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A Study to Assess Factors Associated with Urinary Catheterization Practice among Nurses in Three Tertiary Hospitals of the Amhara Region, Ethiopia: A Cross-Sectional Study

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Abstract

Background: Urinary catheterization is a procedure used to drain the bladder and collect urine, through a flexible tube called a catheter. Poor urinary catheterization practice in catheterization increases the risk of developing urinary catheter complications such as catheter-associated urinary tract infection, a leading cause of infection.

Objective: To assess urinary catheterization practice level, and its associated factors among Nurses at the three tertiary Hospitals in the Amhara region, Northwest Ethiopia, 2021.

Design: A facility-based cross-sectional study design was conducted.

Method: Sample size was proportionally allocated. Then data were collected using a simple random sampling technique. Bivariate and multivariable logistic regression analyses were conducted. A P-value-value, with 95% CI with the correspondence AOR was used to declare significant variables in Bivariate and multivariable logistic regression.

Results: Four hundred twenty-four participants were included. 47.1% of Nurses had poor catheterization practice. Educational qualification (AOR = 3.163, 95% CI 1.389 – 7.204), Low knowledge level (AOR = 3.808, 95% CI 1.940–7.474), and inadequate Urinary catheter material (AOR = 1.866, 95% CI 1.219 – 2.859) were associated with catheterization malpractice.

Conclusion: In this study, nearly half (47.1%) of nurses had poor urinary catheterization practice. Educational level, availability of catheterization materials, working hospital, and knowledge of respondents were significant variables in this study.

Keywords: Ethiopia; Malpractice; Nursing; Urinary Catheterization

Introduction

Urinary elimination is a basic human function that can be compromised by illness, surgery, and other conditions. Urinary catheterization is the aseptic process of inserting a sterile hollow, pliable tube (catheter) into the urethra to facilitate urine drainage into a closed bag system [1,2]. There are two types of urinary catheterization: indwelling and intermittent. Indwelling urinary catheterization is categorized as either short-term (in situ less than 28 days) or long-term (in situ greater than 28 days). An intermittent catheter is inserted into the urethra to empty the bladder

and then removed as soon as the bladder is empty [3].

Urinary catheterization is a common Nursing procedure that should be performed as the last option when a full holistic assessment has shown no other suitable alternatives can be used. Urethral catheters are often indicated in circumstances such as: during and post-surgery; monitoring renal function during critical illness; acute urinary retention; chronic urinary retention; irrigating the bladder if haematuria is a concern, for investigations, such as urodynamics and instilling medication into a bladder [4,5]. Urinary catheterization carries many risks, including trauma, urethral erosion, urinary tract infection, bacteraemia, urethral perforation, bladder calculi, neoplastic changes, and sepsis [6]. Urethral catheterization is contraindicated in the following conditions: unexplained bleeding, history of bladder tumor, history of infection, risk of urethral damage, false passages, risk of damage to internal and external sphincters, urethral surgery, and gender reassignment surgery [3].

Only those health care professionals who are trained and have adequate knowledge and understanding of the urinary tract, the catheterization process, and the principles of asepsis should insert and change urethral catheters. The initial orders to insert a catheter must be from a suitably qualified medical practitioner, Nurse practitioner, advanced practice Nurse, and experienced urological registered nurse practicing within their scope of practice and according to local guidelines [7]. Urinary catheterization should be safe nursing care with quality and a lower cost, based on updated information [8].

Nurses are considered the primary healthcare providers responsible for inserting and maintaining urinary catheters. Urinary catheterization is the routine practice of nurses. So they have a role in the prevention of urinary catheterization complications [9]. In some healthcare facilities, Nurses do not aware that patients have urinary catheters. Another's urine bags are on the floor, in the patient's bed and regular emptying is not done in a timely. Especially in healthcare settings found in developing countries, urine bags are kept in the patient's trouser pockets, in their bed, or even on a dirty floor. Patients stay on the urinary catheter when it's no longer needed and catheter care, maintenance, and timely removal are very poor [10].

Poor practice of urinary catheterization will delay the patient's progress and date of discharge, increasing morbidity, mortality, and an overall hospital stay, which later increases the total cost of the patients. It will also end up with severe complications by developing urinary tract infections [11]. Poor urinary catheterization practice by Nurses during urinary catheterization will result in Hospital-acquired urinary infections, which add $676 to the cost of hospitalization, and when bacteremia occurs, this additional cost reaches $2,836 [12].

The reduction of urinary catheter complications is an interdisciplinary effort requiring consistent attention and support from infection prevention, nursing education, quality improvement, information technology, and hospital administration. Empowering Nursing staff and providing clear protocols for pre-insertion, insertion, and post-insertion are key to preventing urinary catheterization malpractice [13].

The objectives of this study were

1. To determine the level of urinary catheterization practice level among Nurses.
2. To identify factors associated with urinary catheterization practice level among Nurses.

Methods

Study Area and Period

This study was conducted in the three Tertiary Hospitals of the Amhara region from March 22, 2021, to April 30/2021. Debre Markos comprehensive and specialized hospital is located in Debre Markos town, 299 km northwest of the capital Addis Ababa, Ethiopia, and 256km far from Bahir-Dar, the main city of Amhara Regional State [14]. Tibebe Gion comprehensive hospital is found in Bahridar city administration and is 556km from Addis Ababa. Felege Hiwot comprehensive and specialized Hospital is also found in Bahir Dar [15].

Source Populations

Nurses working at Debre Markos, Tibebe Gion and Felege Hiwot Comprehensive and Specialized Hospitals.

Study Populations

Nurses working in the medical ward, surgical ward, emergency, and intensive care units of Debre Markos, TibebeGion, and Felege Hiwot Comprehensive and Specialized Hospitals were selected randomly.

Inclusion Criteria

All Nurses working in the medical ward, surgical ward, emergency, and intensive care units of Debre Markos, Tibebe Gion, and Felege Hiwot Comprehensive and Specialized Hospitals during data collection time.

Exclusion Criteria

Nurses working in the medical ward, surgical ward, emergency, and intensive care unit of Debre Markos, Tibebe

Gion, and Felege Hiwot Comprehensive and Specialized Hospitals who are not willing to participate.

Sample Size Determination

The sample size was determined using a single population proportion formula. The following parameters were taken into consideration to calculate the sample size: The proportion of poor urinary catheterization practice is 50%, the margin of error is 5%, and there is a there is a 95% confidence interval. Since there was no study reported on this topic in Ethiopia, 50% was taken to calculate the sample size.

$$n = Z_{\alpha_{/2}^2} \frac{p(1-p)}{d} 2$$

$$\frac{(1.96)\ 2.\ 0.5(1-0.5)}{(0.05)^2} = 384.16 \approx 384$$

Plus 10% non-response rate ≈ 39. Then, the total sample size was 423.

Sampling Procedure

Three tertiary hospitals were selected by the lottery method and samples were taken from the medical, surgical, emergency, and intensive care units of each respective hospital. Then proportionally allocated to each hospital and unit. Finally, the estimated number of Nurses was selected using a simple random sampling technique.

Study Variables

Dependent Variables: Urinary catheterization malpractice
Independent Variables: The independent variables of the study were socio-demographic characteristics (age, sex, religion, and ethnicity), Participant related factors (Infection prevention training, Work experience, educational level, Attitude, and Knowledge), and Institutional related factors (Working unit, Availability of equipment, Availability of catheterization guidelines, Supportive supervision and working hospital).

Operational Definitions

Attitude: participants with a score greater than or equal to the mean were considered to have a good attitude towards urinary catheterization, and participants with a score less than the mean were considered to have a poor attitude [11].

Knowledge: Appropriate responses from nurses about urinary catheterization were obtained through the structured knowledge questionnaires, and those who scored 8–10 out of 10 points were considered to have High-Level Knowledge, those who scored 5-7 out of 10 points were considered to have Moderate knowledge; and those who scored 0–4 out of 10 points were considered to have low-Level Knowledge [16].

Practice: The appropriate practice of nurses towards urinary catheterization was based on the structured observational checklist, and those who correctly practiced 14 and above from the 21 checklists were considered to have good practice, whereas those who practiced less than 14 were considered to have poor practice [16].

Data Collection Instrument and Procedure

The tool consists of a structured questionnaire and an observational checklist. The knowledge and Attitude parts contain 10 and 11 questions, respectively, and the observational checklist has 21 items to assess the urinary catheterization practice of nurses. It has been adapted from different reviewed literature and was used to assess the extent of practices of nurses toward urinary catheterization practice [11,16-18]. The questionnaires were administered in English to all nurses. The knowledge and attitude questionnaires were given to nurses who agreed to participate after the observational checklist was filled out by data collectors to decrease the effect of information from knowledge questions on practice. No electronic device was allowed to be used while filling out the questionnaires, such as a computer or smartphone.

Data Quality Control

Data collectors and supervisors were trained for one day about the purpose of the study, methodology, how to conduct the observation study, how to reduce the Hawthorne effect, how to obtain consent, how to maintain confidentiality, and how to respect the rights of the participants in the data collection procedures before actual data collection time. The questionnaire was checked for clarity, comprehensiveness, and content validity by an expert, an experienced ICU nurse, and researchers by face validity, and a pilot study was also conducted on 5% of nurses outside the study area (Hiwot Fana specialized university hospital) to test the clarity, visibility, and applicability of the study and tool. The reliability of the tool was examined by using Cranach's alpha to assess the internal consistency of the scale.

Data Processing and Analysis

Data were coded and entered using Epi-Data Version 4.2. Then, exported to SPSS Version 25 for further analysis. Descriptive statistics for continuous variables and descriptive summaries for categorical variables were presented. Both bivariable and multivariable binary logistic regression

models were fitted and VIF was used to check the presence of outliers and multicollinearity among independent variables. Variables with p-values <0.25 in the bivariate analysis were entered into the multivariable analysis.

Model fitness was checked using Homer-Lemeshow goodness-of-fit. Finally, variables with p-values < 0.05 were considered statistically significant factors in poor urinary catheterization practice. The adjusted odds ratio with its 95% CI is reported in the final binary logistic regression table.

Ethical Consideration

The study was conducted after getting ethical clearance from the research ethical clearance committee of Debre markos University Health Science College, and then the letter was submitted to the three tertiary Hospitals. These three hospitals were approved, and the approval letter was submitted to the unit managers to be allowed to start the data collection from the Nurses of the unit. Nurses were informed that the obtained data was only to be used for research purposes and not for their assessment. Written informed consent was obtained after an explanation of the aim of the study during questionnaire administration.

Results

Socio-Demographic and Institutional Characteristics of Participants (Nurses)

A total of 423 participants were involved, with a response rate of 98.111%. Of these respondents, almost all (98.8%) were from the Amhara ethnic group (92). 8% were orthodox in religion, and nearly half (49.5%) were between the ages of 26 and 30, with a median age of 29 (± interquartile range 5). More than half (52.4%) were female.

In terms of educational qualifications, the majority of the participants (85.3%) had earned a bachelor's degree. More than half (55.3%) of participants answered that they didn't take training about infection prevention. More than half, 54.8%, had less than five years of working experience.

Nearly half, 199(47.8%) of the respondents were from Felege Hiwot, 97(23.3%) were from Debre Markos and the remaining 28.8% were from Tibebe Gion comprehensive and specialized hospitals. The surgical ward, Emergency, Medical ward, and ICU accounted for 138 (33.2%), 118 (28.1%), 90 (21.6%), and 70 (16.8%) of the total, respectively. More than half (53.6%) of the respondents respond that they have no adequate urinary catheterization materials. More than three-fourths (78.8%) of respondents had no urinary catheterization guidelines. For further information (Table 1).

Variables	Category	Frequency	Percent %
Sociodemographic factors			
Age	20-25	63	15.2
	26-30	206	49.5
	31-36	99	23.8
	>36	48	11.5
Sex	Male	198	47.6
	Female	218	52.4
Religion	Orthodox	386	92.8
	Muslim	22	5.3
	Protestant	8	1.9
Ethnicity	Amhara	411	
	Others	5	
Working Hospital	Debre Markos	97	23.4
	Felege Hiwot	199	47.8
	Tibebe Gion	120	28.8
working unit	Medical ward	90	21.6
	Surgical ward	138	33.2
	Emergency Ward	118	28.4
	Intensive Care Unit	70	16.8
Supportive supervision	Yes	136	32.7
	No	280	67.3
Urinary catheterization material	Yes	201	46.4
	No	215	53.6
Urinary catheterization guideline	Yes	88	21.2
	No	328	78.8

Table 1: Socio-demographic and institutional Characteristics of Participants (N = 416).

Extent of Practice Towards Urinary Catheterization

The practice of Nurses was assessed before, during, and after urinary catheterization phases by using an observation checklist adapted from revised literature [11,16]. In this study, nearly half of nurses (47.1%) had poor urinary catheterization practice, while the remaining 220 (52.9%) had good urinary catheterization practice. The participants' minimum and maximum practice scores for urinary catheterization practice were 5 and 21, respectively, while the mean values were 13.709 with a standard deviation of ±2.84.

In the pre-catheterization phase of urinary catheterization, the majority of Nurses (94%) correctly identified the correct indication for urinary catheterization before catheter insertion. Nearly two-thirds of nurses (63.2%) did not wash their hands before inserting a urinary catheter. During the catheter insertion phase, nearly three-quarters (80.5%) of nurses used a non-touch technique during catheter insertion, whereas nearly three-fourths (76.2%) of nurses didn't clean the urethral meatus during urinary catheter insertion.

Finally, in the post-insertion phase, most nurses (86.8%) keep the collecting bag below the bladder following catheter insertion. For more than half of the respondents, hand cleaning and noting essential data in the medical record after urinary catheter insertion were insufficient (59.9%). For further information (Table 2).

Questions	Yes Frequency (%)	No Frequency (%)
Practices before Catheter Insertion		
The patient meets the appropriate indications.	391(94)	25(6)
Informed consent is obtained from the patient.	314(75.5)	102(24.5)
Explain indications of catheterization	228(54.8)	188(45.2)
Maintain patient privacy.	256(61.5)	160(38.5)
Assist and position the patient, depending on sex.	343(82.5)	73(17.5)
Prepare and place the required equipment on the trolley	219(52.6)	197(47.4)
Wash hands before inserting the catheter	153(36.8)	263(63.2)
Hand rub with sanitizer	177(28.1)	299(71.9)
Practices during Catheter Insertion		
Use an aseptic technique to insert the catheter	288(69.2)	128(30.8)
Clean urethral meatus	99(23.8)	317(76.2)
Use lubricant jelly.	297(71.4)	119(28.6)
Use a non-touch technique during insertion.	307(73.8)	109(26.2)
Use one catheter for one insertion attempt.	335(80.3)	81(19.7)
Secure indwelling catheter properly	301(72.4)	115(27.6)
Practices after Catheter Insertion		
Keep the catheter and collecting tube free from kinking.	348(83.7)	68(16.3)
Keep the collecting bag below the bladder	361(86.8)	55(13.2)
Keep the urine collection bag off the floor.	312(75)	104(25)
Assist patient to a comfortable position	337(81)	79(19)
Clean areas, remove gloves, and dispose of equipment in the proper receptacle.	283(68)	133(32)
Wash hands and Document relevant data in the patient record.	169(40.6)	247(59.4)
Hand rub with sanitizer.	244(58.7)	172(41.3)

Table 2: Level of urinary catheterization practice of Nurses in terms of urinary catheterization procedural steps (N = 416).

Knowledge and Attitude Level of Nurses Towards Urinary Catheterization

Nurses Knowledge toward Urinary Catheterization: This study revealed that less than a quarter of Nurses (20%) had a high level of knowledge. Nearly half of the respondents (49.5%) had a moderate level of knowledge about urinary catheterization, while the remainder (30.5%) had a low level of knowledge.

In terms of the distribution of respondents based on the right responses to knowledge questions, the question on the suitable technique used for indwelling urinary catheter insertion had the most correct replies (75.2%). The question that requests an adequate indication for urinary catheterization was the most frequently misunderstood. Only 27.4% correctly respond to it. For further information (Table 3).

Questions	Frequency (%)	
	Yes	No
Among the following, what is an inappropriate indication for indwelling urinary catheterization?	157(37.7)	259(62.3)
Which is an appropriate indication of urinary catheterization among the following?	114(27.4)	302(72.6)
Read the following carefully and select the proper technique used for indwelling urinary catheter Insertion?	313(75.2)	103(24.8)
As a nurse in Hospital, if you find that the indwelling urinary catheter is obstructed during your patient assessment, what are you going to do?	132(31.7)	284(68.3)
One of the following is not a nursing action to prevent infections from urinary catheters:?	127(30.5)	289(69.5)
Before inserting a urinary catheter, a nurse has to perform all the following to prevent catheter-associated infections:	245(58.9)	171(41.1)
When will you be prepared for a urinary catheterization?	265(63.7)	151(36.3)
All the following are complications of Urinary catheterization except:	298 (71.6)	118(28.4)
Which one of the following is not a proper technique for urinary catheter maintenance	286 (68.8)	130(31.2)
Select the inappropriate techniques for urinary catheter insertion;	299(71.9)	117(28.1)

Table 3: Nurses' Knowledge towards Urinary Catheterization (N = 416).

Nurses Attitude toward Urinary Catheterization

The study found that more than half (54.1%) of nurses had a good attitude, and the remaining (45.9%) had a poor attitude towards urinary catheterization practice. The mean attitude score of the respondents was 36.92. For further information (Table 4).

Frequency (present)					
Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Delay in urinary catheterization may be related to the perception of nurses as having a secondary role to doctors.	60(14.4)	74(17.8)	56(13.5)	99(23.8)	127(30.5)
The use of gloves and gowns during manipulation of the UC decreases the incidence of UC complications.	25(6.0)	35 (8.4)	36 (8.7)	119 (28.6)	201 (48.3)
I support it if hospitals have a catheter-associated infection prevention team	22 (5.3)	50 (12)	47	135	162
If I had good knowledge and practice in UC practice, I will use it	38 (9.1)	52 (12.5)	61 (14.7)	137 (32.9)	128 (30.8)
Urinary catheterization is a very serious issue.	128 (30.8)	101 (24.3)	51 (12.3)	67 (16.1)	69 (16.6)
It helps if urinary catheterization practice is on the high priority list of hospitals	51 (12.3)	55 (13.2)	49 (11.8)	141 (33.9)	120 (28.8)
UC complications are a common preventable problem.	102 (24.5)	109 (26.2)	47 (11.3)	85 (20.4)	73 (17.5)
Maintaining a closed drainage system prevents urinary catheterization-associated infections.	32 (7.7)	63 (15.1)	67 (16.1)	138 (33.2)	116 (27.9)
The catheter should be removed whenever it is convenient for the healthcare provider;	59 (14.2)	80 (19.2)	40 (9.6)	141(33.9)	96(23.1)
The catheter can be inserted for the nursing staff's convenience	71 (17.1)	86 (20.7)	47 (11.3)	127 (30.5)	85 (20.4)

Table 4: Frequency Distribution of Nurses' Attitudes toward Urinary Catheterization (N = 416).

Factors Affecting the Urinary Catheterization Practice of Nurses

Bivariable and multivariable logistic regression analyses were used to explore the relationship between each independent variable and the dependent variable. Variables having p-values less than 0.25 in the bivariable analysis were entered into the multivariable analysis. Statistically significant factors of urinary cauterization practice were variables with p-values less than 0.05. Of all variables, educational level, working Hospitals, knowledge level,

and availability of urinary catheterization materials were statistically significant variables with a p-value < 0.05 in the multivariable analysis outcome and report, as they had a statistically significant correlation with the urinary catheterization practice of nurses.

Degree holders were nearly three times more likely to commit poor urinary catheterization practices than master's holders (AOR = 3.163, 95% CI = 1.389–7.204). When comparing nurses with low knowledge levels (AOR = 3.808, 95% CI 1.940–7.474) and moderate knowledge levels (AOR = 3.581, 95 percent CI 1.868–6.626) to those with high knowledge levels, the odds of poor practice were 3.808 times lower in low and 3.581 times higher in moderate knowledge level than high knowledge level. Nurses who say they don't have enough catheterization material are nearly twice as likely to practice poor urinary catheterization as those who say they did (AOR = 1.866, 95 percent CI 1.219 – 2.859). For further information (Table 5).

Variables	catheterization practice		COR (95%CI)	P-value	AOR (95%CL)	P-value
	Poor	Good				
Educational level						
Diploma	9	13	1.762(0.587- 5.291)	0.312	2.055(0.627- 7.474)	0.234
Degree	176	179	2.503(1.209 -5.182)	0.013	3.163(1.389-7.204)	0.006*
Masters	11	28	1	1	1	1
Average catheterization per week:						
< 5	154	183	.281 (0.100 -0.789)	0.016	0.349(0.115- 1.059)	0.063
	27	32	.281(0.090-0.874)	0.028	0.340(0.100-1.154)	0.084
>11	15	5	1	1	1	1
Supportive supervision						
No	125	155	0.738(0.490- 1.113)	0.148	0.825(0.517- 1.317)	0.42
Yes	71	65	1	1	1	1
Working Hospital						
Debre Markos	60	37	2.923(1.770 - 4.829)	0.255	4.588(2.547-8.267)	0.000*
Felege Hiwot	71	128	1	1	1	1
TibebeGion	65	55	2.131(1.343 - 3.380)	0.001	2.550(1.523 -4.263)	0.001*
Work experience						
< 5 years	96	132	0.705(0.403- 1.233)	0.22	0.561(0.298- 1.058)	0.074
6-10 years	68	57	1.156(0.630 -2.120)	0.64	0.894(0.460- 1.738)	0.742
>11 years	32	31	1	1	1	1
Knowledge level						
Low	70	57	4.435(2.366 - 8.313)	0	3.808(1.940 -7.474)	0.000*
Moderate	108	98	3.980(2.208 - 7.174)	0	3.58(1.868 - 6.626)	0.000*
High	18	65	1	1	1	1
Infection prevention						
No Training	101	129	0.745(0.509 -1.105)	0.146	1.057(0.728- 1.853)	0..531
Yes	95	91	1	1	1	1
Hospital equipped with UC material						
No	113	88	2.042(1.381-3.020)	0	1.866(1.219- 2.859)	0.004*
Yes	83	132	1	1	1	1

(*)Statistically significant at a p-value < 0.05

Table 5: Bivariable and multivariable logistic regression analyses (N = 416).

Discussion

This study was the first attempt to determine the extent of practice and its related factors among nurses working at selected wards of Debre Markos, Felege Hiwot, and Tibebe Gion comprehensive and specialized hospitals in the Amhara region of Northwest Ethiopia. We set out to assess urinary catheterization malpractice and associated factors among nurses to better understand the possible areas for controlling urinary catheterization malpractice.

In this study, nearly half (47.1%) of the 416 participants working in the selected specialized hospitals had poor urinary catheterization practice, while the other 52.9% had good practice. The poor urinary catheterization practice in this study was lower than that in Saudi Arabia (83.94%) [16]. In this study, only 30.5% of respondents had a low knowledge level, but the low knowledge score of participants in Saudi Arabia was 62.77%.

The result of this study also revealed that poor urinary catheterization (47.1%) is higher than other studies conducted in Rwanda (20.1%, 11), and Nepal (35.62%, 19). In this study, 44.7% of respondents had taken infection prevention training, but in Rwanda, 79.2% of them had training about infection prevention during urinary catheterization. Regarding Nurses' practices before catheter insertion, 38.5% of nurses wash their hands before urinary catheter insertion. This result contradicts Mukakamanzi's result in Rwanda Mukakamanzi J [11] that 100% of nurses wash their hands before catheterization, and another study in Nepal found that 90.62% of nurses wash their hands before catheter insertion [19]. In our study, 40.1% of the respondents documented what they did after catheterization, which is different from the above study in Nepal, which was 75%.

In this study, statistically significant variables were educational level, working hospital, availability of catheterization material, and knowledge level of participants. This confirms the fact that a low level of knowledge is related to poor infection control practices during urinary catheter insertion. This is supported by the cross-sectional study conducted in Egypt that stated that the total score of nurses regarding urinary catheterization practice increased after the educational intervention was delivered to nurses [20]. Another study in the Philippines also stated that the nurses' level of knowledge has an impact on their practices on infection control in the use of urethral catheters [21]. Despite educational level being statistically associated with urinary catheterization practice in this study, unlike degree holders, diploma holders were not significantly associated with poor urinary practice when master's holders were constant. This might be due to the fact that in Ethiopia, more practice-based education is delivered to diploma students than degree students. Diploma students have a practical certificate of competency exam before they shift to the next level, but this is not true for a degree program. This made diploma nurses not significantly associated with poor urinary catheterization practice.

The other variables associated with urinary catheterization practice were the availability of urinary catheterization material and working Hospitals. This is supported by a cross-sectional study conducted in 2019 that found changes within hospitals and nursing resources were associated with significant changes in quality of care and patient safety. Improvements within hospitals' work environments and the educational level of nurses coincide with improvements in quality of care and patient safety [22]. This is supported by the idea that the impact of resource constraints in low-income countries affects quality patient care. The health care workers identified obstacles to patient safety as the unavailability of material context. The availability of medical supplies and the maintenance of equipment improve overall nursing practice [23].

Training, the attitude of the respondent, urinary catheterization guidelines, experience, age, and sex were not statistically associated with poor urinary catheterization practice.

Conclusion

Findings of this study indicate that nearly half of nurses had poor practice regarding urinary catheter insertion. Educational level, working hospital, availability of catheterization material, and knowledge level of participants were statistically significant variables in urinary catheterization practice. This study will be used as input for developing education and training programs on issues related to urinary catheterization practice here in Ethiopia because it is the first attempt at the national level.

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