Original Article

doi:10.31674/mjn.2026.v17i05.010

MJN

# Healthcare Workers' Knowledge and Attitudes toward Elderly Care in Malaysian Public Hospitals: A Single-Centre Cross-sectional Study

**Azura Abdul Halain[1*], Lau Hang Sian[2], Salimah Japar[1], Mardiana Mansor[3], Deena Clare Thomas[4], Dharina Baharuddin[5]**

*[1]Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, Jalan Universiti 1, 43400 Serdang, Selangor, Malaysia*

*[2]Subang Jaya Medical Centre, Jalan SS12/1A, 47500 Subang Jaya Selangor Darul Ehsan Selangor, Malaysia*

*[3]Faculty of Medicine, Universiti Sultan Zainal Abidin, Terengganu, Kampung Gong Badak, 21300, Terengganu, Malaysia*

*[4]Faculty of Medicine and Health Sciences, Universiti Malaysia Sabah Jalan UMS, 88400 Kota Kinabalu, Sabah, Malaysia*

*[5]Universitas Muhammadiyah Aceh, Lueng Bata, Kota Banda Aceh, Aceh 23123, Indonesia*

**Corresponding Author's Email: azurahalain@upm.edu.my*

**ABSTRACT**

**Background:** Aging is a natural part of life, and the number of elderly people is rapidly increasing globally and in Malaysia. Many elderly individuals experience chronic health problems that require specialized nursing care. Healthcare workers, particularly nurses, who lack sufficient knowledge or positive attitudes toward elderly care may deliver suboptimal care, affecting both patients and the healthcare system. **Objectives**:This study aimed to assess healthcare workers' knowledge and attitudes toward elderly care in a Malaysian public hospital and discuss nursing implications to improve gerontology practice. **Methods:** This cross-sectional study was conducted in a single public hospital between September 2018 to June 2019. Using convenience sampling, a total of 304 healthcare workers, including doctors, nurses, dentists, and allied health professionals, were recruited, yielding a response rate of 92.12%. Data was collected using validated self-administered questionnaires: the Facts on Aging Quiz 2 (FAQ-2) to assess knowledge and Kogan's Attitude toward Old People Scale (KOP) to evaluate attitudes. Data analysis was performed using SPSS version 22.0. **Results:** The mean ± SD score for knowledge on aging was 9.16 ± 1.03, while the mean ± SD score for attitudes toward the elderly was 38.00 ± 5.14. A significant association was found between the highest educational qualification and both knowledge ($p$=0.011) and attitude ($p$<0.001) scores. **Conclusion:** Educational level significantly influences healthcare workers' knowledge and attitudes toward elderly care, with exposure to elderly care also playing a role. Enhancing awareness and understanding of aging among healthcare workers is essential to fostering empathy and improving attitudes, ultimately improving the quality of care for elderly patients.

***Keywords: Aging; Attitude; Health Personnel; Knowledge***

## INTRODUCTION

Population aging is a global phenomenon, with the proportion of older adults projected to increase significantly, reaching approximately 22% of the global population, or 2 billion individuals, by 2050 (World Health Organization, 2026; United Nations, 2026). Aging is a continuous process from birth to death, involving complex physical, social, psychological, and spiritual changes (Dominguez *et al*., 2023; Lima *et al*., 2020).

In Malaysia, individuals aged 60 years and above are defined as elderly, following the classification established by the World Assembly on Ageing in 1982 (Department of Statistics Malaysia, 2020). The proportion of older adults in Malaysia has increased from 5.6% in 2014 to 6.5% in 2018 and is projected to

*Received: November 3, 2025 Received in revised form: April 11, 2026 Accepted: April 23, 2026*

reach 23% by 2050, driven by declining birth rates and increased life expectancy, which rose from 72.2 years in 2000 to 75 years in 2018 (Department of Statistics Malaysia, 2020). This demographic transition poses significant challenges to the healthcare system, particularly in managing chronic conditions and the growing demand for elderly care services (Ibrahim, 2025).

The growing elderly population has significantly increased healthcare demands due to a higher prevalence of chronic conditions such as diabetes, hypertension, and dementia (Samsudin, 2016; Lim *et al.,* 2021; Nasaruddin *et al.,* 2025; World Health Organization, 2026). In Malaysia, this demographic shift is particularly challenging, given the shortage of geriatric specialists and the need for multidisciplinary collaboration to improve elderly care (Keong, 2024; Ibrahim, 2025). Additionally, rising healthcare costs further necessitate strategic planning to ensure sustainability and efficiency in service delivery Ryan *et al*., 2024.

Healthcare workers play a central role in addressing these challenges through the delivery of preventive, curative, rehabilitative, and supportive care. This includes a wide range of professionals such as nurses, physiotherapists, dentists, and doctors, all of whom contribute to both direct and indirect patient care (Ministry of Health Malaysia, 2020; Sauni, 2023). In the context of elderly care, healthcare workers are expected to provide continuous, comprehensive, and person-centred services to meet the complex needs of older adults (Ibrahim, 2025).

To fulfil this role effectively, healthcare workers must possess a comprehensive understanding of the aging process across physical, psychological, social, and spiritual domains. Such knowledge is essential not only for improving care quality but also for fostering trust and therapeutic relationships with older patients (World Health Organization, 2023). However, both local and international studies reveal that healthcare professionals' knowledge of geriatric care often remains moderate, with evident gaps in understanding (Shen *et al*., 2024; Mitike *et al*., 2023). These knowledge deficiencies can adversely affect care outcomes and are associated with less favorable attitudes toward older adults (Alshammari *et al*., 2024; Abdullah *et al*., 2023).

From a nursing perspective, this demographic shift underscores the need to strengthen geriatric competencies among nurses, who represent the largest proportion of the healthcare workforce (Lee & Hamid, 2025). Nurses play a pivotal role in promoting healthy aging, conducting functional assessments, and implementing person-centred interventions. Inadequate knowledge about aging may result in suboptimal care and poorer health outcomes among older patients (Coffey *et al*., 2016). In addition to knowledge, attitudes toward elderly individuals are equally important, as positive attitudes are associated with improved patient outcomes and professional satisfaction, whereas negative perceptions may hinder effective care delivery (Tate *et al*., 2024; Abdullah *et al*., 2023).

Previous studies have shown that factors such as educational level, clinical experience, and personal interaction with older adult's influence both knowledge and attitudes toward elderly care (Tan *et al*., 2020). While some studies report a positive association between knowledge and attitudes, others demonstrate inconsistent or non-significant relationships, suggesting that knowledge alone may not be sufficient to influence attitudes toward elderly care (Alshammari *et al*., 2024).

Despite the rapidly aging population in Malaysia, limited empirical evidence exists regarding healthcare workers' preparedness to care for older adults, particularly in terms of their knowledge and attitudes. Therefore, this study aims to assess healthcare workers' knowledge of aging, examine their attitudes toward elderly individuals, and determine the association between knowledge and attitudes, as well as the influence of socio-demographic factors in a Malaysian public hospital setting.

## METHODOLOGY

### Study Design

This cross-sectional study was conducted over ten months, from September 2018 to June 2019, at a 620-bed public multi-specialty hospital serving approximately 570,000 residents. A cross-sectional design was employed as it is appropriate for assessing prevalence and associations at a single point in time (Setia, 2016;

Wang & Cheng, 2020). Although the data were collected during this period, the findings remain relevant as fundamental gaps in geriatric knowledge and attitudes continue to persist across healthcare systems. Nevertheless, advancements in clinical guidelines, geriatric training, and evolving healthcare practices should be considered when interpreting the applicability of these findings to the current context.

**Population, Samples and Sampling**

The study population comprised healthcare workers employed at a public hospital. The inclusion criteria were Malaysian healthcare workers, which include dentists, dietitians, medical assistants, medical doctors, nurses, and rehabilitation therapists (physiotherapists, speech therapists, occupational therapists, and audiologists). Healthcare workers in neonatal and pediatric departments were excluded. Healthcare workers employed in neonatal and pediatric departments were excluded because their clinical focus is predominantly on infants and children, and therefore their exposure to geriatric care is minimal. Including them could introduce bias and reduce the relevance of findings to elderly care practice. A total sample size of 304 was determined using Cochran's formula from a total workforce of 1459, and participants were recruited through convenience sampling.

**Instruments**

The instruments used were the Facts on Aging Quiz 2 (FAQ 2) and the Kogan's Attitude Toward Old People Scale (KOP), both adapted and shortened from Damulak *et al.* (2015). The FAQ-2 originally contained 25 items but was reduced to 10 items to suit the Malaysian context, while the KOP was shortened to 16 items comprising both positively and negatively worded statements. Item selection was based on relevance, clarity, and Content Validity Index (CVI) scoring following expert evaluation. Responses to the FAQ-2 were coded as "Yes," "No," or "I don't know," with one point awarded for each correct answer (range: 0–10). The KOP used a five-point Likert scale (0 = strongly disagree to 4 = strongly agree), yielding a possible total of 0–64. Negatively worded items were reverse scored prior to computing total attitude scores to ensure consistent score direction, with higher scores indicating more positive attitudes toward the elderly.

**Validity and Reliability**

Cronbach's alpha and the Content Validity Index (CVI) were used to evaluate the validity, reliability, and internal consistency of the questionnaires in this study. Expert review by gerontology specialists confirmed their appropriateness, with a Scale-CVI score of 0.975 for the Facts on Aging Quiz 2 (FAQ 2) and 0.775 for Kogan's Attitude Toward Old People Scale (KOP). As the S-CVI of the KOP fell within the 0.70–0.79 range, revisions were made based on expert feedback to enhance content clarity and cultural relevance. Reliability testing using data from the first 30 respondents yielded a Cronbach's alpha of 0.80 for the KOP, indicating good internal consistency and acceptable reliability for research use. For FAQ-2, Cronbach's alpha remained at 0.667, indicating moderate internal consistency. Although slightly below the commonly recommended threshold of 0.70, this value is considered acceptable for exploratory studies in social and behavioral research, particularly for knowledge-based instruments with heterogeneous items, which may inherently yield lower internal consistency (Taber, 2018). The high content validity (S-CVI = 0.975) further supports the adequacy of the instrument for this study.

All negatively worded KOP items marked '*' in Table 3 were reverse scored prior to computing total attitude scores to ensure consistency in score interpretation. Therefore, higher total scores reflect more positive attitudes toward older adults. Both instruments were deemed suitable for assessing healthcare workers' knowledge and attitudes toward aging in this study.

**Data Collection**

After obtaining department-level approvals, eligible participants were approached at their workplaces. The study objectives were explained, and informed consent was obtained. Participants completed a self-administered questionnaire within 10–15 minutes. Completed questionnaires were reviewed for completeness and securely stored in a locked cabinet accessible only to the research team to ensure confidentiality and data protection.

### Data Analysis

Data was analyzed using SPSS version 22.0. Descriptive statistics were used to summarize demographic and scale data. The Shapiro–Wilk test was used to check normality. For normally distributed data, parametric tests (t-test, ANOVA, Pearson correlation) were used, while non-parametric tests (Mann–Whitney U, Kruskal–Wallis, Spearman correlation) were used for non-normal data. Regression analysis examined the relationship between knowledge (FAQ-2) and attitude (KOP) scores. All tests were two-tailed with a significance level of $p \leq 0.05$. Only statistical tests suitable for the data type and distribution were applied.

### Ethical Considerations

This study received ethical approval from the Medical Research and Ethics Committee (MREC), National Medical Research Register (NMRR), Malaysia with reference number NMRR-19-0723-48921 on 11th April 2019. All participants were provided with an information sheet, and written informed consent was obtained prior to data collection.

## RESULTS

A total of 330 questionnaires were distributed, with 304 healthcare workers agreeing to participate and 26 declining, resulting in a response rate of 92.12%. The mean age of respondents was 31.71 ± 6.28 years. Most participants were female (74.3%), Malay (78.6%), and held a diploma qualification (55.6%). Nurses comprised most of the sample (60.9%). The sample was predominantly female nurses with diploma-level education, reflecting the typical workforce composition in Malaysian public hospitals. The distribution of participants according to socio-demographic characteristics is presented in Table 1.

***Table 1: Demographic Characteristics of Respondents (n = 304)***

| Variable | Category | n | % |
|---|---|---|---|
| **Age (years)** | Mean ± SD | 31.71 ± 6.28 | |
| | 18–26 | 71 | 23.4 |
| | 27–35 | 156 | 51.3 |
| | 36–55 | 77 | 25.3 |
| **Gender** | Female | 226 | 74.3 |
| | Male | 78 | 25.7 |
| **Ethnicity** | Malay | 239 | 78.6 |
| | Chinese | 30 | 9.8 |
| | Indian | 26 | 8.6 |
| | Others | 9 | 3.0 |
| **Religion** | Islam | 243 | 80.0 |
| | Buddhism | 18 | 5.9 |
| | Hindu | 25 | 8.2 |
| | Christian | 15 | 4.9 |
| | Others | 3 | 1.0 |
| **Education** | PhD | 5 | 1.6 |
| | Master | 11 | 3.6 |
| | Degree | 67 | 22.0 |
| | Post Basic | 43 | 14.1 |
| | Diploma | 169 | 55.6 |
| | Skills Certificate | 9 | 3.0 |
| **Occupation** | Dentist | 9 | 3.0 |
| | Dietician | 7 | 2.3 |
| | Medical Assistant | 30 | 9.8 |
| | Medical Doctor | 36 | 11.8 |
| | Nurse | 185 | 60.9 |
| | Rehabilitation Therapist | 37 | 12.2 |
| **Length of Service (months)** | Mean ± SD | 92.14 ± 71.13 | |
| | 1–60 | 132 | 43.4 |
| | 61–120 | 89 | 29.3 |
| | 121–180 | 52 | 17.1 |
| | 181–360 | 31 | 10.2 |

The mean knowledge score among respondents was 9.16 ± 1.03. Most participants demonstrated good understanding of physical and psychological changes associated with aging. However, knowledge of demographic trends was less consistent. The distribution of correct and incorrect responses to the "Facts about Aging Quiz" (FAQ 2) is shown in Table 2.

***Table 2: Distribution of Responses to FAQ 2 Regarding Knowledge about Aging (n = 304)***

| Questions | Correct | Incorrect |
|---|---|---|
| | n (%) | n (%) |
| 1. A person is categorized as elderly when he/she is at least 60 years old in Malaysia. | 278 (91.4) | 26 (8.6) |
| 2. Elderly women live longer than elderly man. | 228 (75.0) | 76 (25.0) |
| 3. When a person is undergoing an aging process, he/she is experiencing physiological, psychological and reproductive change. | 297 (97.7) | 7 (2.3) |
| 4. Elderly people are at risk of suffering from chronic illness. | 286 (94.1) | 18 (5.9) |
| 5. All five senses tend to decline in old age. | 282 (92.8) | 22 (7.2) |
| 6. Population aging is the increase in the number and proportion of older people in society. | 249 (81.9) | 55 (18.1) |
| 7. Physical strength tends to decline in old age. | 299 (98.4) | 5 (1.6) |
| 8. As we age, the structure of bone changes and this results in loss of bone tissue. | 284 (93.4) | 20 (6.6) |
| 9. Muscle loses size and strength as we get older, which can contribute to fatigue and weakness and reduces tolerance to exercise. | 293 (96.4) | 11 (3.6) |
| 10. The aging process happens during an individual's lifespan, and we are all involved in this process. | 289 (95.1) | 15 (4.9) |

The mean attitude score was 38.00 ± 5.14. Overall, respondents displayed positive attitudes toward the elderly, especially in areas relating to empathy, respect, and acceptance. However, some negative perceptions and stereotypes were still evident. The detailed responses to Kogan's Attitudes toward Old People Scale (KOP) are shown in Table 3.

***Table 3: Responses to KOP Scale Assessing Attitudes toward the Elderly (n = 304)***

| Questions | n (%) | | | | |
|---|---|---|---|---|---|
| | 0 Strongly Disagree | 1 Disagree | 2 Neutral | 3 Agree | 4 Strongly Agree |
| It would be better if most elderly lived housing with people their own age. * | 69 (22.7) | 108 (35.5) | 62(20.4) | 58 (19.1) | 7 (2.3) |
| 2. Most elderly people are not different from anybody else; they are as easy to understand as younger people. | 32 (10.5) | 96 (31.6) | 92 (30.3) | 72 (23.7) | 12(3.9) |
| 3.Most elderly people are set in their ways and unable to change. * | 4(1.3) | 45 (14.8) | 86(28.3) | 143(47.0) | 26(8.6) |
| 4. Most elderly people would prefer to quit work as soon as their children can support them. * | 18(5.9) | 123(40.5) | 86(28.3) | 65(21.4) | 12(3.9) |
| 5. Most elderly tend to let their homes become messy and unattractive. * | 73(24.0) | 165(54.3) | 32(10.5) | 27(8.9) | 7(2.3) |
| 6. People grow wiser with old age. | 17(5.6) | 68(22.4) | 132(43.4) | 73(24.0) | 14(4.6) |
| 7. Most elderly people are easy to be with. | 3(1.0) | 37(12.2) | 109(35.9) | 126(41.4) | 29(9.5) |
| 8. Most elderly bore others by taking about the "good old days". * | 28(9.2) | 124(40.8) | 93(30.6) | 53(17.4) | 6(2.0) |
| 9. Most elderly people spend much time prying into the affair of others. * | 30(9.9) | 105(34.5) | 97(31.9) | 63(20.7) | 9(3.0) |
| 10. Most elderly people make mistakes like anybody else. | 12(3.9) | 49(16.1) | 76(25.0) | 153(50.3) | 14(4.6) |
| 11. A nice neighborhood is one that has several old people living in it. | 2(0.7) | 30(9.9) | 132(43.4) | 111(36.5) | 29(9.5) |
| 12. Most elderly people are very different from one another. | 1(0.3) | 25(8.2) | 126(41.4) | 132(43.4) | 18(5.9) |
| 13. Most elderly are quite clean in their personal appearance. | 3(1.0) | 25(8.2) | 126(41.4) | 132(43.4) | 18(5.9) |
| 14. Most elderly are irritable and unpleasant. * | 50(16.4) | 130(42.8) | 88(28.9) | 34(11.2) | 2(0.7) |
| 15. Most elderly are constantly complaining about the young generation's behavior. * | 12(3.9) | 67(22.0) | 94(30.9) | 117(38.5) | 14(4.6) |
| 16. Most elderly need the same amount of love and reassurance as anyone else. | 3(1.0) | 4(1.3) | 23(7.6) | 136(44.7) | 138(45.4) |

**Negative statement*

There was a statistically significant association between educational qualification and knowledge score ($p = 0.011$), as well as attitude toward the elderly ($p < 0.001$). Participants with higher educational attainment demonstrated better knowledge and more positive attitudes toward elderly care. In contrast, no significant associations were observed between knowledge or attitude scores and other socio-demographic variables, including age, gender, ethnicity, religion, occupation, and length of service ($p > 0.05$). These findings suggest

that educational background plays a key role in shaping healthcare workers' knowledge and attitudes toward elderly care. The detailed associations are presented in Table 4.

***Table 4: Association between Socio-Demographic Characteristics and Knowledge about Aging and Attitude toward the Elderly among Healthcare Workers (n = 304)***

| Variable | Knowledge about Aging | *p*-value | Attitude toward Elderly | *p*-value |
|---|---|---|---|---|
| | Mean (95% CI) | | Mean (95% CI) | |
| **Age** | r = 0.022 | 0.699[a] | r = 0.030 | 0.605[a] |
| **Gender** | | 0.617[b] | | 0.444[b] |
| Female | 9.15 (9.01–9.29) | | 37.87 (37.19–38.54) | |
| Male | 9.19 (8.93–9.45) | | 38.38 (37.22–39.55) | |
| **Ethnicity** | | 0.148[c] | | 0.271[c] |
| Malay | 9.19 (9.06–9.32) | | 37.84 (37.22–38.45) | |
| Chinese | 9.37 (8.99–9.74) | | 38.80 (36.65–40.95) | |
| Indian | 8.88 (8.42–9.35) | | 39.27 (36.64–41.90) | |
| Others | 8.44 (6.81–10.08) | | 36.00 (31.42–40.58) | |
| **Religion** | | 0.153[c] | | 0.448[c] |
| Islam | 9.20 (9.07–9.33) | | 37.89 (37.27–38.50) | |
| Buddhism | 9.17 (8.59–9.74) | | 38.94 (36.48–41.41) | |
| Hindu | 8.84 (8.37–9.31) | | 38.20 (35.76–40.64) | |
| Christian | 9.47 (9.06–9.88) | | 39.20 (35.19–43.21) | |
| Others | 7.00 (-1.61–15.61) | | 33.67 (10.59–56.75) | |
| **Highest Education Qualification** | | **0.011[c]** | | **<0.001[c]** |
| PhD | 9.40 (8.29–10.51) | | 39.00 (35.12–42.88) | |
| Master's Degree | 9.64 (9.30–9.98) | | 39.96 (38.68–41.23) | |
| Degree | 9.36 (9.09–9.63) | | 37.30 (35.58–39.02) | |
| Post Basic | 8.81 (8.51–9.12) | | 37.12 (36.42–37.82) | |
| Diploma | 9.11 (8.94–9.28) | | 42.33 (39.09–45.57) | |
| Skills Certificate | 9.56 (9.15–9.96) | | 37.60 (27.96–47.24) | |
| Occupation | | 0.148[c] | | 0.200[c] |
| Dentist | 8.78 (7.07–10.49) | | 39.56 (36.63–42.49) | |
| Dietician | 9.86 (9.51–10.21) | | 40.71 (36.99–44.44) | |
| Medical Assistant | 9.10 (8.68–9.52) | | 38.13 (36.32–39.95) | |
| Medical Doctor | 9.31 (8.98–9.63) | | 39.47 (37.20–41.74) | |
| Nurse | 9.09 (8.93–9.24) | | 37.65 (36.93–38.38) | |
| Rehabilitation Therapist | 9.41 (9.12–9.69) | | 37.30 (35.78–38.82) | |
| Length of Service | r = -0.026 | 0.656[a] | r = 0.080 | 0.163[a] |

**Statistically significant results at $p \leq 0.05$ are marked in bold; [a] Pearson/Spearman correlation, [b] Independent t-test, [c] One-way ANOVA/Kruskal-Wallis test.*

The variation in knowledge and attitude scores across educational levels is illustrated in Figures 1 and 2. As shown in Figure 1, mean knowledge scores vary slightly across educational levels, with generally comparable scores observed among all groups. Although participants with higher qualifications demonstrated marginally higher scores, the differences between groups appear minimal Similarly, Figure 2 demonstrates that participants with higher qualifications generally exhibit higher attitude scores, although some variability is observed within groups.

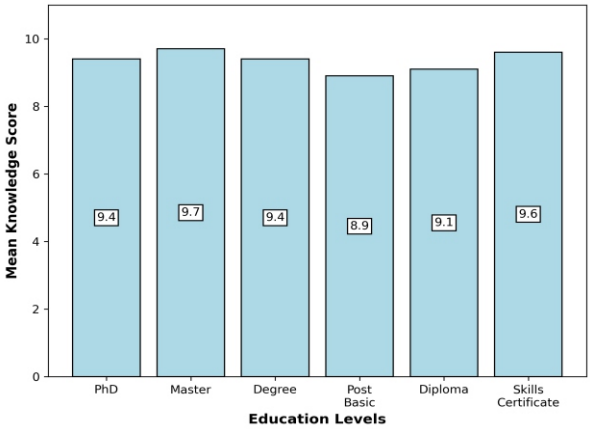


***Figure 1: Mean Knowledge Score Across Educational Levels among Healthcare Workers***

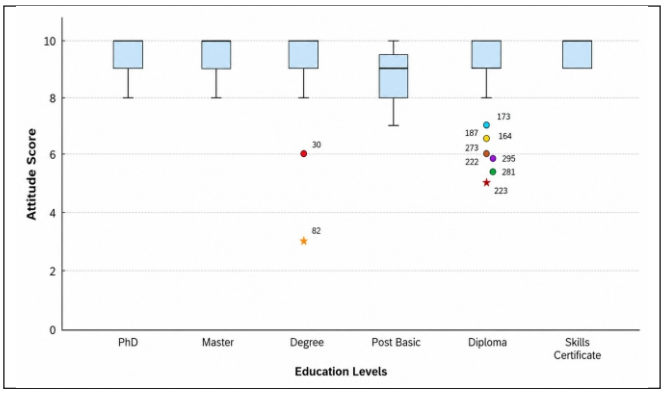


***Figure 2: Distribution of Attitude Scores by Educational level***

Linear regression analysis indicated that knowledge about aging was not a significant predictor of attitudes toward the elderly ($\beta = -0.018$, $p = 0.759$). The model explained negligible variance in attitude scores ($R^2 = 0.000$, Adjusted $R^2 = -0.003$), indicating no meaningful relationship between knowledge and attitudes among healthcare workers is shown in Table 5. The negligible effect size ($\beta = -0.018$) and near-zero explanatory power ($R^2 = 0.000$) indicate that knowledge alone is insufficient to influence attitudes, highlighting the need for more comprehensive educational approaches that incorporate experiential and affective learning components.

***Table 5: Linear Regression Analysis of Knowledge Predicting Attitude (n = 304)***

| Variable | B | *β* | 95% CI | p-value |
|---|---|---|---|---|
| Knowledge about aging | -0.088 | -0.018 | -0.652, 0.476 | 0.759 |

*$R^2$ = (value), Adjusted $R^2$ = (value) ; *$p \leq 0.05$ considered as statistically significant; a- Linear regression*

The relationship between knowledge and attitude scores is illustrated in Figure 3. As shown in the scatter plot, there is no clear linear relationship between knowledge and attitude scores, supporting the non-significant regression findings.

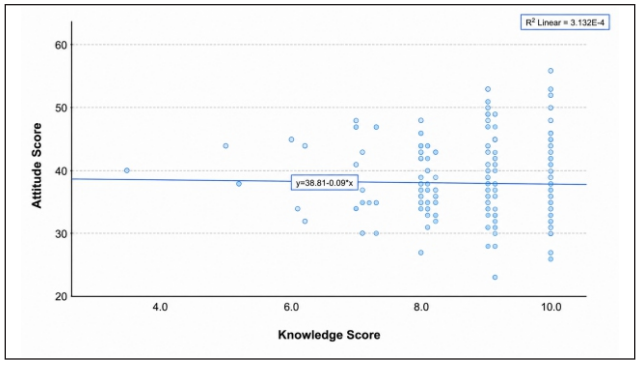


***Figure 3: Relationship between Knowledge and Attitude toward Elderly Care***

## DISCUSSION

The findings of this study provide critical insights into the knowledge and attitudes of healthcare workers toward elderly care. Although no standardized cut-off exists for the Facts on Aging Quiz 2 (FAQ-2), the relatively high mean score observed in this study suggests adequate baseline knowledge, particularly in clinically observable aging changes. This finding is consistent with previous studies reporting adequate foundational gerontological knowledge among healthcare professionals (Shen *et al*., 2024; Mitike *et al*., 2023). Although no universally accepted cut-off exists for categorizing knowledge levels using the Facts on Aging Quiz 2 (FAQ-2), the relatively high score observed in this study may be attributed to participants' routine

clinical exposure to elderly patients as well as prior formal education. Similarly, positive attitudes toward elderly individuals were demonstrated, as reflected by the mean Kogan's Attitude Scale score (38.00 ± 5.14), which aligns with existing literature emphasizing the importance of empathy and respect in elderly care (Tate *et al*., 2024; Abdullah *et al*., 2023).

Furthermore, educational qualification emerged as a significant factor influencing both knowledge ($p$ = 0.011) and attitudes ($p < 0.001$). Healthcare workers with higher educational attainment demonstrated better understanding and more positive attitudes toward elderly care, a finding consistent with previous research (Ross *et al*., 2020). This reinforces the importance of strengthening gerontological content within healthcare education curricula. Nevertheless, specific knowledge gaps remain, particularly regarding demographic trends related to population aging. For example, 18.1% of respondents were unaware of population aging trends, which may hinder effective planning and delivery of services for an aging population. Moreover, these findings suggest that attitudes toward elderly care are not shaped by knowledge alone but are also influenced by broader socio-demographic and experiential factors, including cultural norms and personal experiences with older adults.

Despite the relatively high level of knowledge demonstrated by healthcare workers in this study, no significant association was found between knowledge about aging and attitudes toward elderly individuals. This finding suggests that factual knowledge alone may be insufficient to shape attitudes toward elderly care. Attitudes are complex and multifactorial constructs influenced by experiential, cultural, and organizational factors, including workplace environment, personal interactions with older adults, societal norms, and prevailing age-related stereotypes. This reflects the distinction between knowledge and attitude domains, indicating that improvements in knowledge do not necessarily translate into changes in attitudes. Consequently, healthcare workers may possess adequate gerontological knowledge yet continue to hold neutral or negative attitudes if these contextual factors are not adequately addressed. This finding is consistent with studies conducted in Singapore, which similarly reported no significant relationship between knowledge and attitudes toward elderly care (Tan *et al*., 2020). In contrast, studies from Jordan and Ethiopia have demonstrated a positive association between higher knowledge levels and more favorable attitudes, suggesting that sociocultural context and healthcare system characteristics may moderate the relationship between knowledge and attitudes (Alshammari *et al*., 2024). Taken together, these contrasting findings indicate that improving attitudes toward elderly care requires more than cognitive knowledge acquisition alone and should incorporate experiential learning, reflective practice, and organizational support to effectively address implicit biases and ageism in healthcare settings.

These findings have important implications for nursing education and clinical practice. The absence of a significant relationship between knowledge and attitudes highlights the need to move beyond knowledge-based education alone and integrate experiential and empathy-based training approaches. Integrating structured gerontological nursing modules into undergraduate and postgraduate curricula is essential to strengthen competencies in assessment, communication, and psychosocial support for older adults. Educational approaches that incorporate experiential learning, simulation-based training, and interprofessional collaboration may be more effective in fostering empathy and person-centered care while reducing age-related biases (Coffey *et al*., 2016; Teófilo, 2019). In clinical practice, nurses play a pivotal role in identifying early functional decline, managing chronic conditions, and coordinating holistic care that respects the dignity and autonomy of older adults. Ongoing professional development and interprofessional collaboration are therefore crucial in promoting high-quality and compassionate elderly care within hospital settings

**Limitations**

Despite these strengths, several limitations should be acknowledged. This study was conducted in a single public hospital using convenience sampling, which may limit the external validity and generalizability of findings to other healthcare settings in Malaysia. This sampling approach may also introduce selection bias, as individuals with a greater interest in elderly care may have been more likely to participate. Additionally, the cross-sectional design precludes causal inferences regarding the relationship between knowledge and attitudes. Furthermore, the time gap between data collection (2018–2019) and publication may reduce the applicability of

the findings to current clinical practice, given the evolving nature of geriatric care and healthcare training. Future research should consider longitudinal study designs to better examine causal relationships between healthcare workers' knowledge, attitudes, and the quality of care provided to older adults.

### Future Scope

Future research should investigate the long-term effects of elderly care education on patient outcomes and nursing competence. Integrating simulation-based learning, empathy workshops, and interprofessional training modules can further strengthen evidence-based elderly care and improve the overall quality of nursing practice.

## CONCLUSION

Healthcare workers demonstrated generally adequate knowledge and moderately positive attitudes, although specific gaps and residual age-related stereotypes remain. However, some still lack key knowledge about aging and hold certain stereotypes. Higher education was linked to better knowledge and more positive attitudes, highlighting the importance of including geriatric topics in training programs. Although this study did not show a direct connection between knowledge and attitudes, other research suggests that increasing knowledge can improve attitudes. Training focused on aging, empathy, and communication is important. Healthcare organizations should support ongoing education, teamwork, and respect in order to provide better care for elderly people. From a nursing perspective, continuous professional development is crucial. Structured geriatric training and interprofessional collaboration can enhance nurses' ability to deliver person-centered care that upholds dignity, autonomy, and safety for older adults.

### CRediT Authorship Contribution Statement

A.B.A.H: Conceptualization, Methodology, Investigation, Data Curation, Formal Analysis, Writing – Original Draft, Writing – Review and Editing. L. H. S: Methodology, Validation, Formal Analysis, Writing – Review & Editing. S. J: Supervision, Project Administration, Writing – Review and Editing. M.M: Investigation, Data Curation, Resources. D.C.T: Validation, Visualization, Writing – Review and Editing. D. B: Supervision, Funding Acquisition, Project Administration, Writing – Review and Editing.

### AI Assistance Declaration

During the preparation of this manuscript, generative Artificial Intelligence (AI) tools, specifically ChatGPT, were used only for minor language editing. The authors carefully reviewed and edited all AI-generated content to ensure accuracy, coherence, and alignment with the study objectives. The authors take full responsibility for the final content of the manuscript.

### Conflict of Interest

All authors confirm that no financial or personal relationships can lead to a conflict of interest regarding this study.

## ACKNOWLEDGEMENT

The author wish to thank the Director of Hospital, Heads of Departments, and the Clinical Research Centre (CRC), Malaysia for their support. The authors also extend appreciation to the staff who assisted during the data collection.

## REFERENCES

Abdullah, M. Z., Rahman, N. H. A., & Kamarudin, R. N. A. (2023). Knowledge and attitudes about geriatrics among emergency department doctors in Hospital Universiti Sains Malaysia. *Mathews Journal of Emergency Medicine, 8(*1), 1–7. https://doi.org/10.30654/MJEM.10050

Abdullah, N., Rahman, A., & Ismail, Z. (2023). Attitudes of healthcare professionals toward elderly care: A systematic review. *Journal of Geriatric Nursing, 45*(2), 123–131. https://doi.org/10.1016/j.jgn.2022.11.004

Alshammari, F., Alzoubi, F., & Alqudah, R. (2024). Knowledge and attitudes of nurses toward caring for older people in Jordan: A cross-sectional study. *Work with Older People, 2*8(2), 103–115. https://doi.org/10.

1108/WWOP-04-2024-0019

Chang, E. S., Kannoth, S., Levy, S., Wang, S. Y., Lee, J. E., & Levy, B. R. (2021). Global reach of ageism on older persons' health: A systematic review. *PLoS ONE, 16*(1), e0244827. https://doi.org/10.1371/journal.pone.0245469

Coffey, A., Savage, E., Leahy-Warren, P., Mulcahy, H., Wills, T., McCarthy, V., & Patricia, M. (2016). *Systematic Literature Review and National Focus Groups to Support the Development of a Strategic Vision and Educational Framework for Gerontological Nursing*. Sonova AG. http://hdl.handle.net/10147/622901

Damulak, P. P., Minhat, H. S., & Rahman, A. A. (2015). Attitude towards the elderly among healthcare-related students in Malaysia. *International Journal of Health Sciences Research, 5*(11), 248–258. https://www.ijhsr.org/IJHSR_Vol.5_Issue.11_Nov2015/37.pdf

Department of Statistics Malaysia. (2020). *Current population estimates, Malaysia, 2018–2019*. Putrajaya: Department of Statistics Malaysia. https://www.dosm.gov.my

Dominguez, L. J., Veronese, N., & Barbagallo, M. (2023). The link between spirituality and longevity. *Aging Clinical and Experimental Research, 35*, 4155–4160. https://doi.org/10.1007/s40520-023-02684-5

https://doi.org/10.1007/s11165-016-9602-2

Ibrahim, R. (2025, April 22). *Call for legislation to protect ageing population. The Sun Daily*. https://thesun.my/malaysia-news/call-for-legislation-to-protect-ageing-population-AD13981652

Keong, Y. W. (2024, February 20). *Malaysia's urgent need to enhance dementia care facilities amid aging crisis*. Sinar Daily. https://www.sinardaily.my/article/220002/culture/health

Lee, S. H., & Hamid, N. F. (2025). Geriatric nursing practice and patient-centered outcomes in Malaysian hospitals. *Malaysian Journal of Nursing, 16*(1), 22–34. https://doi.org/10.31674/mjn.2025.v16i1.004

Lim, K. K., Chan, C. Y., Kaur, N., & Cheong, A. T. (2021). Prevalence and factors associated with multimorbidity among older adults in Malaysia: A population-based study. *BMJ Open, 11*(10), e050901. https://doi.org/10.1136/bmjopen-2021-052126

Lima, S., Teixeira, L., Esteves, R., Ribeiro, F., Pereira, F., Teixeira, A., & Magalhães, C. (2020). Spirituality and quality of life in older adults: a path analysis model. *BMC Geriatrics, 20*(1), 259. https://doi.org/10.1186/s12877-020-01646-0

Ministry of Health Malaysia. (2020). Strategic Framework of the Medical Programme. https://www.moh.gov.my/moh/resources/Pelan_Strategik_KKM.pdf

Mitike, H., Yimam, W., Goshiye, D., & Kumar, K. P. (2023). Knowledge, attitudes, practices, and associated factors towards care of elderly patients among nurses. *SAGE Open Nursing, 9*, 23779608231159631. https://doi.org/10.1177/23779608231159631

Nasaruddin, N. H., Ganapathy, S. S., & Tham, S. W. (2025). Factors associated with dementia among older people in Malaysia: Findings from National Health and Morbidity Survey. *Australasian journal on ageing, 44*(1), e13392. https://doi.org/10.1111/ajag.13392

Ross, L., Jennings, P., & Williams, B. (2020). Improving health care student attitudes toward older adults through educational interventions: A systematic review. *Clinical Education in Geriatrics, 74*-94. https://doi.org/10.1080/02701960.2016.1267641

Ryan, S. E. K. J., Chi, W. R., & Sa'adon, F. N. (2024, September 19). Dedicated Federal Budget funding for geriatrics is key to unlocking its growth. *SEDAR Institute*. https://www.isedar.my/2024/09/19/dedicated-federal-budget-funding-for-geriatrics-is-key-to-unlockin…

Samsudin, S. (2016). The prevalence of non-communicable diseases among older age group in Malaysia and its effects on health care demand. *International Journal of Public Health Research, 6*(2), 741-749. https://spaj.ukm.my/ijphr/index.php/ijphr/article/view/48

Sauni, L. A. (2023, March 21). Malaysia faces critical shortage of geriatricians. *Sinar Daily*.

https://www.sinardaily.my/article/192478/malaysia/national/malaysia-faces-critical-shortage-of-geriatricians

Setia, M. S. (2016). Methodology series module 3: Cross-sectional studies. *Indian Journal of Dermatology, 61*(3), 261–264. https://doi.org/10.4103/0019-5154.182410

Shalihin, M. S. E., Abd Muttalib, N. S., Azmi, N. S., & Zin, Z. N. M. (2021). Knowledge and attitude towards geriatric health and the associated factors among medical students of International Islamic University Malaysia. *Malaysian Journal of Public Health Medicine, 2*1(3), 151-163. https://doi.org/10.37268/mjphm/vol.21/no.3/art.1197

Shen, S., Zeng, X., Hui, X., Chen, L., Zhang, J., & Chen, X. (2024). Application, knowledge and training needs regarding comprehensive geriatric assessment among geriatric practitioners in healthcare institutions: a cross-sectional study. *BMC Geriatrics, 24*(1), 349. https://doi.org/10.1186/s12877-024-04964-9

Taber, K. S. (2018). The use of Cronbach's alpha when developing and reporting research instruments in science education. *Research in Science Education, 48*(6), 1273–1296.

Tan, G. T. H., Yuan, Q., Devi, F., Wang, P., Ng, L. L., Goveas, R., ... & Subramaniam, M. (2021). Dementia knowledge and its demographic correlates amongst informal dementia caregivers in Singapore. *Aging & Mental Health, 25*(5), 864-872. https://doi.org/10.1080/13607863.2020.1740914

Tate, K., Guney, S., Lai, C., Van Son, C., Kennedy, M., & Dahlke, S. (2024). Gerontological nursing competencies: A scoping review. *Nurse Education Today, 133*, 106034. https://doi.org/10.1016/j.nedt.2023.106034

Teófilo, T. J. S., Veras, R. F. S., Silva, V. A., Cunha, N. M., Oliveira, J. D. S., & Vasconcelos, S. C. (2019). Empathy in the nurse–patient relationship in geriatric care: An integrative review. *Nursing Ethics, 26*(6), 1585-1600. https://doi.org/10.1177/0969733018787228

United Nations Department of Economic and Social Affairs. (2026). *World population ageing 2026 highlights*. https://www.un.org/development/desa/pd/content/world-population-ageing-2026

Wang, X., & Cheng, Z. (2020). Cross-sectional studies: Strengths, weaknesses, and recommendations. *Chest, 158*(1), S65–S71.https://doi.org/10.1016/j.chest.2020.03.012

World Health Organization. (2023). *Integrated care for older people (ICOPE): Implementation framework.* https://www.who.int/publications/i/item/9789241515993

World Health Organization. (2026). *Global report on ageing and health: 2026 update*. https://www.who.int/news-room/fact-sheets/detail/ageing-and-health