ethics approval and consent to participate

A support letter was obtained from Bahir Dar University, department of applied human nutrition. Ethical clearance was also issued from the Amhara Public health institute office with ethical approval number R/No.231/2015 and delivered to the respective health institutions. In addition, informed consent was obtained from all the participants.

**Consent for publication**

Not applicable.

**Competing interests**

The authors declare no competing interests.

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