

Medical Science

To Cite:

Alharthi MA, Alhazli AH, Alsaedi SS, Alharthi HM, Alharbi SZ, Mobarki SY. Knowledge, attitude, and practice of frailty management among clinical nurses in Saudi Arabia: A cross-sectional study. *Medical Science* 2026; 30: e62ms3848
doi: <https://doi.org/10.54905/disssi.v30i169.e62ms3848>

Authors' Affiliation:

King Abdulaziz University faculty of nursing, Saudi Arabia

*Corresponding author:

Aziz Hamad Alhazli,
King Abdulaziz University faculty of nursing, Saudi Arabia,
E-mail: azoo2014azoo@hotmail.com

Contact List

Meshari Awwadh Alharthi	Re9d@hotmail.com
Aziz hamad Alhazli	azoo2014azoo@hotmail.com
Salah salem Alsaedi	alsaedi86@hotmail.com
Hassan Mohammed Alharthi	Yiti1551@gmail.com
Saleem Zaidan Alharbi	Mr-saleem@hotmail.com
Sultan Yahya Mobarki	mymobarki@hotmail.com

Peer-Review History

Received: 21 August 2025
Reviewed & Revised: 30/August/2025 to 09/March/2026
Accepted: 16 March 2026
Published: 30 March 2026

Peer-review Method

External peer-review was done through double-blind method.

Medical Science
pISSN 2321-7359; eISSN 2321-7367



© The Author(s) 2026. Open Access. This article is licensed under a [Creative Commons Attribution License 4.0 \(CC BY 4.0\)](http://creativecommons.org/licenses/by/4.0/), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if changes were made. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/>.

Knowledge, attitude, and practice of frailty management among clinical nurses in Saudi Arabia: A cross-sectional study

Meshari Awwadh Alharthi, Aziz Hamad Alhazli*, Salah Salem Alsaedi, Hassan Mohammed Alharthi, Saleem Zaidan Alharbi, Sultan Yahya Mobarki

ABSTRACT

Background: Frailty is becoming a bigger problem for public health because it causes disabilities, falls, longer hospital stays, and higher medical costs. Because nurses are always with their patients, they can spot early signs of frailty and give them the right care. **Aim:** This study evaluated clinical nurses' knowledge, attitudes, and practices (KAP) concerning frailty management, and investigated the factors affecting these components and their interrelationships. **Methods:** A cross-sectional study was performed involving 353 clinical nurses in a hospital in Saudi Arabia. Data were gathered using a self-administered, validated computerized questionnaire that addressed patient demographics, knowledge, attitudes, and practices (KAP) regarding frailty care. We used IBM SPSS Statistics to do descriptive statistics, Spearman correlations, and multiple linear regression to find out what factors affect KAP scores. **Results:** Nurses had a basic understanding of how to manage frailty (88.4%), but their attitudes (72.5%) and practices (58.4%) were not good enough, with an overall KAP score of 76.8%. Practice exhibited a weak correlation with knowledge ($r = 0.148$, $p = 0.005$) and a strong correlation with attitude ($r = 0.224$, $p < 0.001$), whereas knowledge and attitude showed no significant relationship ($p = 0.094$). Gender, age, geriatric nursing experience, and department significantly affected KAP scores ($p < 0.05$). **Conclusion:** Saudi clinical nurses have a good understanding of frailty, but their attitudes and practices are not up to par. To improve care for frail elderly patients, organizations need to support nurses, set up standardized screening, and create structured educational programs to help nurses improve their skills.

Keywords: Frailty, nurses, knowledge, attitude, practice, frailty management, cross-sectional study, Saudi Arabia.

1. INTRODUCTION

Frailty is a major barrier to treatment, and a growing public health problem as the global population ages rapidly (Dent et al., 2023). One of the most noteworthy feature is frailty which varies from 26.8–47.4% in older people and is characterized

by low tolerance to stressors and greater sensitivity owing to depletion of physiological reserves (Doody et al., 2022; O'Donovan et al., 2023). Furthermore, frailty predicts poor clinical outcomes, including falls, fractures, dementia, and disability. It has been shown to strongly correlate with these types of negative outcomes (for example, being incapacitated, being depressed, and experiencing sleep problems) (Rasiah et al., 2020).

In addition, these factors contribute greatly to socioeconomic difficulties, including increased healthcare costs. Certain clinical practice guidelines have advocated for the early identification of aged adults who are at risk, in addition to suggesting therapeutic choices such as exercise, nutrition, and polypharmacy therapies. Therefore, early detection and treatment of frailty by medical professionals is essential to maintaining the health of older people who are fragile (Lorbergs et al., 2022).

Nurses are very important in helping people to understand the risks and benefits of performing Cardiopulmonary Resuscitation (CPR) on at-risk or vulnerable patients using a Clinical Frailty Scale (CFS) (Surkan et al., 2020). Patients admitted to the critical care unit are often offered the CFS by a medical expert following a brief interview and physical assessment (Papadopoulou et al., 2021).

Indicators of frailty, such as weakness, fatigue, or changes in cognitive function, can be closely monitored by nurses, who can then report these findings to the medical team (Warnier et al., 2021). Healthcare workers, particularly nurses, must always be knowledgeable and cautious in their work. It has been demonstrated that older patients in critical care units who have short-term mortality, poor frailty, and poor quality of life after being discharged from the hospital require more organ support and stay longer in the hospital and intensive care unit (Kalaiselvan et al., 2023).

Educating nurses about frailty may lead to improved care for weak, medically-complex patients (Canbolat Seyman and Sara, 2023). Manuel et al. conducted studies showing that focused education around frailty diagnosis, reversibility, and management are necessary to improve hospital frailty identification and management (Manuel et al., 2024).

Because they often engage with patients, nurses are well-positioned to assess and manage frailty (Kasa et al., 2023). Although all data available were drawn from developed countries, multiple empirical studies were carried out, and many of them comprised intervention studies where nurses had an improvement effect on health status with seniors and reversed the course of frailty (Gobbens and Uchmanowicz, 2023). Although there is consensus among primary care physicians, researchers, and geriatricians about the significance of frailty and its management in older adults, the knowledge of frailty, screening, and management is still in the early stages, as evidenced by limited practical experiences with developing and applying screening and management approaches (Gobbens and Uchmanowicz, 2023).

One of the possible obstacles in terms of the reasons is the absence of structured technology and knowledge (Shen et al., 2024). Additionally, nursing staff may not possess sufficient knowledge or experience in the care of frail older individuals; however, it is difficult to quantify the lack of knowledge and/or experience that exists among clinical nurses in relation to the care of frail elderly individuals (Avgerinou et al., 2021).

According to a qualitative study, nurses require training because they lack knowledge of frailty, even in hospital systems that employ frailty screening techniques (Warnier et al., 2021; Gobbens and Uchmanowicz, 2023). However, most survey respondents in quantitative research are healthcare professionals, and the extent of knowledge held by clinical nurses is seldom documented. A quantitative survey of Brazilian healthcare professionals suggested variability in assessments for faltering and the use of standard instruments by clinicians, with <50% reporting use for each individual component (Azevedo et al., 2024).

Additionally, Canadian research indicates that general frailty screening techniques were utilized more frequently in medical and/or surgical care. Many of these studies have focused primarily on reporting on the frailty screening process or just evaluating nurses' attitudes and opinions about screening for frail patients; however, the difficulty in determining the level of knowledge, attitudes, and actual behaviors of clinical nurses regarding frail patients' treatment is rarely displayed through quantitative measurement. International guidelines recommend frailty screening for all older adults and not just even those with geriatric expertise (Lorbergs et al., 2022).

Contact with older inpatients is commonly made by nurses in the Chinese healthcare system, not only geriatric specialist clinics but also almost all clinical environments. A prior investigation conducted by scholars from China measured the level of understanding of nursing staff concerning frailty utilizing the knowledge, attitude, and practice (KAP) paradigm. This was done exclusively with those who work in gerontology. Geriatric nurses may have somewhat skewed KAP scores that are not representative of clinical nurses in general since they operate in more specialized settings (Huang et al., 2025).

Moreover, an evaluation of the KAP status of nurses who work throughout healthcare delivery systems is vital to improve the nursing profession as a whole; additionally, this type of study will add to the body of literature regarding geriatric nursing in

alternative environments. Thus, the purpose of this research was to utilize the KAP model to examine and formulate hypotheses regarding the link between knowledge, attitude, and practice in relation to the management of frailty among nurses providing care in China. First proposed in the 1960s, the KAP model is widely used to assess behavioral changes (Mong et al., 2022).

This theoretical framework declares that human behavior develops through three stages: the formation of beliefs, the collection of information, and the development of behavior (Mong et al., 2022). Nurses' attitudes towards frailty care and knowledge level are crucial for the success of frailty care because attitudes normally serve as a mediator in the process of converting information into actions; however, this relationship has not been established so far (Mong et al., 2022; Zhou et al., 2023a).

As a result, a route analysis of the connection between nurses' knowledge, attitudes, and practice is necessary using structural equation modeling. To the best of our knowledge, no previous study has used the KAP model to assess nurses' practices for managing frailty in older people. Therefore, the current study sought to accomplish two goals: to determine the extent and determining factors of clinical nurses' knowledge, attitudes, and practices regarding frailty management in Saudi Arabia; and to clarify the connections between these factors and clinical nurses' knowledge, attitudes, and practices regarding frailty management in Saudi Arabia.

2. METHODS

Study design and setting

A cross-sectional observational study was conducted in Saudi Arabia. The researchers administered an e-questionnaire survey to the nurses at a Saudi Arabian hospital.

Inclusion criteria

1. More than 1 year of experience in clinical nursing.
2. A nursing practice certificate issued by the Saudi Ministry of Health.
3. Voluntary involvement in the research.

Exclusion criteria

1. Nurses who have no affiliation with this center.
2. Nurses who aren't currently working, while the survey is being conducted.

Sample size

We used the G Power program (version 3.1) to determine out the sample size based on the statistical power. Based on the principles and process of structural equation modeling (SEM), the minimum sample size was suggested at 360 people (assuming a medium effect size [$f^2 = 0.15$] with an alpha level of 0.05, and power of 0.95) with an outcome of 44 observed variables. To reach a goal sample size of approximately 353 nurses, an additional 10% of the targeted sample participants were included for purposes of the anticipated non-response or any incomplete questionnaires. This guaranteed the robustness and dependability of the structural model's parameter estimates.

Instruments

Demographic data form

The participating nurses' sociodemographic information included the department, sex, age, education, job title, years of work experience, and years of geriatric nursing experience.

Knowledge, attitude, and practice of the frailty management questionnaire

To ensure that it was appropriate for both Culture and Context, the questionnaire was created through multiple steps including literature research, semi-structured interview, and expert validation from nursing educators and clinicians in Saudi Arabia, a review of the text, and finally, pilot-testing with clinical nurses from Saudi Arabia. The questionnaire consisted of thirty-one items and three dimensions: knowledge, attitude, and practices.

Knowledge was assessed using six subjective questions (know, know a little, or don't know) and eight objective questions (correct, uncertain, or incorrect). Attitude was also assessed by eight items on a 5-point Likert scale (from 'strongly disagree' to 'strongly agree').

Scores higher than 3 indicate that one's attitude towards a particular item/issue is positive. Practice was assessed using nine statements on a 5-point Likert scale, ranging from 1 (never) to 5 (often) (Ji et al., 2024).

Overall, a higher score indicates a more suitable degree of knowledge, attitudes, and actions. Bad, middling, and good scores are defined as scores below 60%, 61–79%, and >80%, respectively. The average score for each dimension multiplied by the theoretical maximum is the average score rate (%) for each dimension (Ji et al., 2024).

The Cronbach's alpha value for the questionnaire was 0.845, and the retest reliability was 0.990. In the pilot study involving 20 randomly selected clinical nurses, the Cronbach's alpha coefficients for the knowledge, attitude, and practice groups were 0.752, 0.873, and 0.915, respectively. The instrument had a Cronbach's alpha value of 0.846 (Ji et al., 2024).

Data collection and quality control

The research team called each Chief Nurse from each unit to explain the purpose and methodology of this study. The head nurses then electronically sent the survey question to research participants. The participants answered the computerized questionnaire independently and anonymously after receiving an overview of the survey's goals, completion requirements, and related topics. All study participants were told that the survey was voluntary. Data was collected electronically using a secure online survey platform approved by the Research Council of the Saudi Arabian hospital, and the dataset was exported at the conclusion of the data gathering period (Ji et al., 2024).

Two researchers examined the data to exclude questionnaires that did not comply. Notably, no data were missed because this survey was conducted using an electronic questionnaire with all items marked as needed. Questionnaires that took less than five minutes to complete or had nonsensical responses were excluded. Measured data is represented by the median (IQR), while counted data is represented by frequencies and percentages (Ji et al., 2024).

Statistical analysis

Analyses were done by using IBM SPSS. Ethical obligations have been satisfied for both the Saudi Ministry of Health & the ethics committees of all participating hospitals by complying with all study protocols. The median value (IQR), numerical count & percentage of the frequency of each datum collected. A multivariate linear regression analysis included variables to investigate what factors affect nurses' knowledge, attitudes, and behavior regarding frailty management. Spearman correlation analytical methods measured the relationship between the KAP score data. A probability (p) value of less than 0.05 was considered a statistically significant finding (Çetinkaya-Rundel and Rundel, 2018).

3. RESULTS

Participants' characteristics

The demographic details of the 353 clinical nurses who took part in this cross-sectional study on frailty management in Saudi Arabia are shown in the table 1. Males made up most of the sample (212, 60.1%), with females making up 39.9% (141). Only 12.5% and 7.9% of participants were 41–50 and 51–60 years old, respectively, whereas 40.5% of participants were ≤30 years old and 39.1% were 31–40 years old. In terms of years of service, 35.7% had 11–20 years, 57.8% had 1–10 years, and just 6.5% had ≥21 years. Few had no experience (1.1%) or more than 21 years (2.3%), whereas most claimed 1–5 years (41.6%) or 6–10 years (35.1%) of geriatric nursing experience.

Of the respondents, the greatest number were junior nurses (56.7%), chief nurses made up the second-largest group of responders (11.3%), and supervisor nurses were in third place (32%). In terms of educational attainment, the majority (43.3%) had only completed high school, followed by associates' degrees (30.3%), bachelor's degrees (19.3%), and postgraduate degrees (7.1%). Many nurses worked in internal medicine (23.8%) and general surgery (41.6%), with lesser percentages in geriatrics (17.6%), emergency or intensive care unit (11%), orthopedics or traumatology (4.2%), and other departments (1.7%).

There was a moderate to high level of knowledge about frailty management outcomes (88.4%) among the responders, with only 8.2% indicating they had strong knowledge about frailty management and only 3.4% indicating they did not know anything about it. Conversely, only 2.8% of attitudes were positive, whereas 72.5% of them were rated negatively. Similarly, practice was generally rated lower than it should have been (58.4% rated as bad, 39.9% rated as moderate), with good practices accounting for only 1.7%. Essentially, there is a lack of ability for clinical nurses to treat frail patients effectively.

Table 1. Demographics of study participants (n = 353).

	Variables	Values, n (%)
Gender	Male	212 (60.1)
	Female	141 (39.9)
Age (years)	≤ 30	143 (40.5)
	31-40	138 (39.1)
	41-50	44 (12.5)
	51-60	28 (7.9)
Years of service	1-10	204 (57.8)
	11-20	126 (35.7)
	≥ 21	23 (6.5)
Years of geriatric nursing	0	4 (1.1)
	1-5	147 (41.6)
	6-10	124 (35.1)
	11-20	70 (19.8)
	≥ 21	8 (2.3)
Professional title	Junior nurse	200 (56.7)
	Supervisor nurse	113 (32)
	Chief nurse	40 (11.3)
Highest education	: Associate degree, vocational	107 (30.3)
	High school	153 (43.3)
	Bachelor's degree	68 (19.3)
	Master's degree, Doctoral degree	25 (7.1)
Department	Internal medicine	84 (23.8)
	General Surgical	147 (41.6)
	Geriatrics	62 (17.6)
	ICU or Emergency	39 (11)
	Orthopedics or Traumatology	15 (4.2)
	Others	6 (1.7)
Knowledge grades	Good	29 (8.2)
	Moderate	312 (88.4)
	Poor	12 (3.4)
Attitude grades	Good	10 (2.8)
	Moderate	87 (24.6)
	Poor	256 (72.5)
Practice grades	Good	6 (1.7)
	Moderate	141 (39.9)
	Poor	206 (58.4)

Note: n = sample number, % = percentage.

Association Between Total Knowledge, Attitude, and Practice (KAP) Scores and Demographic Characteristics

The correlation between Saudi Arabian clinical nurses' demographic traits and their overall Knowledge, Attitude, and Practice (KAP) ratings are shown in Table 2. With a median total KAP score of 80 (IQR = 6), most individuals were classified as poor (76.8%) and 22.1% as moderate, while just 1.1% were classed as having good total KAP overall. All the demographic factors examined showed a statistically significant correlation with overall KAP grades ($p < 0.05$).

There was a significant difference by gender ($p < 0.001$), with a higher percentage of females (67.9%) in the intermediate category and a higher percentage of males (67.5%) in the poor group. An additional strong relationship was identified between a person's age

and their KAP ($p < 0.001$). Most nurses (39.7%) aged between 31 and 40 years of age were classified as being in the intermediate category, while most nurses (46.1%) who were less than 30 years of age were classified as being in the bad category.

Table 2. Grades of KAP scores in association with demographics.

Variable	Total KAP 80 (6)	Good 4 (1.1%)	Moderate 271 (76.8%)	Poor 78 (22.1%)	<i>p</i> value
Gender					
Male	82 (8)	4 (100%)	183 (67.5%)	25 (32.1%)	<0.001 ^x
Female	77 (5)	0 (0%)	88 (32.5%)	53 (67.9%)	
Age					
≤ 30	82 (7)	0 (0%)	125 (46.1%)	18 (23.1%)	<0.001 ^x
31-40	79 (6)	4 (100%)	103 (38%)	31 (39.7%)	
41-50	77 (4.75)	0 (0%)	27 (10%)	17 (21.8%)	
51-60	77 (6)	0 (0%)	16 (5.9%)	12 (15.4%)	
Years of service					
1-10	81 (6)	0 (0%)	163 (60.1%)	41 (52.6%)	0.003 ^x
11-20	79.5 (5.25)	2 (50%)	93 (34.3%)	31 (39.7%)	
≥ 21	79 (7)	2 (50%)	15 (5.5%)	6 (7.7%)	
Years of geriatric nursing					
0	71 (24)	0 (0%)	2 (0.7%)	2 (2.6%)	<0.001 ^x
1-5	79 (6)	0 (0%)	113 (41.7%)	34 (43.6%)	
6-10	81 (5)	0 (0%)	101 (37.3%)	23 (29.5%)	
11-20	80 (8)	2 (50%)	49 (18.1%)	19 (24.4%)	
≥ 21	79.5 (22)	2 (50%)	6 (2.2%)	0 (0%)	
Professional title					
Junior nurse	80 (7)	2 (50%)	160 (59%)	38 (48.7%)	<0.001 ^x
Supervisor nurse	80 (6)	0 (0%)	91 (33.6%)	22 (28.2%)	
Chief nurse	77 (5.75)	2 (50%)	20 (7.4%)	18 (23.1%)	
Highest education					
Associate degree, vocational	81 (6)	0 (0%)	94 (34.7%)	13 (16.7%)	<0.001 ^x
High school	79 (7)	0 (0%)	114 (42.1%)	39 (50%)	
Bachelor's degree	78 (9)	2 (50%)	43 (15.9%)	23 (29.5%)	
Master's degree, Doctoral degree	82 (5.5)	2 (50%)	20 (7.4%)	3 (3.8%)	
Department					
Internal medicine	80 (8)	0 (0%)	73 (26.9%)	11 (14.1%)	<0.001 ^x
General Surgical	80 (6)	0 (0%)	120 (44.3%)	27 (34.6%)	
Geriatrics	80 (6)	0 (0%)	48 (17.7%)	14 (17.9%)	
ICU or Emergency	76 (6)	0 (0%)	19 (7%)	20 (25.6%)	
Orthopedics or Traumatology	77 (4)	2 (50%)	7 (2.6%)	6 (7.7%)	
Others	95 (44)	2 (50%)	4 (1.5%)	0 (0%)	

Note: Total KAP scores are presented as median (Interquartile range), Chi-Square Test ^x

Much of the bad group comprised nurses with between 1 and 10 years of experience, accounting for (60.1%), while those with greater experience (≥21 years) were relatively better represented in intermediate and good categories. For years of service, there was a strong correlation ($p = 0.003$). Years of service showed a significant connection ($p = 0.003$). KAP was highly correlated ($p < 0.001$) with years of geriatric nursing experience, and nurses with 1–10 years made up the highest percentage in both poor and moderate KAP.

They had relatively greater representation among higher grades for chief nurses. In contrast, junior nurses made up the largest proportion of low grades at 59%, showing that a meaningful relationship was found between professional title and KAP ($p < 0.001$). There was also a significant relationship ($p < 0.001$) between educational level and grade distribution; postgraduate nurses had better grade distribution and significantly higher KAP median scores than both high school and associate degree holders.

Lastly, there was a significant correlation between KAP and department of work ($p < 0.001$). Nurses in the internal medicine and general surgical departments had the highest percentage of poor grades, while those in the geriatrics and intensive care unit/emergency departments had comparatively higher percentages in the moderate category. Overall, the KAP Level for frailty management among clinical nurses was strongly associated with professional and demographic factors.

Correlation Analysis of Knowledge, Attitude, and Practice (KAP) Dimensions

The relationships among the Knowledge, Attitude, and Practice (KAP) aspects of frailty care among Saudi Arabian clinical nurses were examined using Spearman's rho analysis, as shown in Table 3. The results indicate a slight negative relationship between attitude and knowledge ($r = -0.089$), but this was not statistically significant ($p = 0.094$). This suggests that nurses' attitudes toward frailty care were not closely linked to their knowledge level about frailty management. In contrast, Knowledge and Practice had a small but statistically significant positive association ($r = 0.148$, $p = 0.005$), implying that better frailty practices were slightly associated with higher knowledge.

Additionally, there was a slight to moderate positive and statistically significant relationship between attitude and practice ($r = 0.224$, $p < 0.001$). This suggests that better clinical practices were associated with more positive views on frailty care. Overall, these findings point to the interconnectedness of KAP components in clinical nurses' frailty care, indicating that although knowledge by itself may not directly affect attitudes, knowledge and, more importantly, attitudes are strongly correlated with practice.

Table 3. Correlations among participants' KAP dimensions.

Items	Spearman's rho -value	p-value
Knowledge vs. Attitude	-0.089-	0.094
Knowledge vs. Practice	0.148	0.005
Attitude vs. Practice	0.224	< 0.001

Note: Bolded p-values denote significance.

Table 4. Multiple linear regression analysis of factors affecting total KAP score.

Variates	β	SE	β'	t value	p values	95% CI	
						Lower	Upper
Constant	83.740	1.561		53.635	< 0.001	80.669	86.811
Gender	-2.595-	0.817	-0.195-	-3.178-	0.002	-4.201-	-0.989-
Age group (years)	-1.725-	0.565	-0.242-	-3.056-	0.002	-2.836-	-0.615-
Years of service	-0.276-	0.880	-0.026-	-0.313-	0.754	-2.007-	1.455
Years of geriatric nursing	1.693	0.569	0.220	2.977	0.003	0.574	2.813
Professional title	-0.413-	0.525	-0.044-	-0.788-	0.431	-1.445-	0.619
Highest education	-0.026-	0.382	-0.004-	-0.069-	0.945	-0.778-	0.725
Department	0.663	0.303	0.120	2.191	0.029	0.068	1.258

Multiple Linear Regression Analysis

The findings of the multiple linear regression study examining variables affecting the overall Knowledge, Attitude, and Practice (KAP) score of Saudi Arabian clinical nurses are shown in Table 4. The whole regression model explained 14.1% of the variation in total KAP scores ($R^2 = 0.141$; adjusted $R^2 = 0.123$) and was statistically significant ($F = 8.078$, $p < 0.001$). One gender category (based on coding) had considerably lower overall KAP scores by around 2.6 points compared to the reference group, according to gender, which was a significant predictor ($\beta = -2.595$, $p = 0.002$). Age group was a strong negative predictor ($\beta = -1.725$, $p = 0.002$). Basically, the older the nurses, the lower their overall KAP scores. On the other hand, total KAP was significantly positively correlated with years of geriatric nursing experience ($\beta = 1.693$, $p = 0.003$), suggesting that higher KAP scores were anticipated expected with greater geriatric experience.

Department ($\beta = 0.663$, $p = 0.029$) was another major predictor of KAP, with greater KAP associated with employment in specific departments. Years of service ($p = 0.754$), professional title ($p = 0.431$), and highest education level ($p = 0.945$) showed no statistically significant relationships to KAP. The constant term ($\beta = 83.740$, $p < 0.001$) defines the estimated total KAP score at the baseline while each of the other independent variables are held constant. When you look at the big picture, it's clear that clinical nurses' KAP scores for frailty management aren't random; they are shaped by things like gender, age group, how many years they've spent in geriatric nursing, and which department they work in.

4. DISCUSSION

The research team wanted to find out how much Saudi Arabian clinical nurses know about frailty care, what they think about those methods, and what they do in their day-to-day work. To get real answers, they sent an electronic questionnaire, one that's already been proven reliable to hospital nurses. The survey asked about their knowledge, beliefs, and clinical routines, and collected details like their age and whether they'd received training in frailty care.

The research team ran a cross-sectional study using a single electronic questionnaire. They sent it out to hospital nurses at a medical center in Saudi Arabia, aiming to gauge how much those nurses know, believe, and do when caring for frail patients. To create the questionnaire, they dug into the literature and got input from experts. What they ended up with was a tested KAP scale that covers three main areas of frailty care, plus sections for education and demographic details.

Nurses had to have a year of clinical experience and a valid nursing license before they could sign up for the program as volunteers. The research team pulled together anonymous data and ran descriptive stats, inferential tests, and structural equation modeling. That's how they pinpointed key factors and figured out how knowledge, attitudes, and behaviors work together.

The present study found that although most clinical nurses had a correct understanding of frailty care, they exhibited negative attitudes and behaviors, with KAP levels still below the acceptable standards. The study results support earlier research, which indicated nurses continued to have inadequate practice skills and knowledge levels and that less than 5% of nurses met acceptable performance or competency levels (Huang et al., 2025).

The research showed a clear link between what nurses know, how they feel, and what they do in practice and how all that ties back to their skills and personal backgrounds. A nurse's own qualities have a big impact on how well they support patients facing frailty (Dent et al., 2023). The study took a close look at clinical nurses: how they work, what they believe about dealing with frailty, and how deep their understanding really goes. The study results match past research findings, although they demonstrate some important differences between the two sets of data.

Right now, most nurses only have a moderate grasp of frailty care; very few know enough, according to a recent survey. This matches previously published research reporting that a low proportion of nurses reported having enough knowledge to administer activities of daily living within their scope of practice. One reason for this is straightforward: there aren't clear guidelines for assessing frailty. Training programs are hit-or-miss, sometimes nonexistent. Plus, people often mix up frailty with other related conditions, which just adds to the confusion. All these things make it harder for nurses to really understand frailty. The study found plenty of participants working in geriatric settings who hadn't received any training on how to measure frailty (Mong et al., 2022; Huang et al., 2025).

This study found that many nurses had some understanding of frailty, but relatively few understood it well. Many nurses in this research lacked proper knowledge and understanding, something other studies have pointed out before. Nurses often don't really grasp what it means for an elderly patient to be frail (Ramzan et al., 2024).

These reasons have been associated with insufficient training and these factors could justify existing results in the current study, given that most participants were non-geriatric staff and potentially no frailty screen is utilized with these types of departments (Zhou et al., 2023; Ramzan et al., 2024).

However, the data from this research indicate that registered professionals have adequate knowledge. Now, this is a major gap. The gap can be explained by looking at how much clinical exposure and practical experience. These factors seem to explain why results didn't match up with earlier research (Gobbens and Uchmanowicz, 2023). A strong relationship exists between KAP average scores and total length of time working in nursing for the elderly population (clinical and critical care). The results of this research study are in agreement with previous studies documenting increases in knowledge or skill levels among healthcare providers with years of experience working at a particular facility or performing similar tasks (Gobbens and Uchmanowicz, 2023; Zhou et al., 2023).

The present findings are consistent with other studies that have found that a substantial number of nurses do not possess sufficient knowledge regarding assessment, diagnosis, and treatment, or have an appropriate understanding of diseases related to frailty (e.g.,

Sarcopenia). According to a previous study, the lack of knowledge is primarily due to insufficient clinical processes, inadequate professional training, and limited exposure to geriatric care (Taani et al., 2026).

A large percentage of people (62%) in the current study reported having at least an average amount of knowledge about CPR, while in the study of McCarthy it was only 6% of subjects. There are many factors causing these differences in knowledge about performing CPR such as experience (Ji et al., 2024; Taani et al., 2026).

The difference between previously reported studies and the current study may reflect a difference in understanding the educator role within the educational environment; thus, because of there being little or no training opportunities for staff, little or no institutional support, and little or no familiarity with frailty management programs in operation in their work environment. Ultimately, the past investigations illustrate that the better a particular characteristic (organizational support, knowledge of frailty guidelines, continued education) is identified in the environment in which educators are working, the more likely nurses are to have positive perceptions of frailty management (Gobbens et al., 2022; Nan et al., 2022).

The findings of this research study confirm what other studies have shown: Often, nurses' strategies to assist Australia's frailer patients are inadequate when compared with their clinical practice; a lack of funds, as well as a lack of education or training, has resulted in the lack of regular use of frailty screening methods in many health care settings (Ramzan et al., 2024).

The various components of the knowledge, attitude, and practice model (KAP) revealed further relationships. Specifically, studies have reported a strong correlation between the knowledge and attitude dimensions of KAP (i.e., the relationship between the knowledge and attitude dimensions of KAP are also significantly correlated). Additionally, the relationship between knowledge and practice was partially mediated by the attitude dimension. There was no statistically significant relationship between attitude and knowledge in the current study; both components were statistically significant when compared to pooled practice (Gwyther et al., 2018; Yan et al., 2023).

Therefore, in this case, it appears that simply increasing nurses' knowledge would not change their attitudes about caring for frail patients; it could be that other influences such as the culture of the workplace, training opportunities, or institutional policy may have a larger effect on how nurses perceive care of frail individuals (Gwyther et al., 2018; Yan et al., 2023).

The previous study found significant predictors of KAP scores to be awareness of frailty, organizational support, and understanding the recommendations. Age, department, and experience with geriatric patients, but it will vary from study to study depending on such variables (Rezaei-Shahsavarloo et al., 2020; Taani et al., 2026).

Although gender was also shown to be a statistically significant factor in the present study, it was not mentioned as an independent factor in the other study when comparing findings. The potential reasons for the differences between the studies may be related to variations in: clinical practice environments, education systems, and health care systems (Rezaei-Shahsavarloo et al., 2020; Taani et al., 2026).

In this study, the relationships among knowledge, attitudes, and practice also differed. Several previous studies have shown that there was a significant positive relationship among all three components of KAP: knowledge, attitudes, and practice (i.e., all three are positively related). Still, also an attitude may influence the relationship between knowledge and practice. However, a significant association between knowledge and attitude was not established in the current study (however, both were positively associated with practice) (Leblanc et al., 2022; Warren et al., 2022).

This indicates that under the current circumstances, people in charge must consider some additional aspects when wanting to change attitude, as this may not be possible just by providing knowledge; for instance, a workload or an organizational culture could help achieve better results regarding nurses' job satisfaction (Leblanc et al., 2022; Warren et al., 2022).

There were many different factors that played into KAP scores. In this study, elderly nursing experience was still one of the most positive predictors of total KAP score. However, an increase in age category was associated with a decrease in total KAP score (again this can be viewed as contradicting previous research those with more clinical experience or better knowledge and ability to manage frailty did seem to be older a generation discrepancy in regards to training, availability of continuing education, etc., and level of familiarity with current clinical standards) (Dumbuya et al., 2024; Ramzan et al., 2024).

Research indicates that all studies agree on the poor knowledge and experience level of nurses when it comes to treating patients with frailty; there is wide variation in the ways that nurses maintain this level of inconsistency. Findings suggest that formalized programs for treating frailty are needed, as well as institutional support, and the provision of specific education for improving nurse competency and increasing the use of evidence-based practice (Xin et al., 2024; Huang et al., 2025).

There are a lot of limitations during evaluating these results. The use of a cross-sectional design means that causal relationships cannot be established; self-reported surveys can also carry a risk of social desirability bias when considering practice. Contextual-relevant variables such as workload, organizational support, and access to practice guidelines were not assessed as part of this study. Also, since there was more emphasis on self-reported familiarity than on how well actual nursing practice was done, clinical skills were only assessed subjectively.

The research establishes that training hospitals should have some form of proper frailty education for all their employees. All staff, particularly nurse's education will not only provide knowledge but also practical education through usage examples of the clinical frailty scale. By building off the positive attitudes they have developed about caring for frail patients, educational programs can enhance nurses' self-perceptions of their value and confidence in their skills as caregivers to frail individuals.

Hospital administrators must make frailty a fundamental component of quality indicators and must incorporate them into standard nursing practice. Longitudinal studies, conducting interventional research at multiple sites, must be designed to establish a sense of causal relationship with the treatment of frail patients (as well as the assessment of therapeutic effectiveness), which will serve as the focus of future investigations into this phenomenon. Future studies should contain objective outcome measurements based on clinical care, along with additional worksheet variables that include support from the leaders, burden on workers, and leadership support for workers who serve the frail population.

5. CONCLUSION

For Saudi Arabian clinical nurses' knowledge, attitude, and behaviors. A primary finding shows that although nurses possess a reasonable amount of knowledge about their role as caregivers, their attitudes, and behaviors (including their clinical practices) are not always as appropriate as they should be. There is a strong degree of correlation between the three variables (i.e.: knowledge, attitude, practice); however, none have a definitive pathway from knowledge to attitude. Therefore, education alone will not suffice.

For nurses to improve their management of frail patients it is essential to consider environmental and cultural factors which impact their view of frailty, as demonstrated by frail patients' low management levels suggest that translating this knowledge into action has been very difficult. Policy makers, educators, and hospital administrators can use this research as critical information towards developing systematic improvements in the management of frail patients. Addressing the current disparity between knowledge and practice among nurses is clinically important for achieving enhanced health outcomes for the increasing number of frail elderly patients in Saudi Arabia. If these current gaps are not intentionally addressed, they will continue to affect the quality of care nurses can deliver to this vulnerable patient population.

Acknowledgments

We thank the authors and participants who contributed to the conduct of this study. We would like to express my sincere gratitude to all those who supported me throughout the course of this work.

Authors' Contributions

Meshari Awwadh Alharthi contributed to the conceptualization and design of the study and participated in data collection.

Aziz Hamad Alhazli contributed to study design, supervision of data collection, statistical analysis, interpretation of the results, and drafting of the manuscript.

Salah Salem Alsaedi contributed to data collection, data management, and initial manuscript preparation.

Hassan Mohammed Alharthi contributed to methodology development, data analysis, and critical revision of the manuscript.

Saleem Zaidan Alharbi contributed to data interpretation and manuscript editing.

Sultan Yahya Mobarki contributed to manuscript review, final editing, and approval of the final version for publication.

All authors read and approved the final manuscript and agree to be accountable for all aspects of the work.

Informed consent

Written & Oral informed consent was obtained from individual participants included in the study.

Ethical approval

The study was done in conformity with ethical guidelines. Participation was entirely voluntary, and all respondents provided informed consent. The participants' anonymity and confidentiality were ensured, and the data obtained were utilized purely for the study. The ethical guidelines for Human Subjects are followed in the study.

Funding

This research did not receive any external funding like specific grant from funding agencies in the public, commercial, or nonprofit sectors.

Conflict of interest

The authors declare that they have no conflicts of interest, competing financial interests or personal relationships that could have influenced the work reported in this paper.

Data and materials availability

All data associated with this study will be available based on a reasonable request to the corresponding author.

REFERENCES

1. Avgerinou C, Kotsani M, Gavana M, Andreou M, Papageorgiou DI, Roka V, Symintiridou D, Manolaki C, Soulis G, Smyrnakis E. Perceptions, attitudes and training needs of primary healthcare professionals in identifying and managing frailty: a qualitative study. *Eur Geriatr Med* 2021;12:321–32. doi: 10.1007/s41999-020-00420-0.
2. Azevedo PS, De Melo RC, de Souza JT, Frost R, Gavin JP, Robinson K, Boas PJ, Minicucci MF, Aprahamian I, Wachholz PA, Hinslif-Smith K. Frailty identification and management among Brazilian healthcare professionals: a survey. *BMC Geriatr* 2024;24:486. doi: 10.1186/s12877-024-05020-2.
3. Canbolat Seyman C, Sara Y. What do orthopaedic nurses think about frailty? A qualitative analysis. *Collegian* 2023;30:119–26. doi: 10.1016/j.colegn.2022.08.004.
4. Çetinkaya-Rundel M, Rundel C. Infrastructure and Tools for Teaching Computing Throughout the Statistical Curriculum. *Am Stat* 2018;72:58–65. doi: 10.1080/00031305.2017.1397549.
5. Dent E, Hanlon P, Sim M, Jylhävä J, Liu Z, Vetrano DL, Stolz E, Pérez-Zepeda MU, Crabtree DR, Nicholson C, Job J. Recent developments in frailty identification, management, risk factors and prevention: A narrative review of leading journals in geriatrics and gerontology. *Ageing Res Rev* 2023;91:102082. doi: 10.1016/j.arr.2023.102082.
6. Doody P, Asamane EA, Aunger JA, Swales B, Lord JM, Greig CA, et al Doody P, Asamane EA, Aunger JA, Swales B, Lord JM, Greig CA, Whittaker AC. The prevalence of frailty and pre-frailty among geriatric hospital inpatients and its association with economic prosperity and healthcare expenditure: A systematic review and meta-analysis of 467,779 geriatric hospital inpatients. *Ageing Res Rev* 2022;80:101666. doi: 10.1016/j.arr.2022.101666.
7. Dumbuya J, Marwaha RS, Shah PK, Challa S. To assess the knowledge, attitudes, and confidence of caregivers and administrators towards the oral health of nursing home residents in San Antonio, Texas. *BMC Geriatr* 2024;24:511. doi: 10.1186/s12877-024-04784-x.
8. Gobbens RJ, Vermeiren S, Hoof AV, Ploeg T van der. Nurses' Opinions on Frailty. *Healthcare* 2022;10. doi: 10.3390/healthcare10091632.
9. Gobbens RJJ, Uchmanowicz I. Frailty Viewed from a Nursing Perspective. *SAGE Open Nurs* 2023;9:23779608221150598. doi: 10.1177/23779608221150598.
10. Gwyther H, Shaw R, Dauden EA, D'Avanzo B, Kurpas D, Bujnowska-Fedak M, Kujawa T, Marcucci M, Cano A, Holland C. Understanding frailty: a qualitative study of European healthcare policy-makers' approaches to frailty screening and management 2018. doi: 10.1136/bmjopen-2017-018653.
11. Huang X, Zhou H, Feng Y, Li M, Wang R, Fang G, Lu L, Chen JA, Jiang W. Knowledge, attitude, and practice of frailty management among clinical nurses: a cross-sectional study. *BMC Geriatr* 2025;25:174. doi: 10.1186/s12877-025-05776-1.
12. Ji M, Hang L, Wang T, Luo H, Wu X, Gu D. A survey of nurses' knowledge, attitudes, and practice of sarcopenia: A cross-sectional study. *Nurse Educ Pract* 2024;74:103869. doi: 10.1016/j.nepr.2023.103869.
13. Kalaiselvan M, Yadav A, Kaur R, Menon A, Wasnik S. Prevalence of Frailty in ICU and its Impact on Patients' Outcomes. *Indian J Crit Care Med* 2023;27:335–41. doi: 10.5005/jp-journals-10071-24456.
14. Kasa AS, Drury P, Traynor V, Lee S-C, Chang H-C. The effectiveness of nurse-led interventions to manage frailty in

- community-dwelling older people: a systematic review. *Syst Rev* 2023;12:182. doi: 10.1186/s13643-023-02335-w.
15. Leblanc A, Diab N, Backman C, Huang S, Pulfer T, Chin M, Kobewka DM, McIsaac DI, Lawson J, Forster AJ, Mulpuru S. Development and assessment of an educational intervention to improve the recognition of frailty on an acute care respiratory ward. *BMJ Open Qual* 2022;11. doi: 10.1136/bmj-oq-2022-001935.
 16. Lorbergs AL, Prorok JC, Holroyd-Leduc J, Bouchard DR, Giguere A, Gramlich L, Keller H, Tang A, Racey M, Ali MU, Fitzpatrick-Lewis D. Nutrition and Physical Activity Clinical Practice Guidelines for Older Adults Living with Frailty. *J Frailty Aging* 2022;11:3–11. doi: 10.14283/jfa.2021.51.
 17. Manuel K, Crotty M, Kurrle SE, Cameron ID, Lane R, Lockwood K, Block H, Sherrington C, Pond D, Nguyen TA, Laver K. Hospital-Based Health Professionals' Perceptions of Frailty in Older People. *The Gerontologist* 2024;64:gnae041. doi: 10.1093/geront/gnae041.
 18. Mong I, Ramoo V, Ponnampalavanar S, Chong MC, Wan Nawawi WNF. Knowledge, attitude and practice in relation to catheter-associated urinary tract infection (CAUTI) prevention: A cross-sectional study. *J Clin Nurs* 2022;31:209–19. doi: 10.1111/jocn.15899.
 19. Nan J, Duan Y, Wu S, Liao L, Li X, Zhao Y, Zhang H, Zeng X, Feng H. Perspectives of older adults, caregivers, healthcare providers on frailty screening in primary care: a systematic review and qualitative meta-synthesis. *BMC Geriatr* 2022;22:482. doi: 10.1186/s12877-022-03173-6.
 20. O'Donovan MR, Devleeschauwer B, Sezgin D, Liew A, Kabir Z, O'Caomh R. Comparing frailty prevalence between countries: validation of the Global Burden of Disease study Frailty Index (GBD-FI) in the survey of health, ageing and retirement in Europe. *Age Ageing* 2023;52:afad214. doi: 10.1093/ageing/afad214.
 21. Papadopoulou C, Barrie J, Andrew M, Martin J, Birt A, Raymond Duffy FJ, Hendry A. Perceptions, practices and educational needs of community nurses to manage frailty. *Br J Community Nurs* 2021;26:136–42. doi: 10.12968/bjcn.2021.26.3.136.
 22. Ramzan M, Marshall P, Hashmi M. Knowledge of Clinical Frailty Scale among Intensive Care Nurses at Tertiary Care Hospital: Knowledge of Clinical Frailty Scale Among Intensive Care Nurses. *Pak J Health Sci* 2024;44–8. doi: 10.54393/pjhs.v5i10.1714.
 23. Rasiah J, Cummings GG, Gruneir A, Oelke ND, Estabrooks C, Holroyd-Leduc J. Prefrailty in older adults: A concept analysis. *Int J Nurs Stud* 2020;108:103618. doi: 10.1016/j.ijnurstu.2020.103618.
 24. Rezaei-Shahsavarloo Z, Atashzadeh-Shoorideh F, Gobbens RJJ, Ebadi A, Ghaedamini Harouni G. The impact of interventions on management of frailty in hospitalized frail older adults: a systematic review and meta-analysis. *BMC Geriatr* 2020;20:526. doi: 10.1186/s12877-020-01935-8.
 25. Shen S, Zeng X, Hui X, Chen L, Zhang J, Chen X. Application, knowledge and training needs regarding comprehensive geriatric assessment among geriatric practitioners in healthcare institutions: a cross-sectional study. *BMC Geriatr* 2024;24:349. doi: 10.1186/s12877-024-04964-9.
 26. Surkan M, Rajabali N, Bagshaw SM, Wang X, Rolfson D. Interrater Reliability of the Clinical Frailty Scale by Geriatrician and Intensivist in Patients Admitted to the Intensive Care Unit. *Can Geriatr J* 2020;23:223–9. doi: 10.5770/cgj.23.398.
 27. Taani MH, Skuble H, Antwi-Boasiako C, Wangler DM, Kerby CJ, Kawafha MM, AlAbidi S, Andargeery SY. Evaluation of the knowledge, perception, and practice of nurses regarding sarcopenia: a descriptive study. *BMC Geriatr* 2026;26:158. doi: 10.1186/s12877-025-06910-9.
 28. Warnier RMJ, Van Rossum E, Du Moulin MFMT, Van Lottum M, Schols JMGA, Kempen GIJM. The opinions and experiences of nurses on frailty screening among older hospitalized patients. An exploratory study. *BMC Geriatr* 2021;21:624. doi: 10.1186/s12877-021-02586-z.
 29. Warren N, Gordon E, Pearson E, Siskind D, Hilmer SN, Etherton-Ber C, Hanjani LS, Young AM, Reid N, Hubbard RE. A systematic review of frailty education programs for health care professionals. *Australas J Ageing* 2022;41. doi: 10.1111/ajag.13096.
 30. Xin B, He Y, Wu Y, Zhang D, Liu J, Yang S, Shi P, Su H, Jiang W. Associations between sensory impairment and functional limitations among older Chinese adults: mediating roles of social isolation and cognition. *BMC Geriatr* 2024;24:797. doi: 10.1186/s12877-024-05383-6.
 31. Yan R, Li L, Duan X, Zhao J. Association of frailty with health service use among older Chinese adults: analysis of population-based panel data. *Front Public Health* 2023;11. doi: 10.3389/fpubh.2023.1011588.
 32. Zhou C, Qu X, Wang L, Wu Q, Zhou Y. Knowledge, attitude, and practice regarding postoperative delirium among cardiac surgery nurses: A cross-sectional multi-centre study. *J Clin Nurs* 2023;32:5046–55. doi: 10.1111/jocn.16751.