Knowledge, attitude, and associated factors towards older people care among nurses working at public hospitals in West Shoa zone, Oromia region, Ethiopia

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Abstract

Background: Nurses’ knowledge and attitude regarding the care of older people can have an impact on patient outcomes such as reduced length of hospital stays, reduced readmission rates, and increased patient and family satisfaction. However, evidence is scarce in Ethiopia, particularly in the study area. Therefore, the study aimed to assess the knowledge, attitude, and associated factors towards the care of older people among nurses working at public hospitals in West Shoa Zone, Ethiopia.

Methods: Institutional based cross-sectional study was conducted from April 1–30, 2021 among 423 nurses who were working in adult care units. Data were collected through a self-administered questionnaire. The sample was selected using simple random sampling. The logistic regression analysis model was fitted and the Adjusted Odds Ratio at 95% confidence interval was used. P-values less than or equal to 0.05 were considered statistically significant.

Results: A total of 411 nurses participated in the study with a 97.16% response rate. The mean age of the participants was 29.11 (SD ± 3.84) years. The study showed that 37.2% (95% CI: 33, 42%) of the participants had good knowledge and 45.7% (95% CI: 40.9, 50.6%) had a favorable attitude toward the care of older people. The significantly associated factors positively affected both the knowledge and the attitude of nurses. Age greater than 30 years (AOR: 2.37, 95% CI: 1.18, 4.75), experience greater than 5 years (3.00: 1.21, 7.41), being BSc degree holder and above (3.57: 1.40, 9.09), lived with older people (2.14: 1.34, 3.42), and nurses working in adult intensive care unit (3.03: 1.03, 8.91) were significantly associated with knowledge. Likewise, being female (2.04: 1.33, 3.12), being BSc degree holder and above (2.77: 1.35, 5.65), lived with older people (1.59: 1.03, 2.44), and care for older people (1.63: 1.06, 2.53) were significantly associated with attitude.

Conclusion: In this study, less than half of the nurses had good knowledge and a favorable attitude towards the care of older people. Continuous professional development regarding the care of older people is important to enhance nurses’ knowledge and attitude.

Keywords: Knowledge, Attitude, Nurses, Older people, West Shoa, Ethiopia

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Background
Aging is a normal and irreversible phase in which the body undergoes physiological, chronological, psychological, and social changes [1]. Globally, the percentage of the population aged 60 years and above is increasing [2]. In 2017, there were about 962 million people aged 60 or above, accounting for 13% of the global population [3]. The number of older people in the world is estimated to be 1.4 billion in 2030 and 2.1 billion in 2050 and could grow to 3.1 billion in 2100. In Ethiopia, older people greater than 60 years represent 5% of the total population [4].

Nurses provide front-line health care for older people in a wide variety of settings, including preventive care in primary care offices and the community, acute care in hospitals, and long-term care in nursing homes and assisted living facilities [5]. The good knowledge and favorable attitude of nurses regarding the care of the older people can have a positive impact on patient outcomes, patient and family satisfaction, and can assist the caregivers in providing adequate care to older people [6, 7]. To provide high-quality older people care, nurses' attitude toward the older people and their knowledge of the aging process are of paramount importance for practice and quality of care [8, 9]. Good knowledge and favorable attitude of nurses are important and regarded as a requirement for good quality health services for older people in a variety of different settings. Poor knowledge and unfavorable attitude towards the care of the older people can result in the prolonged hospitalization, unnecessary hospital readmission, and financial burdens and also increases the demands of hospital resources. It has a negative impact on the treatment outcomes as well [8, 10].

As studies in Iran, California, Bangladesh, Slovak Republic, India, and Zanzibar showed the magnitude of nurses' knowledge about the older people care was 32.7, 80, 32.8, 91, 76.4, and 17.6% respectively [11–16]. In Iran, Portugal, Saudi Arabia, India, and Nepal, and Poland the magnitude of favorable attitude towards older people care was 9.8, 18.8, 65, 64.6, 50.3, and 36.9% respectively [11, 15, 17–19]. Regarding factors; age, gender, marital status, religion, year of work experience, level of education, working units, type of hospital, living with the older people, and experience in older people care were statistically significant variables associated with knowledge and attitude of nurses [11, 17, 19–24].

Despite the potential importance and crucial role of nurses in determining and delivering proper healthcare standards, and the quality of healthcare services, determination of the level of knowledge, attitude, and associated factors is necessary. However, evidences were scarce on nurses' knowledge and attitude toward the care of the older people in Ethiopia, particularly in the study area. Therefore, the study aimed to assess knowledge, attitude, and associated factors towards care of older people among nurses working at public hospitals in West Shoa Zone, Ethiopia. The results of this study could be utilized as an input to nurses, hospital administration, regional health bureau, federal ministry of health, and other concerned bodies.

Methods and materials
Study setting
The study was conducted in West Shoa zone public hospitals. West Shoa zone is one of the zones of Oromia region in Ethiopia, and it is located in the Western part of the country. Ambo town, which is located about 112 km from Addis Ababa, is the capital of West Shoa zone. The West Shoa zone has 8 public hospitals, 91 health centers, 526 health posts, 1 private higher clinic, 40 medium private clinics, 168 small clinics, 43 drug stores, 21 drug vendors, and 16 pharmacies. Within the zone, there are one teaching referral hospital, three general hospitals, and four primary hospitals. Ambo, Gede, and Ginde bet-net are general hospitals, whereas Guder, Bako, Inchini, and Jeldu are primary hospitals. The study included all the public hospitals in the zone. The total number of nurses in West Shoa zone public hospitals was 701, of which 565 are working in adult care units/wards.

Study design and period
An institutional-based cross-sectional study was conducted from April 01–30/2021.

Source and study populations
All nurses who were working at public hospitals in West Shoa zone, Ethiopia were the source population and those nurses who were working in adult care units at the public hospitals and found during the data collection period were the study population.

Eligibility criteria
All nurses who were working in medical ward, surgical ward, operation room, emergency, ICU ward, gynecology ward, a psychiatric unit, optometric unit, dental clinic, medical OPD, surgical OPD, and nurses on medical and surgical chronic follow-up clinics were included in the study. Nurses who were not available during data collection (on annual, maternal, sick leave, and training) were excluded.

Sample size and sampling procedure
Sample size determination
The sample size was calculated using a single population proportion formula, considering the following assumptions: Confidence level (CI) =95%, Degree of precision (d) =0.05. The proportion (p) =50% (no similar study).
Using \( n = \frac{Z^2 \alpha}{2} \cdot \hat{p} (1-\hat{p}) \).
\[ d^2 = (1.96)^2 \cdot \frac{(0.5(1-0.5))}{(0.05)^2} \]
\[ n = 384. \] By considering 10% non-response rate the final sample size was 423.

**Sampling procedure and techniques**

All public hospitals in the West Shoa zone were included in the study. First, to get the sample size, all hospitals were included in the study. Secondly, the total calculated sample size of 423 nurses was proportionally allocated to each hospital based on the number of nurses in the adult units/wards. Finally, the simple random sampling method was used to select those proportionally allocated study participants. Figure 1.

**Operational definition**

**Good knowledge** Respondents with a KOP-Q score of ≥75% were classified as having a good knowledge and those with score of <75% were classified as having a poor knowledge [25].

**Favorable attitude** Respondents with OPACS mean score of ≥3 classified as having a favorable attitude and those with mean score of <3 were classified as having unfavorable attitude [25].

**Older people** According to the UN definition, older people are those people whose age is 60 years and over [26]. The definition has gained acceptance in the Ethiopian context as it coincides with the country’s official retirement age [27].

**Type of hospital** A type of facility that provides health care service at either primary, general, or referral level.

**Working hours** The normal hours of work are 8 h a day and 39 h a week, according to the Ethiopian law Labor proclamation.

**Data collection tools and techniques**

Data were collected through a self-administered questionnaire using the Knowledge of Older Patients Quiz and Older People in Acute Care Survey. The KOP-Q was developed and validated among 331 participants in
the Netherlands and USA [28, 29]. Older People in Acute Care Survey (OPACS) is a tool that measures the attitude of hospital nurses regarding the care of the older people; it was developed in Australia and validated in the United States among 130 participants [25]. The tool was developed in the English language yet not translated into the local language because nurses are trained with English as a medium of instruction and in their working area they write and document patient records in English language. Then, the reliability of knowledge and attitude questions was checked by using Cronbach’s alpha 0.71 for knowledge and 0.89 for attitude.

The data collection tool contains five sections. Section one includes Socio-demographics characteristics such as age, gender, marital status, religion, ethnicity, level of education, experience, and monthly income. Section two includes personal related factors such as lived with older people and caring for older people in clinical practice. Section three includes institutional related factors such as type of hospital, training regarding older people care, presence of guideline, working unit, and working hours. Section four includes a set of knowledge questions containing 30 true/false items. The overall nurses’ knowledge score towards the care of older people was obtained by recoding and converting every correct answer into 1 and incorrect answer into 0. Section five includes the attitude questions which consist of 34 items and are meant to measure the attitude of nurses towards the care of the older people. Items were answered with a five-point Likert scale (1. Strongly disagree, 2. Disagree, 3. Unsure, 4. Agree, 5. Strongly agree).

Data collection procedures
Data were collected using a pre-tested and structured self-administered questionnaire. Data were collected by eight BSc nurses and four MSc nurses were hired as supervisors. The principal investigator provided a two days training to data collectors and supervisors about the purpose of the study and how to fill the questionnaire. After briefly presenting the purpose of the study and the individual nurses in the study area, data collectors were responsible for the distribution and collection of the questionnaire.

Data quality control and management
The questionnaire was pre-tested before the actual data collection on 22 (5%) nurses in the Holota primary hospital. Cronbach’s alpha was 0.87 and 0.89 for knowledge and attitude respectively, indicating adequate internal consistency. A two days training was given for data collectors and supervisors regarding the study, questionnaire, and data collection procedure. All data were checked for completeness and consistency on the data collection day, before and during analysis.

Data processing and analysis
The data were coded and entered into epi-data version 4.6 and exported to SPSS version 25 for analysis. Descriptive statistics were carried out and summarized with texts, tables, and figures. Model fitness was checked by Hosmer and Lemeshow test of 0.48 for knowledge and 0.46 for attitude and it was fitted. Both bivariable and multivariable binary logistic regressions were used to assess the association between the outcome variables and the explanatory variables. Variables with a p-value less than 0.25 in bivariable logistic regression were fitted into the multivariable logistic regression model. Adjusted odds ratios were calculated and variables with a p-value less than or equal to 0.05 at 95% confidence interval were declared as significant to the outcome variables.

Results
Socio-demographic characteristics of the study participants
Out of the total sample size (423), 411 nurses participated in the study with a 97.16% response rate. The mean age of the participants was 29.11 (SD ± 3.84) years. More than half (55.2%) of the nurses were male. Most of the participants (88.1%) were BSc degree holders and above. Nearly half of the participants (44.8%) had 3–5 years of work experience. More than half of the participants (53.8%) were married and nearly half (47.7%) of the respondents had an income between 6200 and 8017 Ethiopian Birr. (Table 1).

Personal and institutional related factors of study participants
More than half i.e., 51.8 and 54.6% of the respondents have lived with older people and ever cared for older people respectively. Similarly, 22.1% have been working in the outpatient department (OPD) and 36% of the participants were working in primary hospitals. (Table 2).

Nurses’ knowledge toward the care of the older people
Overall, 153(37.2%) (95% CI: 33, 42%) of the respondents had good knowledge, whereas, 258 (62.8%) had poor knowledge toward the care of the older people. (Table 3).

Nurses’ attitude towards care of older people
The result of this study revealed that 188(45.7%), (95% CI: 40.9, 50.6%) of the respondents had a favorable attitude whereas, 223(54.3%) had an unfavorable attitude toward the care of the older people. (Table 4).

Factors associated with nurses’ knowledge toward the care of older people
All independent variables were entered into the bivari-
value of < 0.25 were fitted into the multivariable logistic regression analysis. In multivariable logistic regression analysis age greater than 25 years and above, being BSc degree holder and above, work experience greater than two years and above, ever lived with older people, and nurses who were working in adult intensive care unit were significantly associated with knowledge towards the care of the elderly patients at a \( p \)-value of less than or equal to 0.05; 95% CI.

Nurses with the age of 26–30 years were 2.12 times more likely to have knowledge toward the care of the older people than those who are between ages of 20–25 years \[ \text{AOR: 2.12; 95% CI: (1.03, 4.34)}, \] and those participants whose age was >30 years were 2.37 times more likely knowledgeable than those who are between ages of 20–25 years \[ \text{AOR: 2.37; 95% CI: (1.18, 4.75)}. \]

Those nurses who had 3–5 years of work experience were 2.22 times more likely knowledgeable than those who had less than or equal to 2 years of work experience \[ \text{AOR: 2.22; 95% CI: (1.08, 4.56)}, \] and participants who had >5 years of work experience were 3.00 times more likely knowledgeable than those who had less than or equal to 2 years of experience \[ \text{AOR: 3.00; 95% CI: (1.21, 7.41)}. \].

In addition, nurses who had BSc degree and above were 3.57 times more likely knowledgeable than those nurses who had diploma \[ \text{AOR: 3.57; 95 CI: (1.40, 9.09)}. \]

Factors associated with nurses’ attitude toward the care of the older people
All independent variables were entered into the bivariable logistic regression model and variables that were < 0.25 were fitted into the multivariable analysis. In multivariable logistic regression analysis; being female, having BSc degree and above, ever lived with older people, and care of the older people in clinical practice were significantly associated with nurses’ attitude toward the care of the older people at \( p \)-value less than or equal to 0.05; 95% confidence interval.

Female nurses were 2.04 times more likely to have a favorable attitude when compared to their counterparts \[ \text{AOR: 2.04, CI: (1.35, 3.12)}. \] Additionally, nurses who had a BSc degree and above were 2.77 times more likely to have a favorable attitude when compared to those

| Variables            | Category | Frequency | Percentage |
|----------------------|----------|-----------|------------|
| **Age**              | 20–25 years | 84        | 20.4       |
|                      | 26–30 years | 131       | 31.9       |
|                      | > 30 years  | 196       | 47.7       |
| **Gender**           | Male      | 227       | 55.2       |
|                      | Female    | 184       | 44.8       |
| **Marital status**   | Single    | 190       | 46.2       |
|                      | Married   | 221       | 53.8       |
| **Religion**         | Orthodox  | 117       | 28.5       |
|                      | Muslim    | 80        | 19.5       |
|                      | Protestant| 184       | 44.8       |
|                      | Wakefata  | 30        | 7.3        |
| **Ethnicity**        | Oromo     | 390       | 94.9       |
|                      | *Others   | 21        | 5.1        |
| **Level of education** | Diploma  | 49        | 11.9       |
|                      | BSc and above | 362      | 88.1       |
| **Year of experience** | <=2 years | 126       | 30.7       |
|                      | 3–5 years  | 184       | 44.8       |
|                      | > 5 years  | 101       | 24.6       |
| **Monthly income (ETB)** | < 6200  | 166       | 40.4       |
|                      | 6200–8017 | 196       | 47.7       |
|                      | 8018–9056 | 23        | 5.6        |
|                      | > 9056    | 26        | 6.3        |

*Others = (Amhara, Tigre and Gurage)
who had a diploma [AOR: 2.77, CI: (1.35, 5.65)]. (Table 6).

**Discussion**

In this study, the overall good knowledge of nurses towards the care of older people was found to be 37.2% (95% CI: 33, 42%). The finding of this study was higher than the study conducted in Bangladesh, 32.8% [13]. This variation could be because of the difference in the study setting: more than half of the respondents in Bangladesh had a diploma level of education. In the contrary, the finding was lower than a study conducted in Nigeria, 96% [30]. The possible reason might be the difference in study participants. The implication of the finding revealed the variability of nurses’ knowledge about the older people care in different settings. As studies demonstrated, care for older people is not considered a very attractive area of nursing practice [31, 32]; as a result, there may be professional disrespect for choosing to work with older people [8]. Thus, having good knowledge might attract and motivate nurses to work with the older people.

In this study, age was significantly associated with good knowledge towards the care of older people. Nurses whose age group is 26–30 years were 2.12 times more likely to have good knowledge towards the care of older people. (Table 6).
older people compared to those nurses aged between 20 and 25 years. Furthermore, those participants whose age was > 30 years were 2.37 times more likely to have good knowledge towards the care of older people compared to those whose age group is 20–25 years. The finding was supported by a study conducted in Korea [22]. This could be because nurses with higher age have more experience caring for older people, which enhances their knowledge regarding the older people. Older nurses increased their clinical thinking ability because of their experiences in caring for the older people as well as exposure to more complicated cases [33]. Thus, to enhance the quality of care for the older people, junior nurses better work with the senior staffs and should share their experience.

The work experience was found to be the determinant factor of the knowledge of nurses towards the care of older people. Nurses who had 3–5 years of work experience were 2.22 times more likely to have good knowledge towards the care of older people compared to...
those who had less than or equal to 2 years of working experience. Similarly, nurses who had more than 5 years of experience were 3 times more likely to have good knowledge towards the care of older people compared to those nurses with less than or equal to 2 years of working experience. The result of this study is complemented by a study conducted in Korea [34]. Nurses with more experience might have a better chance of eventually gaining access to up-to-date knowledge about the care of older people through their daily observations and practices. This implies the great importance of work experience to have a good knowledge and would possibly help for a better evidence-based practice.

The findings of this study revealed that the level of education is significantly associated with the knowledge of nurses toward the care of the older people. Nurses who had a baccalaureate degree and above were 3.57 times more likely to have good knowledge towards the care of older people compared to those having a diploma. The result of this study is supported by a study conducted in the Netherlands [23]. This is because education improves the knowledge of nurses towards the care of patients. Higher education curriculum helps nurses to get the chance of participating in different seminars, workshops, reviewing different kinds of literature and updating themselves. Nurses who have a higher

| Variables                           | Knowledge | COR (95% CI) | AOR (95% CI) | P-value |
|-------------------------------------|-----------|--------------|--------------|---------|
|                                     | Good      | Poor         | COR (95% CI) | AOR (95% CI) | P-value |
| Age                                 |           |              |              |          |         |
| 20–25 years                         | 15        | 69           | 1.0          | 1.0      |         |
| 26–30 years                         | 48        | 83           | 2.66 (1.37, 5.15) | 2.12 (1.03, 4.34) * | 0.040 |
| > 30 years                          | 90        | 106          | 3.90 (2.09, 7.29) | 2.37 (1.18, 4.75) * | 0.015 |
| Work experience                     |           |              |              |          |         |
| < =2 years                          | 23        | 103          | 1.0          | 1.0      |         |
| 3–5 years                           | 71        | 113          | 2.81 (1.63, 4.83) | 2.22 (1.08, 4.56) * | 0.029 |
| > 5 years                           | 59        | 42           | 6.29 (3.45, 11.47) | 3.00 (1.21, 7.41) * | 0.017 |
| Level of education                  |           |              |              |          |         |
| Diploma                             | 6         | 43           | 1.0          | 1.0      |         |
| BSc and above                       | 147       | 215          | 4.90 (2.03, 11.80) | 3.57 (1.40, 9.09) * | 0.007 |
| Ever lived with the older people    |           |              |              |          |         |
| Yes                                 | 101       | 112          | 2.53 (1.67, 3.83) | 2.14 (1.34, 3.42) * | 0.001 |
| No                                  | 52        | 146          | 1.0          | 1.0      |         |
| Care of older people in clinical practice | 198 | 126          | 1.86 (1.23, 2.81) | 1.53 (0.95, 2.46) | 0.075 |
| No                                  | 55        | 132          | 1.0          | 1.0      |         |
| Monthly income ETB                  |           |              |              |          |         |
| < 6200                              | 36        | 130          | 1.0          | 1.0      |         |
| 6200–8017                           | 87        | 109          | 2.88 (1.81, 4.58) | 1.10 (0.57, 2.13) | 0.756 |
| 8018–9056                           | 14        | 9            | 5.61 (2.25, 14.02) | 1.65 (0.49, 5.60) | 0.415 |
| > 9056                              | 16        | 10           | 5.77 (2.41, 13.82) | 2.03 (0.65, 6.28) | 0.217 |
| Working unit/ward                    |           |              |              |          |         |
| MW                                  | 29        | 44           | 1.72 (0.78, 3.80) | 1.47 (0.61, 3.51) | 0.386 |
| AICU                                | 15        | 13           | 3.01 (1.13, 8.03) | 3.03 (1.03, 8.91) * | 0.043 |
| OPD                                 | 40        | 51           | 2.05 (0.95, 4.39) | 1.56 (0.67, 3.65) | 0.299 |
| EM                                  | 18        | 34           | 1.38 (0.58, 3.26) | 1.28 (0.49, 3.31) | 0.605 |
| OR                                  | 17        | 37           | 1.23 (0.50, 2.83) | 1.18 (0.45, 3.04) | 0.731 |
| SW                                  | 21        | 45           | 1.22 (0.53, 2.77) | 1.02 (0.41, 2.54) | 0.952 |
| GynW                                | 13        | 34           | 1.0          | 1.0      |         |

COR Crude Odds Ratio, AOR Adjusted Odds Ratio, *significant at p-value <=0.05, CI confidence interval
educational status are more likely to protect their patients’ health and cope with changes in their mental and physical abilities, so older people can stay independent and active as long as possible [https://explorehealthcareers.org/career/geriatrics/geriatric-staff-nurse/]. Thus, nurses should be motivated to engage in their professional development and the educational career. This might help for a better older people care.

The findings of this study revealed that nurses who were working in the intensive care unit were significantly associated with knowledge toward the care of older people. Nurses who were working in the adult intensive care unit were 3.03 times more likely to have good knowledge of the care of older people compared to those working in the gynecology ward. The result of this study contradicts the study done in Portugal [17]. This could be due to the fact that as the nurses frequently contacted with the patients, the nurses have developed a good knowledge towards the care of elderly patients. The finding implies that nurses working in different working units would have a better knowledge and this might be important for a better evidence-based practice on the older people care.

In this study, 45.7% (95% CI: 40.9, 50.6%) of the respondents had a favorable attitude concerning the care of older people. This finding was higher than a study done in Iran 9.8% [11]. The possible justification could be the type of tool used, the study period, and the difference in working experience. On the other hand, the finding was lower than the study done in Bangladesh, 63.8% [13]. The variation could be because of the difference in the socio-demographic characteristics, socioeconomic status, and taking of geriatric care training. Positive attitudes towards the older people care are

**Table 6** Factors associated with nurse’s attitude towards the care of the older people in bivariable and multivariable logistic regression at public hospitals in West Shoa Zone, Ethiopia, 2021 (n = 411)

| Variables                        | Attitude | COR (95% CI) | AOR (95% CI) | P-value |
|----------------------------------|----------|--------------|--------------|---------|
|                                  | Favorable| Unfavorable  |              |         |
| Gender                           |          |              |              |         |
| Female                           | 103      | 81           | 2.12(1.42, 3.15) | 2.04(1.35, 3.12) * | 0.001  |
| Male                             | 85       | 142          | 1.0          | 1.0     |
| Marital status                   |          |              |              |         |
| Married                          | 112      | 109          | 1.54(1.04, 2.28) | 1.37(0.90, 2.10) | 0.136  |
| Single                           | 76       | 114          | 1.0          | 1.0     |
| Level of education               |          |              |              |         |
| Diploma                          | 13       | 36           | 1.0          | 1.0     |
| BSc & above                      | 175      | 187          | 2.59(1.33, 5.04) | 2.77(1.35, 5.65) * | 0.005  |
| Lived with older people          |          |              |              |         |
| Yes                              | 116      | 97           | 2.09(1.40, 3.10) | 1.59(1.03, 2.44) * | 0.035  |
| No                               | 72       | 126          | 1.0          | 1.0     |
| Care of the older people in clinical practice | | | | |
| Yes                              | 116      | 108          | 1.71(1.15, 2.54) | 1.63(1.06, 2.53) * | 0.026  |
| No                               | 72       | 115          | 1.0          | 1.0     |
| Knowledge towards the care of older people | | | | |
| Good                             | 79       | 74           | 1.45(0.97,2.18) | 1.13(0.72,1.78) | 0.569  |
| Poor                             | 109      | 149          | 1.0          | 1.0     |
| Working unit/ward                 |          |              |              |         |
| MW                               | 29       | 44           | 1.27(0.59, 2.74) | 1.19(0.53, 2.67) | 0.671  |
| AICU                             | 11       | 17           | 1.25(0.47, 3.30) | 1.15(0.41, 3.25) | 0.779  |
| OPD                              | 48       | 43           | 2.16(1.04, 4.48) | 1.90(0.87, 4.12) | 0.105  |
| EM                               | 20       | 32           | 1.21(0.53, 2.75) | 1.30(0.54, 3.10) | 0.547  |
| OR                               | 30       | 24           | 2.42(1.08, 5.43) | 2.20(0.93, 5.22) | 0.072  |
| SW                               | 34       | 32           | 2.05(0.95, 4.45) | 2.06(0.90, 4.69) | 0.084  |
| GynW                             | 16       | 31           | 1.0          | 1.0     |

COR Crude Odds Ratio, AOR Adjusted Odds Ratio, 1 Reference, *Significant at p-value<=0.05, CI confidence interval
highly needed and critically important for better healthcare and wellbeing of the older people [16].

The sex of the study participants was significantly associated with nurse’s attitudes towards the care of older people. Female nurses were 2.04 times more likely to have a favorable attitude towards the care of older people compared to those male counterparts. This finding is supported by a study done in Iran [11]. This could be for the reason that females have better concentration on their work and they are naturally gifted in caring behaviors. For good quality care of elderly patients, both male and female nurses should work strongly to improve care and special attention should be given for male nurses.

This study revealed a significant association between the levels of education and attitude of nurses towards the care of the older people. Nurses who had a BSc degree and above were nearly three times more likely to have a favorable attitude towards the care of older people compared to those who had a diploma. The result of this study is complemented by a study conducted in Nepal [35]. This could be because an increased level of education helps to read different kinds of literature regarding the care of the older people, which will bring a favorable attitude. To have a favorable attitude towards a better quality of older people care, nurses with a lower educational status should get short- and long-term training.

Nurses who had lived with the older people were significantly associated with nurses’ attitude towards the care of the older people. Nurses who had lived with the older people were 1.6 times more likely to have a favorable attitude compared to those who didn’t live with the older people. The result of this study is complemented by a study conducted in Korea [34]. This could be because nurses who have lived with the older people might help the older people and appreciate their problems. This might result in a positive attitude towards care for elderly people.

This study also investigated nurses who had an experience of the care of older people in clinical practice and found out that it significantly associated with nurses’ knowledge regarding the care of the older people. Nurses who had experienced the care of the older people in clinical practice were 1.63 times more likely to have a favorable attitude towards the care of older people compared to those who did not have the experience of caring for the older people in clinical practice. The result of this study is supported by a study conducted in Turkey [20]. The possible justification might be that engaging with older people helped the nurses understand problems of the elderly which motivated them to care for the older people.

Strength and limitations
This study focused on one of the neglected special population groups and possibly it could be the first study in the study area and could have added a valuable contribution to the medical field. However, it has some limitations. Firstly, since self-administered questionnaire for knowledge and attitude regarding care of the older people was used, there may be recall bias. Secondly, lack of comparable studies in Ethiopia made the local comparison and discussion difficult. Thirdly, nurses working in the pediatrics units were not included in the study.

Conclusion
According to this study, less than half of the study participants had good knowledge and a favorable attitude toward the care of older people. The study also showed that age greater than 25 years and above, serving for greater than two years and above, being BSc degree holder and above, ever lived with the older people, and nurses who were working in adult intensive care unit were significantly associated with the knowledge of nurses. Moreover, being female, being BSc degree holder and above, ever lived with the older people, and care of older people in clinical practice were significantly associated with nurses’ attitude towards care of the older people. Likewise, continuous professional development regarding the care of the older people is important to enhance nurses’ knowledge and attitude.

Abbreviations
AOR: Adjusted odds ratio; CI: Confidence interval; COR: crude odds ratio; ICU: Intensive care unit; KOP-Q: Knowledge of older patient’s quiz; OPACS: Older patients in acute care survey; OPD: Outpatient department; SPSS: statistical package for social sciences

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Authors’ contributions
FF designed the study, developed the proposal, participated in the data collection, performed analysis, and drafted the manuscript. HSM, HLE, and AWA approved the proposal with revisions, participated in data analysis, and revised subsequent drafts of the manuscript. All authors read and approved the final manuscript.

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Availability of data and materials
The summary data are available in the main document. The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.
Declarations

Ethics approval and consent to participate
Ethical clearance was obtained from an ethical review committee of the school of nursing on behave of the institutional review board (IRB) of the University of Gondar (Ref. No: SNU/1647/2013). An official permission letter was secured from each hospital. Each study participant was informed about the purpose, method, expected benefit, and risk of the study. They were also informed about their full right not to participate or withdraw from the study at any time, and deciding not to participate had no impact on their service. Written consent was obtained and participants’ willingness was respected and confidentiality was guaranteed. For participants who could not read and write, a thumbprint was used in place of participants’ signatures. The study has been performed following the ethical standards laid down in the 1964 Declaration of Helsinki. This was also approved by the Ethical Review Committee.

Consent for publication
Not applicable.

Competing interests
The authors declare that they have no competing interests.

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References
1. Antsiharad A, Agha Jarnaat M, Ghahremani Z. Attitudes toward elderly among nurses working in medical-surgical wards in Zanjan hospitals, 2012. Prev Care Nurs Midwifery. 2015;4(2):81–90.
2. Beard HP, Bloom DE. Towards a comprehensive public health research to population ageing. Lancet (London, England). 2015;385(9968):658.
3. Engström G, Fagerberg I. Attitudes towards older people among Swedish healthcare students and health care professionals working in elder care. Nurs Rep. 2011;1(1):2–6. https://doi.org/10.4081/nursrep.2011.e2.
4. Bassan N, Ubenou U, Palle J. An exploratory study of the knowledge and practices of family caregivers in the care of the elderly at home in the Buea Health District. Cameroonian Gerontol Geriat Res. 2018;4(7473). https://doi.org/10.1124/2167-7182.1000473.
5. King BJ, Roberts TJ, Bowers BJ. Nursing student attitudes toward and preferences for working with older adults. Gerontol Geriat Educ. 2013;34(3):272–91. https://doi.org/10.1080/02701960.2012.718012.
6. Salmond SW, Echevarria M. Healthcare transformation and changing roles for nursing. Orthop Nurs. 2017;36(1):12–25. https://doi.org/10.1097/NOR.0000000000000387.
7. Mattos MK, Jiang Y, Seaman JB, Nisen ML, Chaeas ER, Novosel LM. Baccalaureate nursing students’ knowledge of and attitudes toward older adults. J Gerontol Nurs. 2015;41(7):46–56. https://doi.org/10.3928/00989142-20150429-01.
8. Baumbusch J, Leblanc ME, Shaw M, Kjorven M. Factors influencing nurses’ readiness to care for hospitalised older people. Int J Older People Nursing. 2016;11(2):149–59. https://doi.org/10.1111/ijon.12109.
9. Huang C-S. Undergraduate students’ knowledge about aging and attitudes toward older adults in east and west: a socio-economic and cultural exploration. Int J Aging Hum Dev. 2013;77(1):59–76. https://doi.org/10.1080/00946777.2013.763229.
10. Williams B, Doherty NL, Bender A, Mattos H, Tlibb JR. The effect of Nintendo Wii on balance: a pilot study supporting the use of the Wii in occupational therapy for the well elderly. Occup Ther Health Care. 2011;25(2–3):131–9. https://doi.org/10.3109/07388057.2011.560627.
11. Afarigan B, Abedi HA. Investigating the relationship between ageism and some demographic aspects in offering nursing care to elder patients of Al-Zahra Hospital, Isfahan. Int J Med Res Health Sci. 2016;5(12):233–8.
12. Roethler C, Adelman T, Parsons V. Assessing emergency nurses’ geriatric knowledge and perceptions of their geriatric care. J Emerg Nurs. 2011;37(2):132–7. https://doi.org/10.1016/j.jen.2009.11.020.
13. Mahmoud MS, Begum MK, Akhter J. Knowledge and attitude of senior staff nurses regarding geriatrics health care in a tertiary public hospital. Asian J Med Biol Res. 2020;6(3):431–9. https://doi.org/10.3529/ajmbre.v6i3.449791.
14. Kabstóvá O, Puteková S, Martinková J, Záhorecová H. Nurses’ attitudes and knowledge of the geriatric age issue. Kontakt. 2016;18(4):e213–e8. https://doi.org/10.1610/kontakt.2016.10.002.
15. Kaur S, Kumar A, Kaur B, Rani B, Ghat Singla M. Knowledge and attitude regarding care of elderly among nursing students: an Indian perspective. J Nurs Care. 2014(3).
16. Muhisin AA, Munyogwa MJ, Kibisi SM, Seif SA. Poor level of knowledge on elderly care despite positive attitude among nursing students in Zanzibar Island: findings from a cross-sectional study. BMC Nurs. 2020;20(1):1–8. https://doi.org/10.1186/s12912-020-00488-w.
17. de Almeida Tavares JP, Altd S, Sá-Couto P, Boltz M, Capezuti E. Portuguese nurses’ knowledge of and attitudes toward hospitalized older adults. Scand J Caring Sci. 2015;29(1):51–61. https://doi.org/10.1111/scs.12124.
18. Alquwez N, Cruz JP, Almazan FU, Alami MS, Mesde JJ. The Arabic version of the Kogan attitudes toward older people scale among Saudi nursing students: a psychometric analysis. Ann Saudi Med. 2018;38(6):399–407. https://doi.org/10.5144/0256-4947.2018.399.
19. Subba HK, Subba R, Poudyal S. Attitudes towards older patients among nurses working in hospital. Hindu. 2019;34:93–7.
20. Adibelli D, Kılıç D. Difficulties experienced by nurses in older patient care and their attitudes toward the older patients. Nurse Educ Today. 2013;33(9):1074–8. https://doi.org/10.1016/j.nedt.2012.04.002.
21. Oyetunde MO, Ojo OO, Ojewale LY. Nurses’ attitude toward the care of the elderly: implications for gerontological nursing training. J Nurs Educ Pract. 2013;7(1):150. https://doi.org/10.5430/nep.v7n1.50.
22. Kwon Y, Lee HY, Hwang SS. A study on the knowledge, attitude and nursing practice of the nurses-towards the elderly in geriatric hospitals. J Korea Acad-Ind Cooperation Soc. 2013;14(11):5785–91. https://doi.org/10.5762/KAIS.2013.14.11.5785.
23. Dikken J, Hoogerdijin JG, Klaassen L, Lagerwey MD, Shortridge-Baggett L, Schuurmans MJ. The knowledge-about-older-patients-quiz (KOP-Q) for nurses: cross-cultural validation between the Netherlands and United States of America. Nurse Educ Today. 2017;55:25–30. https://doi.org/10.1016/j.nedt.2017.05.003.
24. Topaz M, Doron I. Nurses’ attitudes toward older patients in acute care in Israel. Online J Issues Nurs. 2013;18(2):246–40. https://doi.org/10.3912/OJNI. Vol18No02PPT01.
25. Dikken J, Hoogerdijin JG, Lagerwey MD, Shortridge-Baggett L, Klaassen L, Schuurmans MJ. Measurement of nurses’ attitudes and knowledge regarding acute care older patients: psychometrics of the OPACS-US combined with the KOP-Q. Geriatr Nurs. 2017;38(5):393–7. https://doi.org/10.1016/j.gerinurse.2017.01.001.
26. United Nations, Department of Economic and Social Affairs, Population Division. World Population Prospects: The 2017 Revision. New York: United Nations; 2017.
27. Government of the Federal Democratic Republic of Ethiopia. National Plan of Action on Older persons (1998–2007) E.C Ministry of Labor and Social Affairs; 2006. http://old.adapt.it/adapt-indices/a-federal-democratic-republic-ethiopia-national-plan-action-older-persons-2006/.
28. Dikken J, Hoogerdijin JG, Krutwagen C, Schuurmans MJ. Content validity and psychometric characteristics of the “knowledge about older patients quiz” for nurses using item response theory. J Am Geriatr Soc. 2016;64(11):2378–83. https://doi.org/10.1111/jgs.14476.
29. Dikken J, Hoogerdijin JG, Schuurmans MJ. Construct development, description and initial validation of the knowledge about older persons quiz (KOP-Q) for nurses. Nurse Educ Today. 2015;35(6):260. https://doi.org/10.1016/j.nedt.2015.06.005.
30. Efiong M. Knowledge, attitude and practice of Care of the Elderly Patients among Health Workers in University of Calabar Teaching Hospital Calabar. Cross River State: University of Nigeria; 2015.
31. Liu Y, Norman U, While AE. Nurses’ attitudes towards older people: a systematic review. Int J Nurs Stud. 2013;50(9):1271–82. https://doi.org/10.1016/j.ijnurstu.2012.11.021.
32. Heise B, Johnsen V, Himes D, Wing D. Developing positive attitudes toward geriatric nursing among millennials and generation Xers. Nurs Educ Perspect. 2012;33(3):156–61. https://doi.org/10.5480/1536-5026-33.3.156.

33. Letvak S, Ruhm C, Gupta S. Differences in health, productivity and quality of care in younger and older nurses. J Nurs Manag. 2013;21(7):914–21. https://doi.org/10.1111/jonm.12181.

34. Kang Y, Moyle W, Venturato L. Korean nurses’ attitudes towards older people with dementia in acute care settings. Int J Older People Nursing. 2011;6(2):143–52. https://doi.org/10.1111/j.1748-3743.2010.00254.x.

35. Roohi Moghaddam H, Mohamadi S, Alipour F. Attitude of nurses, instructors and nursing students towards the care of elderly patients (a systematic review). J Gerontol. 2019;4(1):34–44. https://doi.org/10.29252/jge.4.1.34.

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