



## Willingness to care for older people and associated factors in pre-registered student nurses: A multi-country survey study

Hui-Lin Cheng<sup>a,b,1</sup>, Simon Ching Lam<sup>c,1</sup>, Jonas Preposi Cruz<sup>d,e,1,\*</sup>, Joseph U. Almazan<sup>d</sup>, Felipe A. Machuca-Contreras<sup>f</sup>, Helen Shaji John Cecily<sup>g</sup>, Hanan Ebrahim Abd El Aziz Rady<sup>h</sup>, Ioanna V. Papatheanasiou<sup>i</sup>, Farid Ghayeb<sup>j</sup>, Mohammed Qtait<sup>k</sup>, Xian-Liang Liu<sup>b</sup>, Ejercito Mangawa Balay-odao<sup>e,1</sup>

<sup>a</sup> School of Nursing, The Hong Kong Polytechnic University, Hung Hom, Hong Kong SAR

<sup>b</sup> College of Nursing and Midwifery, Charles Darwin University, 410 Ann Street, Brisbane, QLD 4000, Australia

<sup>c</sup> School of Nursing, Tung Wah College, Homantin, Kowloon, Hong Kong SAR

<sup>d</sup> Department of Medicine, School of Medicine, Nazarbayev University, Kerey and Zhanibek Khans St 5/1, Nur-Sultan 010000, Kazakhstan

<sup>e</sup> Nursing Department, College of Applied Medical Sciences, Shaqra University, Dawadmi, Saudi Arabia

<sup>f</sup> Universidad Autónoma de Chile, Avenida Pedro de Valdivia 425, Santiago, Chile

<sup>g</sup> Shri Sathya Sai College of Nursing, Shri Sathya Sai Medical College & Research Institute Campus, Sri Balaji Vidyapeeth University, Tamilnadu, India

<sup>h</sup> Faculty of Nursing, Cairo University, Cairo, Egypt

<sup>i</sup> Community Nursing Lab, Faculty of Nursing, University of Thessaly, Greece

<sup>j</sup> Nursing Department, Faculty of Health Professions, Al-Quds University, Jerusalem, Palestine

<sup>k</sup> College of Applied Professions, Palestine Polytechnic University, Hebron, Palestine

<sup>1</sup> School of Advanced Studies, Saint Louis University, Baguio, Philippines

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### ABSTRACT

**Background:** Addressing nursing students' lack of interest in providing care for the aged population is a global challenge for nursing educators. Despite global interest in student nurses' readiness for older people care, almost all the literature has been identified from single countries, predominantly with high income per capita. At present, no study has been conducted to provide evidence-based data related to this topic from a multi-country perspective.

**Objective:** The study's purpose was to examine the willingness to work with older persons and associated factors among student nurses from nine countries (or regions).

**Design:** This study utilized a correlational and cross-sectional design.

**Settings:** This was a multi-country survey study conducted in China, Chile, Egypt, Hong Kong, India, Greece, the State of Palestine (henceforth Palestine), the Philippines, and Saudi Arabia.

**Participants:** 2250 baccalaureate nursing students were recruited from 10 universities in this study.

**Methods:** The survey that was used to collect data comprised four parts: socio-demographic data, attitude toward aging, older person care perception, and willingness to work with such group.

**Results:** Respondents in five regions (including Mainland China, Greece, Hong Kong, Palestine, and Saudi Arabia) stated that older persons were the least favored group for future career choices. In comparison with mainland China, respondents in Chile, India, and the Philippines were significantly more likely to be willing to care for older patients, but those in Egypt and Greece indicated a lower tendency to choose this option. Favorable attitudes toward aging and older person care perception were significantly associated with having the willingness to provide care to gerontologic patients in the future.

**Conclusions:** Although attitudes toward aging and older person care perception have long been confirmed as important factors that are linked with willingness in caring for older people, this study adds that location is a more influential factor. Additional research in other countries is needed to advance the knowledge in this important area.

\* Corresponding author at: Department of Medicine, School of Medicine, Nazarbayev University, Kerey and Zhanibek Khans St 5/1, Nur-Sultan 010000, Kazakhstan.

E-mail addresses: [Jonas.cruz@nu.edu.kz](mailto:Jonas.cruz@nu.edu.kz) (J.P. Cruz), [felipe.machuca@uautonoma.cl](mailto:felipe.machuca@uautonoma.cl) (F.A. Machuca-Contreras).

<sup>1</sup> Hui-Lin Cheng, Simon Ching Lam, and Jonas Preposi Cruz are co-first authors in this article.

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## 1. Background

The global population of older persons is growing fast at an extraordinary rate and the percentage of people aged 60 and over is projected to become 22% in 2050 (World Health Organization [WHO], 2018). Along with this demographic shift is an increasing demand for sufficient geriatric healthcare professionals to care for geriatric patients in the short- and long-term future. Given that nurses are among the vital healthcare team members who manage older people's care processes (Donelan et al., 2019), preparing nursing students who are enthusiastic and ready to work in areas of geriatric is imperative. Yet, several review reports have consistently documented that nursing students in the vast majority of countries have low intentions of choosing a career in geriatrics after graduation. These intentions are not in line with the greater needs for developing or sustaining a nursing workforce for older person care in aging societies (Abudu-Birresborn et al., 2019; Dai et al., 2020; Hanson, 2014). Addressing nursing students' lack of interest in providing care for the aged population, therefore, becomes a global challenge for nursing educators.

The issue of student nurses' low intention to care for older persons is becoming increasingly complex in modern society where ageism is prevalent. Ageism is defined as negative stereotypes, prejudices, and discrimination against older persons (WHO, 2021). The recent Global Report on Ageism published by the WHO (WHO, 2021) acknowledged ageism as a worldwide concern leading to serious and far-reaching effects on the health and well-being of individuals. Specifically, ageism toward older persons was related to having reduced physical and mental health, being socially isolated and being lonely, having more financial insecurity, poorer quality of life, and untimely death. Ageism is prevalent in healthcare contexts, which manifest in micro- (personal) and macro- (institutional) levels (Eymard and Douglas, 2012; Wyman et al., 2018). At the micro-level, healthcare workers show negative attitudes toward their patients who are older people, transcending to ageist communication and biased clinical decisions. At the macro-level, older people often experience lower priority in healthcare and less access to the needed medical care (Wyman et al., 2018). Ageism also exists among student nurses. A review study of 20 published articles examined ageism among student nurses and revealed that they also display ageist behaviors toward older people. Examples include having bad attitudes toward older persons, talking louder and slower to them, having negative perceptions of them, and not intending to work with them after graduation (Gallo, 2019).

The scientific investigation of student nurses' willingness to care for geriatric patients can be traced back to the 1990s. The earliest work in Australia has shown that nursing students rank working with geriatrics as one of the least preferred career options throughout their undergraduate education years (Stevens and Crouch, 1995; Happell, 1999). The results have been longitudinally replicated in samples of nurse students in high-income countries, including Denmark, New Zealand, and Canada (Bleijenberg, 2012; Hunt et al., 2020; McCloskey et al., 2020), but not in the US (King et al., 2013). A scoping review of 27 research articles reported that studies in several low- and middle-income nations during the past decades have consistently shown a poor intention to work in geriatrics among student nurses. However, two studies from China, which were included in the review, showed opposite findings (Abudu-Birresborn et al., 2019). Student nurses from these publications were moderately to highly motivated and enthusiastic to work with older persons. These attitudes were attributed to students' positive experience of working with this group of clients, their gratitude (i.e., by being cared for by their grandparents), and living with older persons (Cheng et al., 2015; Zhang et al., 2016). The discrepancy across study results is possibly attributed to variances in conceptualizing and measuring the desire to work with older persons (Che et al., 2017). Several scales are used in these studies, ranging from the unidimensional scale through the assessment of career choice in geriatrics by ranking- or dichotomous- or multiple-choice questions to the multidimensional

scales using validated or self-developed instruments, such as the "Intent to Work with Older People Scale" (Nolan, 2002; Che et al., 2018) and the "Willingness to Care for Older People" (Zhang et al., 2016).

Parallel with a line of research on willingness to care for geriatric patients is another focus of understanding its associated factors perceived by nursing students. Many studies have investigated the relationships between willingness to work in geriatrics with socio-demographic and educational factors, including age, gender, year of nursing education, living experience with older relatives, prior geriatric caring experience, and knowledge and training in geriatrics, although the results are inconclusive (Abudu-Birresborn et al., 2019; Dai et al., 2020). Most of them found that student nurses with positive attitude toward older persons had more willingness to provide them care than were those holding negative attitudes, but a few studies have not (Dai et al., 2020; Liu et al., 2013). Emerging literature has also identified the possible role of the perception on older person care in motivating the enthusiasm to be involved in caring for older patients because this concept is more directly linked to nursing practice than attitude toward aging (Neville and Dickie, 2014; Abudu-Birresborn et al., 2019). Therefore, more studies are needed to provide an improved understanding of factors affecting student nurses' willingness to become involved in geriatric nursing.

Despite global interest in student nurses' willingness in providing older person care, the literature has been almost identified from single countries predominantly with high income per capita. Although recent studies have attended to nurse student populations in low- and middle-income countries, including Nigeria, Israel, Jordan, Thailand, Turkey, China, and Sri Lanka (Abudu-Birresborn et al., 2019), data from other countries are significantly underrepresented in the literature. At present, no study has been conducted to provide evidence-based data related to this topic from a multi-country perspective. Existing approaches have attempted to enrich student nurses' motivation to care for older persons by using different educational approaches. These approaches include revising or refining the specific geriatric curricular content, adding empathy skill training, adopting simulation teaching to the internship preparation, and offering support to improve the positive practice experience, although minimal positive benefits were identified for improving the willingness to work with older persons (Eost-Telling et al., 2021; Koh, 2012; Ross et al., 2018). Including the study populations from high-, middle- and low-income countries in a study might solve the challenge of assisting nursing educators in identifying new directions in increasing students' interest in caring for this group of patients. Thus, this multi-country investigation sought to examine the student nurses' willingness to work with geriatric patients. This study also examined factors associated with students' willingness to work with geriatric patients. Results from this multicountry investigation could serve as a basis for developing or transforming gerontological nursing education in ways that move toward improving older person care in these countries.

## 2. Methods

This multi-country study was correlational and cross-sectional. This paper follows "Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) Statement for observational studies" (Vandenbroucke et al., 2007)

### 2.1. Settings and samples

Nine countries (or regions), namely, Chile, China, Egypt, Hong Kong, India, Greece, Palestine, the Philippines, and Saudi Arabia participated in this investigation. The universities with which the researchers were associated during the data collection period were selected as the study's settings for convenience. A conveniently sampled 2250 baccalaureate nursing (BSN) students were surveyed in the study. Students must be (1) a national of the country and (2) registered in the 2nd-, 3rd-, or 4th-years

of the undergraduate nursing program to be eligible to participate. Students in the first year were not included because some countries lack major nursing courses at this level of their nursing program. In addition, students in other BSN programs, such as bridging programs, were excluded

## 2.2. Measures

The researchers collected the data for the study variables using a survey questionnaire comprising four (4) sections.

### 2.2.1. Sociodemographic information sheet

Part one of the questionnaire contains questions to obtain information about the respondents' age, year in the BSN program, sex, type of family structure ("nuclear" or "extended" type of family), type of living community (rural or urban), age of mother, age of father, residing with grandparents, and closeness with grandparent/s (on an 11-point visual analog scale).

### 2.2.2. Attitudes toward aging

The "Kogan's Attitudes toward Older People Scale" (KAOP) was employed to evaluate the respondents' attitudes toward aging (Ayalon et al., 2019; Kogan, 1961; Liu et al., 2013). This scale comprises 34 Likert-scale items (1 = "strongly disagree"; 6 = "strongly agree"). Of the 34 items, 17 were worded positively, and the remainder were worded negatively. Responses in these items are reverse-coded before the calculation of scale scores. The total KAOP score is between 34 and 204. Higher score denotes a more positive attitude. The original version demonstrated acceptable reliability (Spearman-Brown reliability coefficients = 0.66–0.83; inter-scale item correlations = 0.46–0.52) (Kogan, 1961). This scale had been subsequently linguistically adapted and validated in multiple languages, which have been used in countries (or regions) such as Egypt, Greece, Saudi Arabia, China, and Hong Kong (Alquwez et al., 2018; Lambrinou et al., 2005; Liu et al., 2021; Zakari, 2005). The Cronbach's alpha in some subsamples was higher than 0.7, but the values in other countries were not satisfactory. However, generally, the Cronbach's  $\alpha$  of subscales "Prejudice" and "Appreciation" were 0.76 and 0.69, which were deemed satisfactory.

### 2.2.3. Older person care perception

The nine-item "Perspectives on Caring for Older Adults Scale" (PCOP-9) is a shortened version of the 24-item PCOP that was used to assess the respondents' older person care perceptions (Burbank et al., 2018). Respondents rate this scale in a five-point Likert scale (0 = "strongly disagree"; 4 = "strongly agree"). Scoring can be attained by summing up the respondents' ratings on the nine items after five items are reverse scored. A total range of scores of 0–36 is feasible, with a higher obtained score signifying a more favorable perception of older person care. Burbank et al. (2018) established the validity and reliability of the PCOP-9. Confirmatory factor analysis resulted in the nine-item single dimension as the best model fit for the PCOP-9. The PCOP-9 scores correlated positively with the scores of the "Palmore's Facts on Aging Questionnaire," indicating convergent validity. The Cronbach's  $\alpha$  was 0.85 (Burbank et al., 2018). The PCOP has been linguistically adapted and validated in Arabic and Simplified Chinese (Cheng et al., 2020; Alshehry et al., 2020). The Cronbach's alpha in most country subsamples was acceptable, between 0.62 and 0.75, except for Chile, Egypt, and the Philippines.

### 2.2.4. Willingness to care for older person patients

The last part measured the respondents' willingness to care for older patients as a career option using a simple ranking question. This question is the most commonly used measurement method to understand the work preference in practice areas (Che et al., 2017; King et al., 2013; Rathnayake et al., 2016). Evidence also suggests that this ranking exercise is proven as a valid and reliable method and an effective technique

in differentiating among different options when used to obtain preferences for healthcare (Ryan et al., 2001). The tool asks respondents to rank their work preference for seven age groups: "newborn, infants (birth to 1 year), children (2–12 years), adolescents (13–18 years), young adults (19–39 years), middle-aged adults (40–59 years) and older people (60 years and above)." For this study, the choice ranking for older people was the outcome variable. The ranking choice ranges from 1 (first choice) and 7 (seventh choice), with lower scores demonstrating stronger will to care for older person patients.

## 2.3. Data collection

Data were gathered from each respective university from August to December 2018. During the recruitment time, the researchers coordinated with the students' lecturers to distribute questionnaires to eligible respondents at the end of their lecture. Once the instructor left the room, the researchers entered the room and discussed the study to the student nurses. The researchers were not teaching or handling the students in any of their courses when the study was being conducted. The students were told that their participation or non-participation would not affect any aspect of their studies. Those who agreed to participate provided written consent and completed the questionnaires on-site. In a few regions, the students submitted the answered questionnaire online or onsite; this act signified their voluntary consent to join the study (Liu et al., 2021).

## 2.4. Statistical analysis

Descriptive statistics were performed in the data of the respondents' socio-demographic characteristics and key variables including attitude toward aging, older person care perceptions, and willingness to care for older patients. Multiple hierarchical linear regression was performed with the student nurses' willingness in caring older patients as the dependent variable to identify the relative contributions of socio-demographic variables, location, and attitudes and perceptions of older person care. The first block included variables of age, gender, years in the BSN program, family structure, parents' ages, community type, residing with grandparents, and perceived closeness with grandparents. Location was added as the second block. Attitudes toward aging and older person care perception were added as the third block. SPSS version 26.0 was used to perform all the statistical tests in the study. The level of significance for statistical analyses was set as  $p \leq 0.05$ .

## 2.5. Ethical considerations

The protocol of this investigation was approved by the relevant ethical, institutional, or research review committees of the different participating universities (i.e., Universidad Autonoma de Chile: No. 107-17; Ethics Committee of the Applied University of Thessaly [TEI of Thessaly], Greece: 171/12/2017; Hong Kong Polytechnic University: HSEARS20180530002; Research Ethics Committee, KSA: Oct31/COM2-2017/22). Written, verbal, or implied consent was collected from respondents when applied in regional conventional practice. The participation was completely voluntary, and no incentive was offered to each participant.

## 3. Results

Table 1 contains the respondents' socio-demographic characteristics across nine regions. The total sample comprised 2250 pre-nursing licensure students, with the largest proportion of the sample from Hong Kong (15.4%), followed by China (13.2%) and Chile (11.9%). The respondents' average age was 20.56 years ( $SD = 2.41$ ), and 24.5% of the respondents were male. Compared with other regions, most participants were more likely to live in urban areas in Chile (98.4%) and Hong Kong (93.1%) ( $p < .05$ ) (Supplementary Table 1).

### 3.1. Attitude toward aging and older person care perception

Table 1 shows descriptive data of attitude toward aging and older person care perception. The mean scores of the KAOP and PCOP-9 were 123.93 ( $SD = 11.39$ ) and 29.05 (5.00). Table 2 also indicates that the respondents from Saudi Arabia had the highest mean KAOP score of 141.85 ( $SD = 13.69$ ), while the average KAOP score was the lowest in Chile respondents (mean = 115.99,  $SD = 8.69$ ). The respondents from Mainland China had the highest mean PCOP-9 scores (mean = 32.37;  $SD = 4.03$ ) and the lowest score was observed in Saudi Arabia (mean = 24.74,  $SD = 4.30$ ) (Table 2).

### 3.2. Willingness to care for older person patients

The work preferences among respondents after graduation are shown in Tables 3 and 4. Among the nine regions, respondents in five regions (Mainland China, Greece, Hong Kong, Palestine, and Saudi Arabia) stated older people as the least chosen group as their prospective career choices and by contrast, those in Chile and India chose older persons as the most preferred work option after BSN (Table 4). Additionally, less than 5% of respondents from Mainland China (3.7%), Greece (3.4%), and Saudi Arabia (2.9%) ranked working with older persons as the first desired career choice (Table 4).

### 3.3. Factors related with willingness to care for older person patients

The third and final regression model was revealed as the best regression model as evidenced by the increasing values of Nagelkerke's  $R^2$  (Table 5). Model 3 showed that location ( $p < .01$ ), attitude toward aging ( $\beta = -0.12, p < .01$ ), and older person care perception ( $\beta = -0.06, p < .01$ ) were negatively significantly associated with the ranking of working with older person. Compared with mainland China, respondents in Chile ( $\beta = -1.57, p < .01$ ), India ( $\beta = -1.80, p < .01$ ) and the Philippines ( $\beta = -1.19, p < .01$ ) were significantly more likely to be willing to work with older person patients, but those in Egypt ( $\beta = 0.64,$

$p < .01$ ) and Greece ( $\beta = 0.95, p < .01$ ) tended to have a lower willingness.

## 4. Discussion

This study was the first multi-country study that aimed to investigate the willingness in caring for older persons and related factors among student nurses from nine regions. Three key results were identified from this multi-country investigation. (1) Student nurses in the majority of countries seldom chose the older age group as their future career choices. (2) Attitude toward aging and older person care perceptions were related with willingness to care for these patients. (3) Differences in students' willingness to work with older person patients existed across countries.

Recent reviews have consistently reported that student nurses in most developing and developed countries demonstrated the least preferences for caring older patients post-BSN (Abudu-Birresborn et al., 2019; Dai et al., 2020). The present research further confirms this finding in most subsamples, including China, Greece, Hong Kong, Palestine, and Saudi Arabia. Evidence has revealed that nursing students dislike working with older person because the care routine in gerontological wards or long-term facilities involves physical labor, where nurses only provide basic care rather than complicated care techniques (King et al., 2013; Neville & Dickie, 2014). Another possible reason for this dislike is that nursing students only receive a single course on geriatric nursing for a semester, and less exposure might result in a low preference for caring with older person patients (Dai et al., 2020; Xiao et al., 2013). Given unprecedented population aging in these countries/regions, student nurse disinterest in geriatric care is an alarming sign that predicts potential workforce shortages in the short-and long-term future. Strategies to increase nurse students' preferences for geriatric nursing care are urgently needed.

The findings of this investigation identified the positive relationship between attitude toward aging and willingness to work with older person patients. This association is congruent with that reported in review papers but not for other individual studies (Dai et al., 2020; Liu et al., 2013). The inconsistent results across studies might be related to various measurement tools used, and some tools are not psychometrically tested (Ayalon et al., 2019). Several educational approaches can be used to assist student nurses to modify their attitude toward aging, including the provision of positive clinical learning experiences and adding non-technical aspects of geriatric care to the curriculum. Older person care perception was identified as another important factor that was associated with the work preference of caring for older person in this study. Qualitative evidence has also found an array of factors that influenced older person care perception among nursing students, including socio-cultural factors, organizational factors, and prior knowledge/experience working with (Rejeh et al., 2011). Including this variable in the studies would yield another direction in motivating student nurses to decide to care for older person as their future job priority.

In this study, variations in student nurses' willingness to work with geriatric patients existed across countries. Chile, India, and the Philippines had more student nurses who were willing to care for older people compared with mainland China, but Egypt and Greece tended to have fewer students who were willing. Given that these countries are from similar economic zones and share the same collective culture, the differences across these countries might not be related to inequality in economic development and culture but other contextual factors (Cruz et al., 2017; Xiao et al., 2013). Possible explanations for the differences are linked with the diversities in the nursing educational institution system of each country (Abudu-Birresborn et al., 2019), the type of curriculum in nursing, extent of gerontological nursing in the nursing curricula of each country (Hebditch et al., 2020), nursing faculty pedagogies technique in teaching gerontological courses, and extensive clinical placement in hospitals (AlSenany and AlSaif, 2014). These variances from different countries can result in seemingly different

**Table 1**  
Respondents' profiles (n = 2250).

Characteristics	Mean (SD)	n (%)
Age	20.56 (2.41)	
Gender		
Male		549 (24.5)
Female		1695 (74.5)
Level of BSN program		
2nd year		834 (37.1)
3rd year		800 (35.6)
4th year		616 (27.4)
Structure of family		
Nuclear family		1513 (67.4)
Extend family		731 (32.6)
Participant's father age	51.20 (7.48)	
Participant's mother age	47.66 (6.65)	
Living with grandparents		
No		1494 (67.2)
Yes		730 (32.8)
Closeness with grandparents	6.69 (2.87)	
Type of community		
Rural		947 (42.4)
Urban		1289 (57.6)
Location		
Mainland China		298 (13.2)
Chile		267 (11.9)
Egypt		251 (11.2)
Greece		232 (10.3)
Hong Kong		347 (15.4)
India		265 (11.8)
Palestine		218 (9.7)
Philippines		197 (8.8)
Saudi Arabia		175 (7.8)

BSN = Bachelor of Science in Nursing.

**Table 2**  
Descriptive data of attitudes toward aging, older person care perception and willingness to care for older persons in nine countries (n = 2250).

Scales	China Mainland (N = 298) Mean (SD)	Chile (N = 267) Mean (SD)	Egypt (N = 251) Mean (SD)	Greece (N = 232) Mean (SD)	Hong Kong, (N = 334) Mean (SD)	India (N = 365) Mean (SD)	Palestine (N = 218) Mean (SD)	Philippines (N = 197) Mean (SD)	Saudi Arabia (N = 175) Mean (SD)
KAOP (range = 34–192)	128.59 (12.26)	115.99 (8.69)	118.33 (4.61)	120.56 (9.70)	123.36 (10.49)	126.64 (8.97)	120.64 (6.88)	123.83 (4.01)	141.85 (13.69)
Appreciation	62.60 (7.36)	69.14 (7.43)	68.24 (7.24)	59.96 (7.68)	62.94 (6.45)	71.28 (9.80)	58.93 (11.24)	77.90 (4.82)	71.19 (7.49)
Prejudices	66.00 (9.75)	46.84 (7.55)	50.10 (7.96)	60.61 (8.63)	60.42 (8.20)	55.36 (11.97)	61.71 (10.51)	45.93 (4.62)	70.66 (7.58)
PCOP-9	32.67 (4.03)	25.55 (2.50)	28.00 (3.06)	31.11 (5.22)	30.35 (3.92)	30.99 (5.71)	28.66 (5.41)	26.58 (3.94)	24.74 (4.30)
Willingness to care for older people (range = 1–7)	4.48 (1.55)	3.38 (1.92)	5.35 (2.32)	5.53 (1.82)	4.72 (1.89)	2.85 (1.80)	4.80 (1.88)	3.85 (2.25)	5.06 (1.72)

KAOP = Attitudes toward aging scale; PCOP-9 = 9-item Older people care perception scale.

**Table 3**  
Work preference with different age groups (n = 2250).

Age groups	China Mainland (N = 298) n (%)	Chile (N = 267) n (%)	Egypt (N = 251) n (%)	Greece (N = 232) n (%)	Hong Kong, (N = 334) n (%)	India (N = 365) n (%)	Palestine (N = 218) n (%)	Philippines (N = 197) n (%)	Saudi Arabia (N = 175) n (%)
Newborn	27 (9.1)	34 (12.7)	151 (60.2)	69 (29.7)	59 (17.7)	139 (52.5)	77 (35.3)	69 (35.0)	48 (27.4)
Infants	30 (10.1)	26 (9.7)	26 (10.4)	15 (6.5)	36 (10.8)	10 (3.8)	17 (7.8)	0 (0)	19 (10.9)
Children	33 (11.1)	36 (13.5)	3 (1.2)	21 (9.1)	39 (11.7)	20 (7.5)	25 (11.5)	9 (4.6)	32 (18.3)
Adolescents	69 (23.2)	25 (9.4)	17 (6.8)	28 (12.1)	61 (18.2)	0 (0)	17 (7.8)	8 (4.1)	32 (18.3)
Young adults	105 (35.4)	42 (15.7)	3 (1.2)	68 (29.3)	97 (28.4)	7 (2.6)	50 (22.9)	27 (13.7)	20 (11.4)
Middle age adults	23 (7.7)	46 (17.2)	5 (2.0)	24 (10.3)	27 (8.1)	5 (1.9)	19 (8.7)	49 (24.9)	15 (8.6)
Older people	11 (3.7)	58 (21.7)	51 (20.3)	8 (3.4)	24 (7.2)	79 (29.8)	16 (7.3)	35 (17.8)	5 (2.9)

**Table 4**  
Rank distribution in selecting older people as a future career choice (n = 2250).

Ranking Options	China Mainland (N = 298) n (%)	Chile (N = 267) n (%)	Egypt (N = 251) n (%)	Greece (N = 232) n (%)	Hong Kong, (N = 334) n (%)	India (N = 365) n (%)	Palestine (N = 218) n (%)	Philippines (N = 197) n (%)	Saudi Arabia (N = 175) n (%)
First choice	11 (3.7)	58 (21.7)	51 (20.3)	8 (3.4)	24 (7.2)	79 (29.8)	16 (7.3)	35 (17.8)	5 (2.9)
Second choice	18 (6.1)	47 (17.6)	0 (0)	10 (4.3)	21 (6.3)	52 (19.6)	12 (5.5)	49 (24.9)	12 (6.9)
Third choice	43 (14.5)	39 (14.6)	0 (0)	25 (10.8)	44 (13.2)	54 (20.4)	19 (8.7)	18 (9.1)	18 (10.3)
Fourth choice	88 (29.6)	53 (19.9)	15 (6.0)	20 (8.6)	64 (19.2)	43 (16.2)	58 (26.6)	9 (4.6)	22 (12.6)
Fifth choice	56 (18.9)	26 (9.7)	1 (0.4)	31 (13.4)	55 (16.5)	4 (1.5)	21 (9.6)	14, 7.1	47, 26.9
Sixth choice	45 (15.2)	17 (6.4)	61 (24.3)	21 (9.1)	35 (10.5)	13 (4.9)	31 (14.2)	39 (19.8)	17 (9.7)
Seventh choice	36 (12.1)	27 (10.1)	123 (49.0)	117 (50.4)	91 (27.2)	20 (7.5)	61 (28.0)	33 (16.8)	54 (30.9)

outlook on older person among student nurses, contributing to their positive attributes. Furthermore, the possible cultural variability such as the types of family bond, typical family structures (Cruz et al., 2018; Sharma, 2013), the desire of many older persons to live independently (Enßle and Helbrecht, 2020), the responsibility of children to their elder family members, and available healthcare providers who are willing to work with the aging population (Roberto and Blieszner, 2015) may have contributed to the preferences of student nurses to work with older persons. Explicitly, further information on these notions is needed to understand how these factors affect student nurses' inclination to care for older persons. Nevertheless, the results may suggest that various global cultures could influence future nurses' preference to care for older persons.

4.1. Limitations

The strength of this investigation is in its large sample size from nine countries/regions. However, some limitations need to be emphasized. This multi-country investigation employed a “cross-sectional design”, which is a one-time data collection study that failed to determine the

causality relationship between variables. Future investigations may benefit from using a longitudinal study design at various assessment time points to understand the dynamics in willingness to care. We also found that Cronbach's alphas of KAOP and PCOP-9 in some country subsamples were not satisfactory. Cultural adaption and validation would be required before further empirical survey. This limitation should be acknowledged when interpreting the findings on attitudes toward aging and older person care perception as significant factors that were linked with willingness to care for older persons. Furthermore, our study adopted a self-reported questionnaire with fixed item options. Future studies may use other research methods such as qualitative or mixed-methods approaches to broaden and deepen the understanding of factors. These approaches could potentially affect students' interest in geriatrics or identify effective teaching strategies in boosting their interest in caring for older persons. The use of convenience sampling could also affect the likelihood of selection bias. The respective samples for each country were taken only in one university, which may not represent the entire population of nursing students in that country. These limitations should be carefully considered when interpreting the findings of this multi-country investigation.

**Table 5**  
Hierarchical regression analysis of factors associated with willingness to care for older people (n = 2250).

Characteristics	Model 1 β's (95% CI)	Model 2 β's (95% CI)	Model 3 β's (95% CI)
<b>Socio-demographic</b>			
Age	-0.05 (-0.09, 0.01)*	-0.04 (-0.08, 0.00)	-0.04 (-0.08, 0.00)
Gender			
Male	Ref	Ref	Ref
Female	-0.44 (-0.65, -0.23)**	0.02 (-0.18, 0.23)	0.07 (-0.13, 0.27)
<b>Level of BSN program</b>			
2nd year	Ref	Ref	Ref
3rd year	-0.12 (-0.34, 0.09)	-0.09 (-0.29, 0.11)	-0.14 (-0.34, 0.05)
4th year	0.28 (0.05, 0.52)	-0.04 (-0.19, 0.26)	-0.03 (-0.25, 0.20)
<b>Family structure</b>			
Nuclear	Ref	Ref	Ref
Extended	0.15 (-0.06, 0.36)	-0.14 (-0.33, 0.07)	-0.13 (-0.33, 0.06)
Participant's father age	0.16 (-0.00, 0.03)	-0.02 (-0.03, 0.00)	-0.01 (-0.03, 0.01)
Participant's mother age	-0.01 (-0.03, 0.01)	-0.01 (-0.03, 0.01)	-0.01 (-0.02, 0.01)
<b>Living with grandparents</b>			
No	Ref	Ref	Ref
Yes	-0.31 (-0.53, 0.09)*	-0.02 (-0.03, 0.02)	-0.16 (-0.37, 0.05)
Closeness with grandparents	-0.01 (-0.04, 0.03)	0.00 (-0.03, 0.04)	0.02 (-0.02, 0.05)
<b>Type of community</b>			
Rural	Ref	Ref	Ref
Urban	-0.21 (-0.40, 0.02)*	0.05 (-0.14, 0.24)	0.05 (-0.14, 0.27)
<b>Location</b>			
Mainland China		Ref	Ref
Chile		-0.98 (-1.35, 0.62)**	-1.57 (-1.96, -1.17)**
Egypt		1.07 (0.70, 1.45)**	0.64 (0.25, 1.03)**
Greece		1.15 (0.79, 1.51)**	0.95 (0.59, 1.31)**
Hong Kong		0.23 (-0.14, 0.62)	0.04 (-0.32, 0.41)
India		-1.66 (-2.00, -1.32)**	-1.80 (-2.14, -1.46)**
Palestine		0.36 (0.10, 0.71)**	0.07 (-0.29, 0.42)
Philippines		-0.79 (-1.15, -0.43)**	-1.19 (-1.57, -0.81)**
Saudi Arabia		0.54 (0.15, -0.43)**	0.30 (-0.14, 0.75)
<b>Attitude and perception of elderly care</b>			
Attitudes toward aging			-0.12 (-0.02, 0.00)**
Elderly care perception			-0.06 (-0.08-0.04)**
R <sup>2</sup>	0.02	0.18	0.20

BSN = Bachelor of Science in Nursing.

\* Significant at the 0.05 level (2-tailed).

\*\* Significant at the 0.01 level (2-tailed).

#### 4.2. Implications

Compared with other career options, working for older person was ranked as the lowest among nursing students in the majority of countries or regions. The willingness to care for geriatric patients can be influenced by several factors, of which location is the major factor. Prior research on willingness to care for geriatric patients has traditionally focused on individual or educational curriculum layers in a single

country. Investigation of shared perspectives across countries is lacking. The results of this study provide unique insights into this topic from a contextualized perspective. The differences in nurse students' willingness to care for geriatric patients across regions might be related to government policies, societal worldviews of aging, educational pathways in geriatrics, and suboptimal working environments for providing geriatric care. However, the present research has not addressed these factors. Future research could benefit from conducting more studies to compare the experiences of working with the geriatric population from various perspectives, including student nurses, tutors, hospital staff, and managerial staff. Emerging studies have also identified innovations for addressing this universal issue. Examples of such innovations include measuring the benevolent and hostile ageism for determining the perceptions or attitudes of aging and aging care or using e-learning activities to enhance understanding of and communication with older persons (Cary et al., 2017; Dukes et al., 2021).

#### 5. Conclusions

This multi-country study provides empirical data regarding student nurses' willingness to work with geriatric patients to the literature. Although attitude toward aging and older person care perception have been confirmed as important factors that are linked to willingness to care for geriatric patients, the study adds that location is a more influential factor. Considering the incredible global burden due to the rapidly aging population, training nurses specializing in geriatrics is urgently needed. Further research in other countries is needed to advance the knowledge in this important area.

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#### CRedit authorship contribution statement

**Hui-Lin Cheng, Simon Ching Lam, Jonas Preposi Cruz:** Conceptualization, Data curation, Investigation, Methodology, Resources, Software, Supervision, Validation, Visualization, Roles/Writing - original draft, Writing - review & editing. **Hui-Lin Cheng:** Formal analysis. **Jonas Preposi Cruz:** Project administration. **Joseph U. Almazan:** Conceptualization, Data curation, Investigation, Methodology, Software, Supervision, Validation, Visualization, Writing - review & editing. **Felipe A. Machuca-Contreras, Helen Shaji John Cecily, Hanan Ebrahim Abd El Aziz Rady, Ioanna V. Papanthanasidou, Farid Ghraryeb, Mohammed Qtait, Xian-Liang Liu, and Ejercito Mangawa Balay-oda:** Conceptualization, Data curation, Methodology, Software, Validation, Visualization, Writing - review & editing.

#### Declaration of competing interest

None.

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