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International Journal of Nursing Sciences

journal homepage: <http://www.elsevier.com/journals/international-journal-of-nursing-sciences/2352-0132>

Original Article

Undergraduate nursing students' knowledge of aging, attitudes toward and perceptions of working with older adults in Kathmandu Nepal

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ARTICLE INFO

Article history:

Received 2 November 2018

Received in revised form

6 February 2019

Accepted 4 March 2019

Available online 7 March 2019

Keywords:

Aged

Attitudes

Knowledge

Perceptions

Students

Nursing

Nepal

ABSTRACT

Objectives: This study aims to examine Nepalese undergraduate nursing students' knowledge of aging, attitudes towards older adults and perceptions of working with older adults, and to assess differences in these outcomes by socio-demographic characteristics as well as type of nursing program.

Methods: A cross-sectional study was conducted among 385 undergraduate nursing students in six nursing colleges located in the Kathmandu Valley. Knowledge of aging, attitudes toward older adults and perceptions of working with older adults were assessed using standardized tools, the Palmore Facts on Aging Quiz, Kogan's Attitudes towards Older People Scale, and Nolan's Intent to Work with Older People Questionnaire, respectively.

Results: The mean knowledge scores on older adults and aging were relatively low; participants scored an average of 26.9 out of 50. Scores assessing attitudes towards and perceptions of working with older adults were more favorable. Compared to students pursuing a Bachelor of Science in Nursing (BSN), students pursuing a Bachelor of Nursing (BN) had a significantly higher score on the knowledge, attitudes and perception of aging scales. Linear regression analyses showed that the students' knowledge of aging ($\beta = 0.55$; 95% CI = 0.25–0.86) and perceptions of working with older adults ($\beta = 0.22$; 95% CI = 0.05–0.38) had a significant positive association with their attitudes toward older adults.

Conclusions: Undergraduate nursing students in the Kathmandu Valley of Nepal displayed a relatively low level of knowledge, but a positive attitude towards older adults, and a positive perception of working with older adults. Observed differences in knowledge, attitude, and perception scores between students in BSN and BN programs needs further investigation; closing this gap may be important for bolstering undergraduate gerontological preparation in Nepal.

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1. Introduction

Population aging is an issue of global significance. Annually, about 58 million people around the world turn 60 years old, which

equates to two people every second [1]. The global proportion of older adults (≥ 60 years), estimated at 11.5% in 2012, is expected to double by 2050 [1], resulting in a greater number of older adults than children under 15 in the world [1]. This scenario of a burgeoning geriatric population is evident in Nepal, a landlocked Himalayan kingdom nestled between India and China. According to the latest Nepali Census, the population of Nepali older adults, defined by The Senior Citizens Acts of Nepal as “adult 60 years and above” [2], was 2.2 million in 2011, constituting 15.2% of the total national population [3]. The population growth rate of senior

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Peer review under responsibility of Chinese Nursing Association.

citizens in Nepal (3.5%) is higher than the overall population growth rate of the country (2%) [3,4]. Combined with Nepal's epidemiological transition from a high burden of infectious disease to a high burden of non-communicable diseases [5], this demographic shift in the population age structure is a pressing concern. Nepal needs to be prepared to address the unique health, psychological and social needs of its growing senior population.

Given that aging is often associated with multiple chronic diseases and reduced ability to independently perform activities of daily living, collaboration between clinical health, public health, and social care systems will be required [6,7]. Previous studies conducted in Nepal report a high prevalence of chronic conditions, including hypertension, diabetes, respiratory disease, arthritis, back pain, heart disease, depression and under-nutrition among Nepali senior citizens [8–12].

To respond to the unique concerns of older adults and enhance the quality of their care [13], an increase in the number of health professionals globally with expertise in gerontology care will be needed. In particular, nurses will be increasingly responsible for caring for senior citizens. However, developing a nursing workforce specialized in gerontology will be challenging since there is already a shortage of skilled healthcare professionals globally [14]. Additionally, previous research has documented a lack of interest among nurses in working with older adults [6,7,15,16]. Failure to recruit and retain health care professionals in geriatric nursing is attributed to low financial rewards as well as negative attitudes towards aging and working with older adults [17,18]. Fortunately, attitudes can often be changed [17,19]. Also linked to students' negative attitudes and lack of interest in working with older adults is poor knowledge of aging [19]. Education on aging was shown to decrease ageist attitudes and increase interest in working with older adults [19]. In a pre-post study among undergraduate students measuring the effects of an experiential learning activity on knowledge competencies and attitudes towards older adults, a significant increase in the targeted competencies and decrease in ageist attitudes was found after undergoing the learning activity [17], demonstrating the importance of providing positive learning experiences about the elderly to nursing students. Assessing nursing students' knowledge, attitudes, and perceptions about caring for older adults is crucial in understanding their learning needs and identifying their potential misconceptions about older adults, which may, in turn, guide the development and refinement of gerontology nursing courses [15,20]. However, these assessments have not yet been conducted in the Nepalese context. Consequently, we aim to examine and describe undergraduate nursing students' knowledge of aging, attitudes towards senior citizens, and perceptions of working with senior citizens. Also, we aim to discover any differences in these assessments according to socio-demographic characteristics as well as type of nursing program.

2. Material and methods

2.1. Study setting and design

This cross-sectional study was conducted from November 2017 to March 2018 in six nursing colleges located in the bowl-shaped Kathmandu Valley, completely surrounded by mountains. Three districts, Kathmandu, Bhaktapur, and Lalitpur, are encompassed within the Valley, which has an area of 899 square kilometers and a population of 2.5 million people [21]. Kathmandu Valley is the main gateway to the country and one of the fastest-growing metropolitan areas in South Asia [21]. Twenty-four colleges, affiliated with four major universities, offer undergraduate courses in nursing in Kathmandu (Appendix A). Six colleges were randomly selected for

this study. When a selected college declined to participate ($n = 2$), another college was selected from the list using sampling without replacement. A sample size of 385 was determined by using the sample size formula for cross-sectional surveys: $n = z^2/d^2$, where $z = 1.96$ at the 95% confidence interval, and $d = 5\%$ error [22].

Inclusion criteria for participation in the study were as follows: all current undergraduate first year or final year nursing students in a selected nursing college located in Kathmandu Valley who were available on the day of data collection for that college. In Nepal, two distinct nursing programs are available at the undergraduate level, the Bachelor of Science in Nursing (BSN) and the Bachelor of Nursing (BN). Prospective BSN students have completed 12 years of schooling, with science as a major in the 11th and 12th year; the BSN course is a standard 4-year degree. Prospective BN students are eligible for admission into the 3-year BN program after a minimum of two years of work experience as a registered nurse; registered nursing is a certificate level three-year course undertaken after ten years of schooling. In summary, BN students have pre-undergraduate nursing knowledge and hands-on nursing experience; while BSN students matriculate directly from high school. In the current study, final year for BSN students refers to their fourth year; for BN students, final year refers to their third year. Students in certificate level nursing or other allied health programs were excluded. Of the total 392 surveys received, seven (1.8%) were discarded because they were more than 50% incomplete.

2.2. Data collection and variables

Data were collected at the respective nursing colleges using three self-administered questionnaires in English. Pre-testing of the study tools took place among 39 undergraduate nursing students (10% of the sample size) at The Asian College for Advanced Studies in Lalitpur. This college was not included in the main study; pretest responses were not included in the final analyses. Very minor modifications to the tools were made to reflect the Nepali context (Refer to Appendix B–D). Survey administrators were two final-year undergraduate nursing and public health students from a non-participating college; they were involved in the design of the research and development of its objectives and procedures. Knowledge of aging, attitudes toward older people, and perceptions of working with older people were assessed using the following standardized tools:

2.2.1. Knowledge of aging

Knowledge of aging was measured using the revised version of the Paltore Facts on Aging Quiz comprised of 50 true-false questions designed to assess factual knowledge about aging and older persons [23]. Details about the tool and its scoring scheme are described elsewhere [23]. Each correct answer is scored one; cumulative scores range from 0 to 50. Higher scores indicate a greater knowledge of aging.

2.2.2. Attitudes towards older people

The Kogan's Attitudes towards Older People Scale (KAOP) was used to measure attitudes towards senior citizens [24]. The KAOP is a 34-item Likert-type scale; six-point responses to statements range from 1 = strongly disagree to 6 = strongly agree. The scale contains 17 matched positive and negative statements; negative statements are reverse scored. The cumulative KAOP score ranges from 34 to 204, with higher total scores indicating more positive attitudes [24]. The KAOP scale has been widely used in different settings, including a few "non-western" countries like Singapore [25] and Saudi Arabia [26], and across a range of professional groups [27–29].

2.2.3. Perceptions of working with older people

The Intent to Work with Older People questionnaire was used to measure perceptions of working with older adults [30]. The tool, developed following qualitative research, covers three broad areas: nursing students' perceptions of working with older adults in general; their intentions to work with older adults when they qualify; and the perceived consequences of working with older adults in terms of future career prospects and job satisfaction [31]. This 15-item questionnaire utilizes a five-point Likert scale for agreement; nine of the 15 items are negatively worded statements which are reverse coded prior to calculating a cumulative score. The cumulative score ranges from 15 to 75; higher scores indicate greater intent to work with older adults. This tool has been translated into many languages and used in different countries [31].

2.2.4. Socio-demographic variables

Additional questions assessed the students' socio-demographic characteristics including age (continuous and categorized as < 25-years and ≥25 years), sex, religion (Hindu/Non-Hindu), nursing program type (BN/BSN), year in current nursing program (first/last), and exposure to a geriatric practical (yes/no). Additionally, family living structure, classified as nuclear (two generation, i.e. parents and children), joint (three generation, i.e. grandparents, parents, and children), and extended (three generation plus aunts, uncles and/or cousins) was assessed as well as family's monthly income, self-reported in Nepali rupees and converted into USD (\$1 = 100 Nepali rupees) during data preparation.

2.3. Ethical approval

The Ethical Review Board at the Nepal Health Research Council approved this study. Written approval was also obtained from the participating colleges. Nursing student participants were provided a detailed explanation of the purpose of the study, the procedures to be followed, and an assurance that their participation was voluntary. Subsequently, written consent was taken from all respondents. Participants' and participating colleges' identities were kept confidential.

2.4. Data processing and statistical analyses

Data management and analyses were done in EpiData 3.1 and IBM SPSS22 (SPSS Inc. Chicago IL, USA), respectively. Frequencies (percentages) were obtained for categorical variables; continuous variables were summarized with either mean ± standard deviation (SD) or median and interquartile range, as appropriate. Differences in mean distributions between groups were assessed using independent t-tests. To assess relationships between scores on the knowledge, attitude and perceptions scales, six separate linear regression models were constructed. Each model had one scale's score as the outcome variable, with another score as a predictor, adjusted for covariates found to be significantly different for that specific outcome. For all statistical tests, two-tailed *P*-values <0.05 were considered statistically significant.

3. Results

3.1. Demographic characteristics

All undergraduate nursing students were female. The majority were under age 25 (83.6%), Hindu (88.8%) and lived in a nuclear family (69.1%). Slightly greater than half of the students were pursuing a BSN (55.1%), were in the first year of their program (51.6%), and had been exposed to a geriatric practical (50.9%) (Table 1).

3.2. Nursing students' knowledge of aging

Overall, the undergraduate nursing students' scores on the revised Palmore Facts on Aging Quiz ranged from 16 to 39 (0–50 possible), with a mean knowledge score of 26.9 ± 3.6 (Table 1). The majority of the undergraduate nursing students incorrectly identified the following as normal and inevitable problems for senior citizens: depression (64%), Alzheimer's (65%), constipation (73%), loss of interest in/capacity for sexual activity (88%), decline in intelligence (78%) and personality changes (83%). Moreover, they perceived older adults to be less capable of learning new things (79%) and adapting to new environments (80%). However, most nurses correctly identified some challenges that senior citizens face, including declines in memory (88%), physical strength (96%), and sensory ability (96%), as well as sleeping problems (91%) and urinary frequency (87%) (Appendix B).

Slightly higher scores were observed among the students older than 25 compared to younger; likewise, students pursuing their BN scored significantly higher than their counterparts in the BSN program (Table 2).

3.3. Undergraduate nursing students' attitudes toward older people

The range of scores among the undergraduate nursing students on the KAOP scale was 94–157, with a mean score of 122.9 ± 10.9 , falling in the middle of the range of possible scores (34–204) (Table 1). The undergraduate nursing students generally agreed that senior citizens were clean and neat, relaxing to be with, cheerful and agreeable, and that they maintained clean attractive homes and told interesting stories of their past experiences. However, many also agreed that older adults were set in their ways, spent too much time prying onto the affairs of others, made excessive demands for love, and were so different from young people that they were difficult to understand (Appendix C).

Similar to the knowledge scale, nursing students pursuing the BN degree had higher average positive attitude scores than their

Table 1

Demographic characteristics of participating undergraduate nursing students and mean scores on assessments (*n* = 385).

Characteristics	Frequency	Percent
Age in Years, Mean ± SD	385	22.2 ± 3.2
Age		
< 25	322	83.6
≥25	63	16.4
Sex		
Female	385	100.0
Religion		
Hindu	342	88.8
Non-Hindu	43	11.2
Family Type		
Nuclear	266	69.1
Joint/Extended	119	30.9
Family Income, Monthly(\$), Median (IQR)	385	600 (450–900)
Current Nursing Program		
Bachelor of Science in Nursing (BSN)	212	55.1
Bachelor of Nursing (BN)	173	44.9
Year of Current Nursing Education		
First Year	199	51.7
Final Year ^a	186	48.3
Exposure to Geriatric Practical		
No	189	49.1
Yes	196	50.9
Knowledge Score, Mean ± SD	385	26.9 ± 3.6
Attitude Score, Mean ± SD	385	122.9 ± 10.9
Perception Score, Mean ± SD	385	51.3 ± 6.5

Note: SD: Standard Deviation; IQR: Inter Quartile Range; a: 4th year for BSN; 3rd for BN.

Table 2Differences in scores on knowledge, attitude, and perception tools by characteristics of undergraduate nursing students (Mean $\pm$ SD).

Characteristics	n	Knowledge	Attitude	Perception
Age (years)				
< 25	322	26.7 $\pm$ 3.6	122.7 $\pm$ 11.0	51.3 $\pm$ 6.4
$\geq$ 25	63	27.7 $\pm$ 3.4	124.2 $\pm$ 10.3	51.4 $\pm$ 7.1
t		–1.97	–1.05	–0.08
P		0.052	0.297	0.937
Religion				
Hindu	342	26.8 $\pm$ 3.6	122.5 $\pm$ 10.8	51.3 $\pm$ 6.5
Non-Hindu	43	27.5 $\pm$ 3.4	126.1 $\pm$ 11.2	51.6 $\pm$ 6.5
t		–1.21	–2.03	–0.28
P		0.233	0.048	0.783
Family Type				
Nuclear	266	27.0 $\pm$ 3.5	122.7 $\pm$ 10.7	50.8 $\pm$ 6.6
Joint/Extended	119	26.7 $\pm$ 3.7	123.4 $\pm$ 11.3	52.5 $\pm$ 6.1
t		0.83	–0.58	–2.45
P		0.409	0.561	0.015
Current Nursing Program				
Bachelor of Science in Nursing (BSN)	212	26.3 $\pm$ 3.7	121.8 $\pm$ 11.7	50.5 $\pm$ 6.0
Bachelor of Nursing (BN)	173	27.6 $\pm$ 3.2	124.3 $\pm$ 9.6	52.3 $\pm$ 6.9
t		–3.75	–2.29	–2.82
P		<0.001	0.023	0.005
Year of Current Nursing Education				
First Year	199	26.7 $\pm$ 3.7	122.0 $\pm$ 11.4	51.1 $\pm$ 5.7
Final Year	186	27.1 $\pm$ 3.4	123.8 $\pm$ 10.2	51.6 $\pm$ 7.3
t		–1.22	–1.62	–0.73
P		0.225	0.106	0.464
Exposure to Geriatric Practical				
No	189	26.6 $\pm$ 3.7	121.9 $\pm$ 11.4	51.0 $\pm$ 5.7
Yes	196	27.2 $\pm$ 3.4	123.9 $\pm$ 10.3	51.6 $\pm$ 7.1
t		–1.50	–1.82	–1.04
P		0.134	0.070	0.300

BSN counterparts. Between-group differences were also significant for Religion, with non-Hindu students scoring higher (Table 2).

3.4. Undergraduate nursing students' perceptions of working with older people

On the Intent to Work with Older People tool, the undergraduate nursing students displayed a relatively high range of scores, 32–66 out of a possible 15–75 range. The mean score was 51.3 $\pm$ 6.5. (Table 1). Most participants agreed or strongly agreed that older people are challenging and stimulating (75%) as well as interesting to work with (74%). Seventy-two percent agreed that working with senior citizens is a highly skilled job; 80% agreed or strongly agreed that they would consider working with older adults while 64% look forward to their first placement with them. However, 57% of the undergraduate nursing students believed that working with older adults would provide little satisfaction as they rarely get better and 64% thought being older themselves would make it easier to have good rapport with older adults. Most disagreed that working with older adults would adversely affect their job prospects (Appendix D).

Between-group differences were again seen for current nursing program: BN students demonstrated significantly higher mean perceptions scores than BSN students. Additionally, students living in a joint/extended family had higher scores than those living in a nuclear family (Table 2).

3.5. Relationships

In multivariate linear regression models (Table 3), scores on the attitude scale were significantly associated with scores on the knowledge scale, after adjustment for age and type of current nursing program. For each unit increase in attitude score, the knowledge score increased by 0.06 units (95% CI = 0.03, 0.09). The

association was also evident in reverse: each unit increase in knowledge score resulted in an increase in attitude score of by 0.55 units (95% CI = 0.25, 0.86) after adjustment for religion and type of current nursing program. Similarly, students' attitudes toward older adults was positively associated with their perception of working with older adults (β = 0.07; 95% CI: 0.02–0.13); perception scores were also associated with attitude scores. (β = 0.22; 95% CI: 0.05–0.38) (Table 3).

4. Discussion

This study aimed to assess undergraduate nursing students' knowledge of aging, attitudes towards older adults and perceptions of working with older adults. Undergraduate nursing students in the Kathmandu Valley of Nepal displayed a relatively low level of knowledge, with only slightly more than half of the questions answered correctly. However, they also displayed a positive attitude towards older adults and a positive perception of working with older adults.

Our findings of relatively poor knowledge about aging is concerning given that all undergraduate nursing programs in Nepal, have a required Geriatric Nursing module in the first year [32]. It is

Table 3

Linear relationships between students' knowledge, attitude, and perception scores (n = 385).

Variables	Knowledge ^a β (95% CI)	Attitude ^b β (95% CI)	Perception ^c β (95% CI)
Knowledge	—	0.55 (0.25, 0.86)	0.10 (–0.08, 0.28)
Attitude	0.06 (0.03, 0.09)	—	0.07 (0.02, 0.13)
Perception	0.03 (–0.03, 0.08)	0.22 (0.05, 0.38)	—

Note:

^a Models adjusted for age and type of current nursing education.^b Models adjusted for religion and type of current nursing education.^c Models adjusted for family type and type of current nursing education.

possible that our final year students may have had difficulty in recalling the information and our first-year students may not have been exposed yet to all of the content. However, it is more likely that the educational curricula are not of high enough quality for this relatively new module. Geriatric health is a neglected issue in Nepal [33,34] since aging in the Nepalese society is a relatively recent phenomenon. It has only been since 2004 that the Government of Nepal started to include plans, policies, and programs for the elderly [33]. Although the Senior Citizens Treatment Guidelines include a provision to provide separate geriatric wards in the public hospitals [33], this has not yet been implemented in most of facilities. A previous stakeholder report acknowledged that clinical staff often lack important specific knowledge of age-related health issues and the expertise necessary for optimal service provision in Nepal [33].

To address nursing students' relatively low knowledge of aging, educational curricula must be improved. A previous mixed-methods study among Nepali nursing students, nursing teachers, and policymakers identified geriatric nursing as one specialization that needs to be added to the extended nursing program [35]. With the demands created by the demographic transition coupled with increased interest from the Government of Nepal to address the health care, psychological, and social needs of the elderly population, there may be substantial changes in the nursing educational curricula in the near future that will ensure nursing students have adequate and appropriate knowledge about geriatric health.

Attitudes towards the care of older adults are highly significant among nursing students as they have far-reaching impact on the quality of care for older adults [36]. A positive attitude toward and perception of working with older adults is also important to attract students into the geriatric nursing workforce to care for our largest growing population [36]. It was impressive to see that our participants had generally positive attitudes towards older adults and positive perceptions of working with older adults, similar to results from a multi-country European study [31] and a study from Israel [26]. Most respondents in our study thought older adults were really interesting and they would consider working with them. This contrasts with studies, mainly from western countries, which showed that nursing students frequently hold negative attitudes toward older adults [6,37] and that a career in geriatric nursing was not seen as an attractive option upon graduation [38–40]. Our findings are most similar to a previous study in Saudi Arabia which showed that despite low levels of knowledge about the behavioral and physical aspects of aging, nursing students held largely positive attitudes towards older people [26]. Our findings are likely attributable to cultural factors. In traditional Nepali culture, older adults are revered as deities; every auspicious occasion starts with taking blessings from older family members [41]. Children are raised to believe that disrespecting, hurting, or not taking care of elderly family members constitute sins for which there may never be atonement [41]. This culture of respecting older adults very likely influenced participants' attitudes and perceptions towards working with older adults in the current study.

In addition to job availability, many personal factors, including beliefs, attitudes, knowledge, and past experiences [39,42] influence students' decision to focus on gerontological nursing. One study identified personal experience and interactions with older adults as relevant in making this choice [43]. A similar effect was evident in our study, as participants living in a joint/extended family had significantly higher scores on general perceptions of working with older adults than participants from a nuclear family. The joint/extended family structure, in which participants live with elderly grandparents in the same household, provides opportunities for daily interactions and positive personal experiences with older adults that potentially influenced their scores.

One important finding from the current study is that compared to the students pursuing the BSN, students pursuing the BN displayed significantly higher scores on all scales: knowledge, attitude, and perception. The findings were not surprising given that students pursuing BN already have a pre-undergraduate nursing certification (three-year course) and at least two years of post-study work experience as a registered nurse. Their extensive pre-undergraduate nursing training and hands-on nursing experience likely explains their higher knowledge and a more positive attitude and perceptions towards older adults. Measures should be put in place to provide training and experiences that will increase the scores for BSN students.

4.1. Relationships between knowledge of aging, attitudes toward and perceptions of working with older adults

Our findings that students who had greater knowledge of aging had more positive attitudes towards aging and those who had more positive attitudes towards aging had a greater perception of working with older adults aligns with previous studies that showed a significant correlation between knowledge of aging and attitudes towards the elderly among undergraduate students [44,45]. Greater knowledge of aging is believed to promote empathy, enhance understanding and produce positive attitudes [46]. Conversely, lack of knowledge or misinformation about aging may contribute to negative attitudes and ageist beliefs. Previous studies have shown that increasing knowledge about older adults through education reduces ageist attitudes [6,17,19]. As seen in our study, prior research has also demonstrated that positive attitudes toward older adults is associated with an improved perception of working with older adults [31,47]. Nursing educators in Nepal could leverage the positive attitudes among students to motivate increasing knowledge to ensure a workforce with positive intentions of working with Nepal's burgeoning elderly population.

4.2. Strengths, limitations, and future directions

The strengths of the current study include a large sample size and inclusion of six nursing colleges from three districts of Nepal. We also included students from both types of nursing programs (BSN and BN). Further, this is the first study assessing undergraduate nursing students' knowledge of aging, attitudes towards older adults and perceptions of working with older adults in Nepal, a country still in the conception stage of geriatric care policies, and thus is unique in this regard. Recently, there has been an increased interest from the Government of Nepal in addressing the needs of Nepali older adults and a realization that nursing programs should be revised to include geriatric nursing as a specialization [33,35]. As such, the present study may aid educators, researchers, curriculum developers and policy makers in devising effective strategies to enhance and promote geriatric nursing.

Nonetheless, our study is subject to some limitations. Because of its cross-sectional study design, no causal relationships should be inferred. Nursing education and careers are exclusively limited to females in Nepal; thus, all participants were female. If males enter the nursing workforce in Nepal, these findings would not be generalizable; female students have been shown to have a more positive attitude towards older adults in other studies [47]. We only included undergraduate nursing students from the Kathmandu Valley, which may also limit the generalizability of this study to nursing students from other regions, despite similarity in admission requirements, course structure, and syllabus among the universities and affiliated colleges. Lastly, our selection of only first and final year nursing students may not be entirely representative of all nursing students.

Our findings have some research implications. The observed differences in knowledge, attitude, and perception scores between BSN and BN students provide room for further investigation. Moreover, to get a comprehensive picture, it would also be worth replicating our study among certificate level nursing students as well as undergraduate nursing students outside of the Kathmandu Valley.

5. Conclusions

Increased life expectancy in Nepal means a burgeoning older population, which has increased the need for professionals to work in the older adults' healthcare sector. Therefore, preparing healthcare professionals to meet the needs of this growing demographic is a current challenge. As beliefs and values currently held by students are the basis for future professional practice, our research provides some important preliminary results.

Undergraduate nursing students in the Kathmandu Valley of Nepal displayed a relatively low level of knowledge, but a generally positive attitude towards older adults and a positive perception of working with older adults. The positive relationships we found between the students' knowledge of aging and attitudes toward older adults and between attitudes toward older adults and perceptions of working with older adults suggest that nursing programs and educators should take advantage of their important role in promoting gerontological nursing knowledge and interest through gerontology-specific classes. Additionally, nursing faculty have the unique opportunity to challenge negative attitudes and stereotypes held towards older adults; failure by curricula or faculty members to address myths and/or stereotypes about aging may hamper students' ability to effectively manage practical health situations with older adults and further increase biases against working with this growing population. Conversely, nursing courses and faculty that provide ample opportunity to gain knowledge and skills about gerontological nursing may motivate more nursing students to work with older adults.

Conflicts of interest

None.

Acknowledgments

We would like to thank Dr. Mike R Nolan for allowing us to use his tool 'Nolan's Intent to Work with Older People' and Dr. Erdman Palmore for the tool 'Palmore Facts on Aging Quiz'.

Appendices. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijnss.2019.03.003>.

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