

Knowledge, Attitudes, Practices, and Associated Factors Towards Care of Elderly Patients among Nurses

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Abstract

Background: Ethiopia's elderly care service is relatively young and little is known about the practices or readiness of nurses to provide care. Nurses need to have good knowledge, a positive attitude, and experience when it comes to caring for the elderly or patients who are chronically providing quality care. This study aimed to assess the knowledge, attitudes, and practices towards care for elderly patients and associated factors among nurses working in adult care units of public hospitals in Harar, 2021.

Methods: An institutional-based descriptive cross-sectional study was conducted from February 12 to July 10, 2021. A simple random sampling technique was used to select 478 study participants. Data were collected by trained data collectors using a pretested self-administered questionnaire. From the pretest, Cronbach's alpha for all items was above 0.7 for all items. Data were entered into Epi Data v.4.6 and exported to the Statistical Package for Social Science Version 26 for binary logistic regression analysis. A *P*-value of 0.05 was used to declare a significant association between variables.

Results: The study revealed that 311 (69%) had inadequate knowledge. Having a first degree and an unfavorable attitude towards nurses showed a statistically significant association with nurses' inadequate knowledge. A total of 275 (61.0%) nurses were found to have an unfavorable attitude and were significantly associated with having a diploma and first degree, learning in a private organization, 6 to 10 years of experience, lack of training, and inadequate knowledge of nurses. A total of 297 (65.9%) study units had inadequate practice towards the care of elderly patients. Nurses' practices showed a significant association with the type of hospital, work experience, and adherence to guidelines with a response rate of 94.4%.

Conclusion: The majority of nurses had inadequate knowledge, an unfavorable attitude, and inadequate practice towards the care of elderly patients. Having a first-degree and an unfavorable attitude with inadequate knowledge, lack of training and inadequate knowledge, unfavorable attitudes and less than 11 years of experience, working in non-academic hospitals, and unavailability of guidelines with inadequate practices were significantly associated.

Keywords

attitude, elderly care, knowledge, nurses, practice

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Introduction

Every person, in every country on earth, deserves the opportunity to live a long and healthy life. Compared to earlier times, the population is aging far more rapidly. The physical and mental faculties of the elderly population gradually decrease, disease risk rises, and eventually, death occurs. They often have various underlying illnesses as their cause, and they include weakness, urine incontinence, stumbles, delirium, and pressure ulcers. Nurses play a critical role in meeting the holistic needs of older people and implementing the primary health care strategy (WHO, 2018).

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Review of Literature

According to a United Nations report, globally there 703 million people were aged 65 years or over in 2019. The number of elderly people is projected to double to 1.5 billion by 2050. Globally, the share of the population aged 65 years or over increased from 6% in 1990 to 9% in 2019. This proportion is projected to rise further to 16% by 2050, such that one in six people in the world will be aged 65 years or older. The elderly population in Africa is expected to account for 4.5% of the regional population by 2030 and almost 10% by 2050 (UN, 2019). According to a World Bank report in 2021, the elderly population in Ethiopia accounts for 3.56% of the total population (Economy, 2021).

Regarding the physical, psychological, and social aspects of aging and the main clinical areas of geriatric nursing care, nurses had low to average levels of knowledge (Ajam, 2021; Orit et al., 2021). In Florida, nurses had limited knowledge about nursing care given to elderly patients. The same was true for Dutch nurses, where the majority of staff nurses demonstrated insufficient knowledge about the care of elderly patients (Brabham, 2018; Dikken et al., 2018). In Turkey, a review of three studies revealed that 61% of nurses had insufficient knowledge of the care of elderly patients (Abudu-Birresborn et al., 2019). This gap was also evident in Africa, where more than 82% of nurses were found to have inadequate care for elderly patients (Muhsin, 2019). According to studies in Ethiopia, no more than 45% of nurses have adequate or good knowledge of the care of elderly patients. Poor knowledge was found among 71.3% of nurses in Addis Ababa, 62.8% of nurses in West Shoa, and 57.3% of nurses in Bahirdar (Argaw et al., 2019; Fita et al., 2021).

Studies from Iran, Slovakia, and Australia showed that more than half of the nurses had a negative attitude towards elder care (Arani et al., 2017; Bosfield, 2013; Kabátová et al., 2016). Gaps in nurses' attitudes were also evident in Africa. Studies from Zanzibar and Egypt showed that 42% to 93.3% of nurses had an ageist or negative attitude towards the care of elderly patients (Muhsin, 2019; Rush et al., 2017). In Ethiopia, studies showed that 54.3% to 78.1% of nurses had an unfavorable attitude towards the care of elderly patients (Argaw et al., 2019; Fita et al., 2021).

A study conducted in 22 countries found that 55% of respondents reported that geriatric care practice was not considered a main specialty in their country (Pitkälä et al., 2018). In a study of 55 care units in Belgium, 23% of the study participants reported a poor to a fair level of practice for elderly patients in their unit (Piers et al., 2019). Similarly, more than 74% of healthcare providers in Uganda do not routinely follow the recommended care modality when caring for elderly patients (Orit et al., 2021). Based on studies from Slovakia, Bangladesh, and Uganda, inadequate knowledge alone was found to be significantly associated with level of education, experience, and training (Kabátová et al., 2016; Mahmud et al., 2020; Orit et al., 2021). According to

studies from Vietnam and Zanzibar, living with the elderly and the age of respondents were significantly associated with nurses' knowledge of the care of elderly patients (Muhsin, 2019; Thi Thanh Vu et al., 2019).

Age, living with older family members, sex, and marital status were sociodemographic characteristics of respondents associated with an attitude towards the care of elderly patients, as identified in different studies (Arani et al., 2017; Nilsson et al., 2012; Özdemir & Bilgili, 2016). Other factors that were found to influence nurses' attitudes caring for elderly patients included their level of education, experience, learning institutions, and working units/wards (Oyetunde et al., 2013; Rush et al., 2017; Upadhyay et al., 2020). A study in China showed that nurses' knowledge and attitudes were directly associated with their practice of caring for elderly patients (Zeng et al., 2019). Level of education, experience, and training in elderly care are other factors that influence nursing care for elderly patients (Fang-Wen et al., 2021; Moreira et al., 2018).

In Ethiopia, efforts have been made to reform the care of the elderly by involving them in the nursing curriculum and providing training on certain age-related diseases, although this is unsatisfactory (Amsalu et al., 2021; Fita et al., 2021). There is a need for continuing education and curricula on quality of care to enhance nursing practice in the care of the elderly (Eloranta et al., 2014).

To date, there is not enough literature to discuss the Ethiopian context since only two studies were conducted in Oromia and Addis Ababa area, among these one is unpublished data. But no study has been addressed the level of nurses' practices towards the care of elderly patients. Adding to this, the majority of previously conducted studies focused on knowledge and attitude, and they were single institution-based studies with only descriptive statistics. Likewise, previous researchers used purposive and convenience sampling techniques, which might have brought a data set bias. Whereas, in this study, the researcher included the new variable practices towards elderly care, adopted a multicentre approach to draw a better conclusion, and also incorporated oncology unit nurses.

The results of this study will help national and regional health bureaus to identify gaps in the knowledge, attitudes, and practices of nurses and the factors contributing to the identified gaps. Findings from this study will provide a clue for hospitals about the state of nurses' knowledge, attitude, and practice in elderly care. In addition, the results of this research will be of great help in finding prominent factors that might have a negative impact on the knowledge, attitude, and practice of nurses related to the care of elderly patients, and will also help hospital managers look for solutions. Future researchers will also have baseline information from this study so that it can be used as a reference and will give them the impetus to conduct further studies from different perspectives and come up with solutions. Finally, nurses will obtain evidence-based information about their level of knowledge, attitude, and practice in caring for elderly patients and be capable of

filling their gaps. This study aimed to assess knowledge, attitudes, practices, and associated factors among nurses working in adult care units of public hospitals in Harar, Ethiopia.

Methods

Study Design

An institutional-based cross-sectional study design was employed among nurses who worked in three hospitals working in Harar region from February 12 to July 10, 2021. The research was carried out in Harar, the capital of the Harari regional state. The Harar City has three public hospitals (Jogula Hospital, Hiwot Fana Specialized University Hospital, and Harar Police Hospital), a private hospital, eight health facilities, and a regional public health laboratory. There are a total number of 542 staff nurses. They provide health services to the Harari Region state and also to people living in zones of neighboring Oromia and Somali Regions.

Research Questions

1. What are the proportions of knowledge of nurses working in comprehensive hospitals towards elderly care?
2. What are the proportions of attitudes of nurses working in comprehensive hospitals towards elderly care?
3. What are the proportions of practices of nurses working in comprehensive hospitals towards elderly care?
4. What are the factors affecting knowledge, attitudes, and practices of nurses working in comprehensive hospitals towards elderly care?

Sample and Sampling Method

All available staff nurses during the study period who were working in adult care units of the public hospitals in Harar and who fulfilled the inclusion criteria were included in the study. Using a simple random sampling method, 478 nurses were recruited for the study from Hiwot Fana Specialized University Hospital (HFSUH) 248 nurses, Harar Police Hospital 177, and Jogula Hospital 53 nurses as study participants. The final sample size was

proportionally divided for each hospital based on the number of nurses working in the adult care units of the hospital by using the proportion allocation formula. The number of nurses allocated to each hospital was again proportionally divided among each ward or unit in the hospitals based on the number of nurses and the study units were selected from each ward using a simple random sampling technique (Table 1).

The sample size was calculated using a single population proportion formula, considering the following assumptions: confidence level=95%, critical value ($Z_{\alpha/2}$)=1.96 and degree of precision (d)=0.05, with a proportion (p) of 0.29 (Argaw et al., 2019). A 4% contingency for possible nonresponse was considered.

$$\text{Using the formula } n = \frac{\left(\frac{Z_{\alpha/2}}{d}\right)^2 p(1-p)}{0.05^2},$$

$$n = \frac{(1.96)^2 0.29(1 - 0.29)}{0.05^2} = 316$$

Where n=Sample size, $Z_{\alpha/2}$ =Critical value=1.96, P=Proportion of nurses who are knowledgeable and have positive attitudes towards the care of elderly patients and d=margin of error=0.05. After adding a 4% non-response rate (Argaw et al., 2019), the total sample size was 329. Hence, the maximum sample size obtained from Epi Info 7.2.4.0 (i.e., 460) and after a 4% nonresponse rate was added, the total sample size was 478. Hence, the maximum sample size obtained from Epi Info 7.2.4.0 (i.e., 460) and after a 4% nonresponse rate was added, the total sample size was 478 (Supplementary Table 1).

Inclusion and Exclusion Criteria

Nurses who were working in adult care units (Medical, Surgical, Operating Room, Emergency, Adult ICU, Oncology, and Gynecology wards) and had work experience of at least 6 months in public hospitals were eligible for the study, whereas nurses who were providing free services were excluded from this study.

Operational Definitions

Adequate knowledge: Respondents with a KOP-Q score of ≥ 23 , whereas inadequate knowledge: Respondents with a

Table 1. Allocation of Study Participants for Each Ward/Working Unit of the Public Hospitals.

S/N	Hospital	Total number of nurses from each adult care unit/ward							Sample size required from each adult care unit						
		MSW	EW	OR	ICU	ONC	Gyn.	Total	MSW	EW	OR	ICU	ONC	Gyn.	Total
1	HFSUH ^a	101	52	25	41	32	30	281	89	46	22	36	28	27	248
2	Jogula Hospital	86	47	20	30		16	199	76	42	18	27		14	177
3	Harar Police Hospital	24	14	8	12		4	62	21	12	7	10		3	53

^aHiwot Fana Specialized University Hospital, MSW: Medical and Surgical Ward, EW: Emergency Ward, OR: Operation Room, ICU: Intensive Care Unit, ONC: Oncology Unit, Gyn: Gynecology Ward.

KOP-Q score of less than 23 (Arani et al., 2017; Argaw et al., 2019; Fita et al., 2021).

Favorable attitude: Respondents who scored more than 60% of the sum of all OPACS-related questions, while unfavorable attitude: Respondents with a score less than or equal to 60% of the sum of all OPACS questions (Argaw et al., 2019; Fita et al., 2021).

Adequate practice: Study participants who scored the mean score or above on practice-related questions, whilst Inadequate practice: Respondents who scored below the mean score of practice-related questions (Fang-Wen et al., 2021).

Variables and Measurements

Dependent variables included knowledge, attitudes, and practices toward elderly care. Independent variables comprised sociodemographic factors (Age, sex, marital status, educational level, and lived with elderly people) and organizational factors (type of hospital, working unit/ward, and learning organization) and professional factors (training on elderly care, year of experience, use of guideline, and licensure exam status)

Three trained data collectors from Jinela Health Center and Harar General Hospital collected the data, which were supervised by two supervisors and the principal investigator. Data were collected at three public hospitals in Harar (Hiwot Fana Specialized University Hospital, Jogula Hospital, and Harar Police Hospital) from February 12 to July 10, 2021.

Tool for measuring nurses' knowledge towards the care of elderly patients. This tool was used to measure knowledge from the Older Patients-Quiz (KOP-Q). This tool was developed and validated in the Netherlands by Jeroen Dikken (Mezey et al., 2006). The KOP-Q contains 30 dichotomous true/false items measuring knowledge about nurses' care of elderly patients, with each correct answer assigned one point and an incorrect answer assigned zero points. The sum of the correct answers was used to determine the knowledge of each participant in the study. The KOP-Q demonstrated good readability, adequate face validity, and very good content validity index/average (S-CVI/ave. = 0.91) and good item characteristics (psychometric validity) for knowledge items. The items demonstrated excellent reliability (Cronbach's alpha = 0.94)(Dikken et al., 2018).

Tool for the measurement of nurses' attitudes towards the care of elderly patients: To measure attitude, the questionnaire adopted from the Older People's Acute Care Survey (OPACS) was used(Dikken et al., 2018). The OPACS is an instrument measuring hospital nurses' attitudes regarding older patients' care, and it was developed in Australia and validated in the United States. The questionnaire demonstrated good face validity and reliability. It also had content validity (content validity index (CVI) for the older patients in acute care survey = 0.918). The reliability of the OPACS-US was also good (Cronbach's alpha = 0.89 [0.85 – 0.92]) (Dikken et al., 2018).

Measurement tool for nurses' practice regarding the care of elderly patients Questions to measure the practice of nurses in the care of elderly patients were adapted by reviewing various studies (Brabham, 2018; Deasey et al., 2016; Hickman et al., 2007; Kaspar & Hartig, 2016; Mezey et al., 2006). The items were answered on five-point Likert scales, ranging from strongly agree to strongly disagree. "Strongly agree" was assigned five points for direct questions and 1 point for negative or indirect attitude questions. Items were then reviewed by experts in the area of elderly care to check for reliability and validity. The questionnaire consists of 32 items with five categorical aspects of aging. The variables were weighted as follows: always three points, sometimes two points, and never one point (Fang-Wen et al., 2021). The reliability of the OPACS-US was also good (Cronbach's alpha = 0.89 [0.85 – 0.92]).

Ethical Consideration

Ethical approval for the study was obtained from the Ethical Review Committee of the College of Medicine and Health Sciences, Wollo University (Ref No: CMHS235/13). After receiving ethical clearance, a letter of permission was obtained from each hospital's chief executive officer. Written informed consent was obtained from the study participants. Moreover, the entire study was conducted as per the Declaration of Helsinki's ethical principles for medical research.

Statistical Analysis

Data were extracted from EpiData V4.6.0.2 before being exported to SPSS Statistics Version 26 for analysis. Bivariable and multivariable logistic regression methods were used to determine the association between dependent and independent variables. All independent variables with a *P*-value of less than 0.25 during bivariable analysis were used in the multivariable logistic regression model to control for possible confounders. Assumptions for binary logistic regression were checked with the Hosmer–Lemeshow test (>0.05) for all outcome variables. A significant association was declared at a *P*-value of <0.05 with a 95% confidence interval.

Data Quality Control and Management

Data collectors and supervisors were trained on the objectives of the study. A pre-test was conducted on 24 nurses (5% of the sample size) before the actual data collection. Cronbach's alpha was used to assess the measuring tool's internal consistency and reliability, and the pretest reliability score was 0.88, 0.744, and 0.967 for the knowledge, attitude, and practice questions, respectively, while the post-test reliability score was 0.821, 0.792, and 0.947 for the knowledge, attitude, and practice questions, respectively. Experts in the area of geriatric care evaluated the practice questionnaire to check its content for content validity.

Results

Sample Characteristics

Out of 478 randomly selected participants, 451 nurses participated in this study, giving a response rate of 94.4%. Nearly half of the study participants, 235 (52.1%), were diagnosed with HFSUH. The majority of respondents (37.7%) were working in medical and surgical wards when compared to other working units. More than half of the study participants (54%) were male, and the mean age of the study participants was 28.7 ± 5.37 SD, with a minimum and maximum age of 20 and 48 years, respectively.

More than three-fourths (78%) of the nurses who participated in this study had a first degree in nursing. Among the respondents in this study, 377 (83.6%) had learned in public educational organizations, and most (82%) reported that they had not received any training related to the care of elderly patients. Only 109 (24.2%) respondents reported that they followed the guidelines while providing care to elderly patients. The majority of respondents (60.3%) had less than 6 years of work experience (Table 2).

Research Question Results

Knowledge of Nurses Toward Care of Elderly Patients

Overall, only 311 (69%) nurses who participated in this study had inadequate knowledge about the care of elderly patients (95% C.I.: 64.4–72.9) (Figure S1).

Attitude of Nurses Toward the Care of Elderly Patients

This study revealed that 275 (61%) respondents had an unfavorable attitude towards the care of elderly patients (95% C.I.: 56.5%–65.4%) (Figure S2).

Practice of Nurses Toward Care of Elderly Patients

The mean score of nurses' practice was 76.8 ± 6.40 SD, and out of 451 nurses who participated in this study, 154 (34.1%) scored the mean score or above. As a result, 297 (65.9%) (95% C.I.: 61.5%–70%) respondents had inadequate practice in the care of elderly patients (Figure S3).

Factors Associated with Knowledge of Nurses Towards the Care of Elderly Patients

In the bivariable logistic regression analysis, sex (being male), age (<30 years), educational level (having a diploma or degree), learning in a private organization, failure in licensure exam status, working experience (≤ 10 years) and lack of training on elderly care, nurses' unfavorable attitudes, and inadequate practices were significantly associated with inadequate knowledge of nurses towards the care of elderly

Table 2. Sociodemographic Characteristics of Respondents at Public Hospitals in Harar, June, 2021 ($n = 451$).

Variable	Category	Frequency (n)	Percentage (%)
Sex	Male	243	53.9
	Female	208	46.1
Age	20–29 years	298	66.1
	30–39 years	133	29.5
	>40 years	20	4.4
Marital status	Single	190	42.1
	Married	209	46.3
	Divorced	34	7.5
	Widowed	18	4
Educational level	Diploma	70	15.5
	Degree	352	78
	Masters	29	6.5
Learning organization	Governmental	377	83.6
	Private	74	16.4
Licensure exam status	Passed	291	64.5
	Failed	32	7.1
	Do not take exam	128	28.4
Experience	≤ 5 years	273	60.3
	6–10 years	102	22.6
	> 10 years	77	17.1
Hospital type	Academic/teaching	237	52.5
	Nonacademic	214	47.5
Working unit/ward	Medical ward	91	20.2
	Surgical ward	79	17.5
	Operation room	42	9.3
	Emergency	99	22
	Adult ICU	72	16
	Oncology	26	5.8
Training on care of elderly patients	Gynecology	42	9.3
	Yes	82	18.2
Follow guideline for elder patients' care	No	369	81.8
	Yes	109	24.2
Lived with elderly	No	342	75.8
	Yes	245	54.3
	No	206	45.7

patients ($P < 0.05$). In addition, marital status, living with the elderly, and following guidelines were variables associated with the knowledge of nurses and were included in the multivariable logistic regression ($P < 0.25$).

In multivariable logistic analysis, only educational level (having the first degree) and unfavorable attitude showed a significant association with inadequate knowledge of nurses towards care of elderly patients. Nurses who had a BSc degree in nursing were 3.6 times more likely to have inadequate knowledge than nurses who had an MSc degree in nursing [AOR: 3.6; 95% CI (1.41–9.52)]. Respondents

who had an unfavorable attitude were approximately 1.8 times more likely to have inadequate knowledge than respondents who had a favorable attitude [AOR: 1.8; 95% CI (1.11–2.87)] (Table 3).

Factors Associated with the Attitude of Nurses towards care of elderly patients

According to this study, bivariable analyses revealed that age (<40 years), marital status (being single), educational level (having a diploma or degree), private learning organization, failure in licensure exam status, experience (≤ 10 years), having no training on elderly care, lack of following guidelines, and having inadequate knowledge were significantly associated with the attitude of nurses towards the care of elderly patients ($P < 0.05$). Living with the elderly was also found to be associated with nurses' attitudes towards the care of elderly patients and was subjected to multivariable analysis ($P < 0.25$).

During multivariable analysis, having first and second degrees, learning in private organizations, between 6 and 10 years of working experience, having no training in elderly care and having inadequate knowledge showed significant associations with the attitude of nurses towards the care of elderly patients ($P < 0.05$). Accordingly, nurses who had a BSc degree were 3.2 times more likely to have an unfavorable attitude than nurses who had an MSc degree in nursing [AOR: 3.2; 95% CI (1.09–9.28)], and nurses who had a diploma in nursing were 7.9 times more likely to have an unfavorable attitude than nurses who had an MSc degree [AOR: 7.9; 95% CI (2.15–28.63)]. Nurses who did not receive training were approximately 2 times more likely to have an unfavorable attitude toward the care of elderly patients than nurses who received training [AOR: 1.9; 95% CI (1.04–3.66)].

Similarly, those nurses who had learned in private learning institutions were about 5.6 times more likely to have an unfavorable attitude than nurses who had learned in public educational institutions [AOR: 5.6; 95% CI (2.07–15.20)]. Nurses with 6–10 years of work experience were about 3.8 times more likely to have an unfavorable attitude than nurses who had >11 years of experience [AOR: 3.8; 95% CI (1.68–8.71)]. Again, the attitude of nurses towards the care of elderly patients was found to have a direct and statistically significant association with the knowledge of nurses. Those nurses who had inadequate knowledge were 1.7 times more likely to have an unfavorable attitude as compared with nurses who had adequate knowledge [AOR: 1.7; 95% CI (1.05–2.69)] (Table 4).

Factors Associated with Practice of Nurses Towards the Care of Elderly Patients

Bivariable logistic regression revealed that age (40 years), educational level (BSc Degree), hospital type (non-

academic), ≤ 10 years of work experience, no training on elderly care, failure to follow guidelines during the care of elderly patients, and inadequate knowledge were significantly associated with nurses' practice toward the care of elderly patients ($P < 0.05$). Additionally, licensure exam status and learning organization were found to be associated with the practice of nurses in the care of elderly patients ($P < 0.25$) and were included in the multivariable analysis.

Working in non-academic hospitals, having ≤ 10 years of experience and failing to follow guidelines all showed a significant association with nurses' practice ($P < 0.05$) in a multivariable analysis. Nurses who were working in non-academic hospitals were 1.9 times more likely to have inadequate practice than nurses working in academic hospitals [AOR: 1.9; 95% CI (1.22–2.97)]. Similarly, nurses who had 6–10 years of working experience were 7.4 times more likely to have inadequate nursing practice in the care of elderly patients than nurses who had more than 10 years of experience [AOR: 7.4; 95% CI (2.67–20.52)]. Again, nurses with less than 6 years of experience were found nearly 13 times more likely to have inadequate practice than nurses who had worked for more than 10 years [AOR: 13.1; 95% CI (5.38–31.67)]. Nurses who did not follow guidelines while caring for elderly patients were 2.2 times more likely to have inadequate practice than nurses who followed guidelines while caring for elderly patients [AOR: 2.2; 95% CI: 1.20–3.90] (Table 5).

Discussion

This study aimed to assess the knowledge, attitude, and practice of nurses toward the care of elderly patients and to identify factors associated with nurses' knowledge, attitude, and practice. In this particular study, the inadequate knowledge of nurses toward the care of elderly patients was 69% (95% C.I.: 64.4%–72.9%). This finding was similar to the results of studies conducted in Addis Ababa in 2018 (71.3%) (Argaw et al., 2019) and Bangladesh (67.2%) (Mahmud et al., 2020). On the other hand, it was higher than studies conducted in Bahir Dar (57.3%) (Amente T, 2016), Nigeria (0.3%) (Efiong & Campus, 2015), Saudi Arabia (14%) (Elebiary et al., 2018), Israel (49%) (Topaz & Doron, 2013), and Slovakia (9%) (Kabátová et al., 2016). This variation might be due to a difference in sample size (352 nurses in Bahir Dar, 300 in Saudi Arabia, 170 in Israel, and 100 respondents in Slovakia were involved, with a minimum difference of 99 study participants for this study). Another possible reason might be due to the difference in tool/questionnaire, i.e., tools used in Nigeria, Saudi Arabia, Israel, and Slovakia to measure nurses' knowledge were different from the tool used in this study. In contrast, the result of this study was lower than a study conducted in Portugal (78.8%) (de Almeida Tavares et al., 2015). The reason behind this variation might be due to the difference in tools used or the larger sample size used.

Table 3. Bivariable and Multivariable Analysis of Factors Associated with Knowledge of Nurses towards Care of Elderly Patients at Public Hospitals in Harar, June 2021 (n = 451).

Factor	Knowledge (n)		COR (95%CI)	AOR (95%CI)	P value
	Inadequate	Adequate			
Sex					
Male	157	86	0.64(.43–.96)	0.69(.44–1.11)	0.127
Female	154	54	1	1	
Age					
≥ 40	9	11	1	1	
30–39	79	54	1.79(.69–4.61)	1.0(.30–3.29)	0.999
20–29	223	75	3.6(1.45–9.11)	0.9(.23–3.59)	0.891
Marital status					
Married	135	74	1	1	
Single	137	53	1.42(.93–2.17)	0.7(.39–1.32)	0.292
Widowed	13	5	1.43(.49–4.15)	1.2(.37–3.90)	0.757
Divorced	26	8	1.78(.77–4.13)	1.5(.57–3.97)	0.406
Living with elderly					
Yes	161	84	1	1	
No	150	56	1.39(.93–2.09)	0.9(.59–1.51)	0.808
Educational level					
MSc degree	8	21	1	1	
BSc degree	248	104	6.3(2.69–14.59)	3.6(1.41–9.52)	0.008
Diploma	55	15	9.6(3.56–26.02)	2.8(.87–8.71)	0.083
Learning organization					
Governmental	247	130	1	1	
Nongovernmental	64	10	3.4(1.67–6.78)	1.9(.85–4.37)	0.117
Licensure exam status					
Passed	204	87	1	1	
Failed	29	3	1.5(.97–2.32)	2.7(.72–9.85)	0.142
Do not take the exam	78	50	6.2(1.792–21.425)	0.7(.44–1.18)	0.190
Type of hospital					
Academic	159	78	1	1	
Nonacademic	152	62	1.2(.81–1.79)		
Experience					
≥ 11 years	34	43	1	1	
6–10 years	72	30	3.0(1.63–5.64)	1.6(.68–3.62)	0.288
≤ 5 years	205	67	3.9(2.28–6.56)	2.0(.79–5.26)	0.136
Prior training on elder care					
Yes	43	39	1	1	
No	268	101	2.4(1.47–3.93)	1.7(.95–3.18)	0.073
Guideline availability					
Yes	83	26	1	1	
No	228	114	0.6(.38–1.02)	0.7(.41–1.30)	0.292
Attitude					
Favorable	98	78	1	1	
Unfavorable	213	62	2.7(1.81–4.12)	1.8(1.11–2.87)	0.017
Practice					
Adequate	96	58	1	1	
Inadequate	215	82	1.6(1.05–2.39)	1.2(.74–2.03)	0.426

Abbreviations: COR, Crude Odds Ratio; CI, Confidence Interval; AOR, Adjusted Odds Ratio.

In this study, having a BSc degree showed a statistically significant association with inadequate knowledge of nurses towards care of elderly patients when compared with having an MSc degree. This finding is consistent with studies conducted in BahirDar (Amsalu et al., 2021),

North West Ethiopia (Fita et al., 2021), Slovakia (Kabátová et al., 2016), and China (Zeng et al., 2019). The reason for this association could be that, as education levels rise, nurses will have more opportunities to learn subjects in a broader and more detailed manner, thus

Table 4. Bivariable and Multivariable Analysis of Factors Associated with the Attitude of Nurses towards the Care of Elderly Patients at Public Hospitals Found in Harar, June 2021 ($n = 451$).

Factor	Attitude (n)		COR(95%CI)	AOR(95%CI)	P value
	Inadequate	Adequate			
Sex					
Male	150	93	1.0(.73–1.57)		
Female	125	83	1		
Age					
≥ 40	9	11	1	1	
30–39	61	72	1.0(.40–2.66)	0.4(.11–1.41)	0.151
20–29	205	93	2.7(1.1–6.72)	.4(.09–1.72)	0.221
Marital status					
Married	109	100	1	1	
Single	134	56	2.2(1.45–3.32)	1.5(.85–2.63)	0.167
Widowed	11	7	1.4(.54–3.86)	1.8(.39–3.57)	0.770
Divorced	21	13	1.5(.71–3.11)	1.4(.58–3.29)	0.474
Lived with elderly					
Yes	144	101	1	1	
No	131	75	1.2(.83–1.79)	0.8(.53–1.331)	0.455
Educational level					
Masters	6	23	1	1	
Degree	208	144	5.5(2.19–13.94)	3.2(1.09–9.28)	0.034
Diploma	61	9	25.9(8.32–81.15)	7.89(2.15–28.63)	0.002
Learning organization					
Governmental	206	171	1	1	
Nongovernmental	69	5	11.5(4.52–29.04)	5.6(2.07–15.20)	0.001
Licensure exam					
Passed	181	110	1	1	
Failed	29	3	5.9(1.7–19.74)	1.9(.48–7.59)	0.355
Do not take exam	63	65	.6(.41–1.95)	0.9(.54–1.43)	0.589
Type of hospital					
Academic	140	97	1	1	
Nonacademic	135	79	1.2(.81–1.73)		
Experience					
≥ 11 years	22	55	1	1	
6–10 years	70	32	5.5(2.86–10.450)	3.8(1.68–8.71)	0.001
≤ 5 years	183	89	5.1(2.95–8.9)	2.2(.88–5.54)	0.092
Training on elder care					
Yes	38	44	1	1	
No	237	132	2.1(1.282–3.371)	1.9(1.04–3.66)	0.036
Guideline availability					
Yes	80	29	1	1	
No	195	147	.5(.29–1.77)	0.6(.24–1.02)	0.060
Knowledge					
Adequate	62	78	1	1	
Inadequate	213	98	2.7(1.8–4.12)	1.7(1.05–2.69)	0.030
Practice					
Adequate	94	60	1	1	
Inadequate	181	116	0.9(.67–1.48)		

Abbreviations: COR, Crude Odds Ratio; CI, Confidence Interval; AOR, Adjusted Odds Ratio.

increasing their professional knowledge and level of understanding. Another association was found between inadequate knowledge and an unfavorable attitude. This was similar to the results of studies conducted in Bangladesh

(Mahmud et al., 2020) and Saudi Arabia (Elebiary et al., 2018). The reason for this association might be that, as a nurse's approach to elderly patients is with a positive attitude, they will be eager to learn more about elderly care

Table 5. Bivariable and Multivariable Analysis of Factors Associated with Practice of Nurses towards the Care of Elderly Patients at Public Hospitals Found in Harar, June 2021 ($n = 451$).

Variables	Practice (n)		COR(95%CI)	AOR(95%CI)	P value
	Inadequate	Adequate			
Sex					
Male	160	83	0.9(.676–1.476)		
Female	137	71	1		
Age					
≥ 40	5	15	1	1	
30–39	81	52	4.76(1.60–13.63)	2.3(.66–8.10)	0.189
20–29	211	87	7.3(2.57–20.64)	1.9(.46–7.49)	0.388
Marital status					
Married	133	76	1		
Single	128	62	1.18(.78–1.79)		
Widowed	14	4	2.0(.64–6.29)		
Divorced	22	12	1.0(.49–2.24)		
Live with elderly					
Yes	161	84	1		
No	136	70	1.0(.69–1.49)		
Educational level					
Masters	10	19	1	1	
Degree	249	103	4.6(2.07–10.22)	2.3(.84–6.01)	0.105
Diploma	38	32	2.256(.919–5.542)	1.776(.567–5.563)	0.324
Learning organization					
Governmental	253	124	1	1	
Nongovernmental	44	30	.7(.43–1.19)	.7(.34–1.26)	0.200
Licensure exam					
Passed	196	95	1	1	
Failed	15	17	1.0(.65–1.57)	.4(.16–1.03)	0.133
Do not take exam	86	42	.431(.196–.946)	1.098(.645–1.868)	0.730
Type of hospital					
Academic	173	64	1	1	
Nonacademic	124	90	.5(.34–1.06)	1.9(1.22–2.97)	0.005
Work experience					
≥ 11 years	25	52	1	1	
6–10 years	189	83	4.7(2.75–8.15)	7.4(2.67–20.52)	<0.001
≤ 5 years	83	19	9.1(4.56–18.11)	13.1(5.38–31.67)	<0.001
Training on elderly care					
Yes	46	36	1	1	
No	251	118	1.7(1.02–2.71)	1.1(.59–2.25)	0.675
Availability of guideline					
Yes	85	24	1	1	
No	212	130	.45(.28–.76)	2.2(1.20–3.90)	0.01
Knowledge					
Adequate	82	58	1	1	
Inadequate	215	96	1.6(1.05–2.39)	1.3(.77–2.19)	0.325
Attitude					
Favorable	116	60	1		
Unfavorable	181	94	0.9(.67–2.48)		

Abbreviations: COR, Crude Odds Ratio; CI, Confidence Interval; AOR, Adjusted Odds Ratio.

for better intervention, and this in turn may increase their knowledge. Another association was found between inadequate knowledge and an unfavorable attitude. This was similar to the results of studies conducted in Bangladesh (Mahmud et al., 2020) and Saudi Arabia (Elebiary et al.,

2018). The reason for this association might be that, as a nurse's approach to elderly patients is with a positive attitude, they will be eager to learn more about elderly care for better intervention, and this in turn may increase their knowledge.

Based on this study, 61% of nurses who participated in this study (95% CI: 56.5%–64.4%) had an unfavorable attitude toward the care of elderly patients and it was consistent with the results of research conducted in England (57.3%) (Hanson, 2014) and Canada (61%) (Rush et al., 2017). On the other hand, this result was lower than the results of studies conducted in Addis Ababa, Ethiopia (78.1%) (Argaw et al., 2019) and Portugal (81.2%) (de Almeida Tavares et al., 2015). This variation might be due to a sample size difference (Fita et al., 2021) or due to a difference in the data collection method (a web-based data collection method was used in Portugal) (de Almeida Tavares et al., 2015).

The findings of this study, on the other hand, were higher than those of studies conducted in Bangladesh (46.2%), Slovakia (28%), Saudi Arabia (35%), and Nepal (49.7%) (Elebiary et al., 2018; Kabátová et al., 2016; Mahmud et al., 2020; Subba et al., 2019). Variations from studies of Slovakia and Bangladesh might be due to the use of only tertiary hospitals where there is a better educational, training, and working environment as well as the use of small sample sizes (Kabátová et al., 2016; Mahmud et al., 2020). In Saudi Arabia, the selection of geriatric care units for the study might be the reason for the difference, i.e., nurses working in geriatric care units may have better access to specific pre-employment and on-the-job training (Elebiary et al., 2018). The difference between the results of a study conducted in Nepal could be attributed to the small sample size used (Subba et al., 2019).

Educational level (having a diploma or first degree) was significantly associated with the attitude of nurses in this study, i.e., nurses having a diploma and degree were more likely to have an unfavorable attitude when compared with nurses having a second degree (MSc). This finding agrees with the results of studies conducted in Addis Ababa (Argaw et al., 2019) and Nepal (Upadhyay et al., 2020).

Again, multivariable analysis in this study showed that nurses who didn't get training on elderly care were more likely to have an unfavorable attitude when compared with those who did get training. There were similar findings from studies conducted in Egypt (Abozeid, 2015), Nigeria (Oyetunde et al., 2013), and Bangladesh (Mahmud et al., 2020). This might be due to the opportunity to gain new and updated knowledge about elderly care from training. Then the improvement of nurses' knowledge might have a positive effect on their attitude. Respondents who were educated in private learning organizations were more likely to have an unfavorable attitude than those educated in public learning institutions, and the reason might be the difference in the quality of education.

Similarly, working experience (≤ 10 years) was found to have a statistically significant relationship with nurses' negative attitudes in Ethiopia (Arani et al., 2017; Argaw et al., 2019), Bangladesh (Mahmud et al., 2020), and Iran (Arani et al., 2017). This association might be because nurses who

spend more time on patient care can accomplish their tasks efficiently, and this may help them to develop a favorable attitude towards their work. Furthermore, nurses who worked longer shifts may have gained more knowledge as a result of their experience, which may help nurses maintain a positive attitude toward the care of elderly patients. Another variable that had a significant association with attitude in this study was knowledge. Similar findings were found from studies conducted in Ethiopia (Argaw et al., 2019), Israel (Topaz & Doron, 2013), and Vietnam (Thi Thanh Vu et al., 2019). This association might be due to the fact that as nurses' knowledge grows, they will do the activity without difficulty, and this, in turn, will build a favorable attitude towards their care of older patients.

In this study, 297 (65.9%) out of 451 respondents had inadequate practice in the care of elderly patients (95% CI: 61.5%–70%). This result was lower than the result of a study conducted in Taiwan (82.4%) (Chang et al., 2018). This variation might be because the objective assessment wasn't used in the study conducted in Taiwan. On the other hand, this result was higher than the results of a study conducted in China, where 21.2% of study participants were found to have inadequate practice in the care of elderly patients (Zeng et al., 2019). This variation might be due to the data collection method, i.e.; data were collected by interviews in the study conducted in China. Another reason for this variation might be differences in health policy and technological advancement.

Nurses who were working in non-academic hospitals were more likely to have inadequate practice when compared with those who were employees of academic hospitals. This might be because of differences in opportunities for on-the-job training and continuous education. Also, a higher staff might help nurses decrease their workload, which may give them time for the care of elderly patients.

Based on this study, ≤ 10 years of work experience was significantly associated with the inadequate practice of nurses in the care of elderly patients. This finding was similar to the result of a study conducted in China (Zeng et al., 2019). The reason behind this variation might be due to the fact that, as nurses become more experienced, they might have developed more skills over time, and this might have helped them to increase their practice in the care of elderly patients. The lack of following guidelines was another variable that showed a significant association with the inadequate practice of nurses in this study. This might be due to the ease of care of elderly patients when performed using guidelines. Nursing home care might be increased if nurses who followed guidelines might have the ability to give quality care to the elderly.

Strengths and Limitations

The primary data with a multicenter approach were used to conduct this study, which can have a better representation

of the study participants and the generalizability of the results. Practice was incorporated in this study which was not included in previous studies conducted in Ethiopia. Licensure exam status of nurses was added as a variable to see the effect on nurses' knowledge, attitude, and practice of nurses in caring for elder patients. Furthermore, standardized tools were used in this study. This study was conducted using only quantitative study design which might be insufficient to find all possible factors associated with knowledge, attitude, and practice in addition; the cause-and-effect relationship cannot be confirmed in this study since the research design was cross-sectional.

Implications for Practice

An increase in the older population has a significant health implication, since aging in most instances leads to physical, physiological, and social derangements. Inadequate knowledge, practices, and undesirable attitudes of nurses will have a negative impact on the quality of care for elderly patients.

Conclusions

The majority of nurses have inadequate knowledge, unfavorable attitudes, and inadequate practices toward the care of elderly patients. Having a first-degree and unfavorable attitude is significant with inadequate knowledge and Lack of training and inadequate knowledge was found to be significantly associated with nurses' unfavorable attitudes. Less than 11 years of experience, working in non-academic hospitals, and the unavailability of guidelines were also associated with inadequate practices.

Abbreviations

AOR:	Adjusted Odds Ratio
CI:	Confidence Interval
COR:	Crude Odds Ratio
ICU:	Intensive Care Unit
MSW:	Medical and Surgical Ward
ONC:	Oncology
OPD:	Out Patient Department
OR:	Operation Room; WHO: World Health Organization

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Ethical Consideration

Ethical approval for the study was obtained from the Ethical Review Committee of the College of Medicine and Health Sciences, Wollo University (Ref No: CMHS235/13). After receiving ethical clearance, a letter of permission was obtained from each hospital's chief executive officer. Written informed consent was obtained from the study participants. Moreover, the entire study was conducted as per the Declaration of Helsinki's ethical principles for medical research.

Authors' Contributions

MH and YW conceived the study, participated in study design, data collection, data analysis, interpretation of the results and wrote the manuscript. GD and KPK conceived the study and revised the manuscript and participated in statistical analysis and interpretation of the results. HM and WY revised the manuscript critically. DG and KPK participated in interpretation of the results and revised the manuscript critically. All the authors have read and approved the final submitted manuscript.

Data Sharing Statement

The data used to support the findings of this study is available upon request from the corresponding author.

Consent for Publication

Not applicable.

Availability of Data and Materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Declaration of Conflicting Interests

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