

Attitudes, knowledge, and interest of future professionals towards geriatrics: a cross-sectional study

Atitudes, conhecimento e interesse dos futuros profissionais em relação à geriatria: um estudo transversal

Actitudes, conocimientos e interés de los futuros profesionales hacia la geriatría: un estudio transversal

Marina Mariano Roquetti Borges¹

ORCID: 0000-0003-0074-4993

Maria Giovana Borges Saidel¹

ORCID: 0000-0002-3259-1760

Daniella Pires Nunes¹

ORCID: 0000-0002-4679-0373

Maria Helena Melo Lima¹

ORCID: 0000-0001-6521-8324

Ana Railka de Souza Oliveira-Kumakura¹

ORCID: 0000-0002-7075-7987

1 Federal University of Campinas,
Campinas, SP, Brasil

Editors:

Ana Carla Dantas Cavalcanti

ORCID: 0000-0003-3531-4694

Paula Vanessa Peclat Flores

ORCID: 0000-0002-9726-5229

Karina Silveira de Almeida
Hammerschmidt

ORCID: 0000-0002-7140-3427

Corresponding author:

Maria Giovana Borges Saidel

E-mail: mgsaidel@unicamp.br

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ABSTRACT

Objective: this study aimed to examine health students' attitudes, knowledge, and interest towards geriatrics and gerontology and evaluate associations. **Method:** a total of 225 students in the final year of Nursing, Medicine, Speech therapy, Pharmacy, and Physical education participated. The questionnaires included a characterization form, the Aging Semantic Differential Scale, and the Palmore Fact on Aging Quiz. Multiple regression models were used. **Results:** the attitude towards older people was negative (50.67%) and associated with less interest. The level of knowledge was better among Nursing, Medicine, and older students. Increased knowledge was related to attitude and, in total, 71.43% were interested in geriatrics. Interest was strongly associated with female gender. **Conclusion:** students showed a high level of knowledge, interest in geriatrics, and a negative attitude towards geriatric care. Actions focused on geriatric training should be implemented.

Descriptors: Attitude; Aging; Students.

RESUMO

Objetivo: este estudo teve como objetivo analisar as atitudes, conhecimentos e interesse dos estudantes de saúde em relação à geriatria e gerontologia e avaliar suas associações. **Método:** participaram do estudo 225 estudantes do último ano dos cursos de Enfermagem, Medicina, Fonoaudiologia, Farmácia e Educação Física. Os questionários incluíram um formulário de características demográficas, a Escala de Diferencial Semântico de Envelhecimento e Questionário Palmore - Fatos sobre o envelhecimento. Foram utilizados modelos de regressão múltipla. **Resultados:** a atitude em relação aos idosos foi negativa (50,67%) e associada ao menor interesse. O nível de conhecimento foi melhor entre os estudantes de Enfermagem, Medicina e estudantes mais velhos. O aumento do conhecimento se relacionou com a atitude e, no total, 71,43% apresentavam interesse em geriatria. O interesse esteve fortemente associado ao gênero feminino. **Conclusão:** os estudantes apresentaram um alto nível de conhecimento, interesse em geriatria e uma atitude negativa em relação aos cuidados geriátricos. Ações focadas na capacitação em geriatria devem ser implementadas.

Descritores: Atitude; Envelhecimento; Estudantes de Ciências da Saúde.

RESUMEN

Objetivo: este estudio tuvo como objetivo examinar las actitudes, los conocimientos y el interés de los estudiantes de salud hacia la geriatría y la gerontología y evaluar las asociaciones. **Método:** participaron un total de 225 estudiantes de los últimos años de cursos de Enfermería, Medicina, Fonoaudiología, Farmacia y Educación Física. Los cuestionarios incluían un formulario de caracterización, la Escala de Diferencial Semántico de Envejecimiento y el Cuestionario de Hechos sobre el Envejecimiento de Palmore. Se utilizaron modelos de regresión múltiple. **Resultados:** la actitud hacia las personas mayores fue negativa (50,67%) y asociada a un menor interés. El nivel de conocimiento fue mejor entre los estudiantes de Enfermería, Medicina y de edad mayor. El aumento de conocimientos estuvo relacionado con la actitud, en total, el 71,43% estaba interesado en la geriatría. El interés estuvo fuertemente asociado con el género femenino. **Conclusión:** los estudiantes mostraron un alto nivel de conocimiento, interés por la geriatría y una actitud negativa hacia la atención geriátrica. Deben implementarse acciones enfocadas a la formación geriátrica.

Descritores: Actitudes; Envejecimiento; Estudiantes del Area de la Salud.

INTRODUCTION

With an increase in life expectancy, reduced fertility rates, and technological advances, the population of older adults has grown worldwide bringing with it social, economic, and health challenges⁽¹⁾.

Although we have seen changes in healthcare, the increasing number of older people leads to an increased demand for specialized services⁽²⁾. These issues are not restricted to developing countries and current health systems cannot meet the aging-related demands⁽³⁾. Moreover, senescence leads to functional, mental, and cognitive losses, increasing vulnerability, morbidity, and disability⁽³⁾.

There are no doubts regarding the peculiarities of aged individuals. They require a comprehensive assessment with functional capacity being the main requirement for their care. Therefore, trained health professionals must meet the characteristics of this population in an integrated manner⁽³⁾. The literature reports the insufficiency of multidisciplinary teams with the necessary knowledge to act at different care levels for older adults⁽¹⁾. In addition, several factors have been associated with providing care for this group, including the lack of interest⁽³⁾. Thus, academic training investments are essential, with disciplines aimed at comprehensive teaching on the topic^(4,5).

Therefore, the following questions emerged: What is the current level of knowledge, interest, and attitude of future health professionals towards geriatrics and gerontology? Given the growing demand for care towards older people in health services, how are these three domains related? In university, the involvement and engagement of students with geriatrics and gerontology can enable the acquisition of knowledge, a cognitive component that, along with beliefs, can be shared. Knowledge influences the perceptions about the world; when shared with a social group, these perceptions can strengthen connections with culture and increase the degree of involvement and active participation of group members.

Attitude is defined as a "mental or neural state of readiness, organized through experience, exerting a directive or dynamic influence upon the individual's response to all objects and situations with which it is related". In other words, it is the predisposed way how a person feels, perceives, and behaves⁽⁶⁾. Some studies show that attitude can influence older people's care⁽⁷⁾.

There are still many issues related to geriatrics

training. Low interest in this career may be due to a lack of exposure, the nature of this kind of work, the perceived low status of the profession, and financial rewards⁽⁸⁾.

There is a relationship between interest and personal values. Consequently, students' choices in their professional practice are related to their interests. The literature shows that developing the empathy of undergraduate students can improve positive attitudes in older people's care⁽⁹⁾. An association between knowledge, attitude, and interest has been found⁽¹⁰⁾. While knowledge and attitude are influenced by external, employment, and individual factors⁽¹¹⁾, interest is influenced by previous experience, recognition of the profession, work conditions, attitudes, and knowledge⁽¹⁰⁾.

It is a challenge for health students to promote the approach of gerontological content in their curricula, thus acquiring a positive attitude towards older people's care⁽¹²⁾. This study aimed to examine health students' attitudes, knowledge, and interest towards geriatrics and gerontology and evaluate associations.

METHOD

Study design

A cross-sectional quantitative study was conducted according to the Reporting of Observational Studies in Epidemiology (STROBE) guidelines.

Participants

Study participants were health students, with a gerontological content in their curricula, in their final year of a Bachelor of Science (Nursing, Medicine, Speech therapy, Pharmacy, and Physical education), from a public university in São Paulo, Brazil.

All eligible students had clinical hours of supervision and practical activities involving older adult care in community or hospital settings (N=540). However, Speech therapy and Pharmacy programs do not have a specific discipline on the topic. There are 30-hour and 60-hour theoretical courses related to the topic in Nursing and Physical education programs, respectively. Medicine students in their fourth year must complete 35-hours of practical training in a geriatric setting, and fifth year students must complete 60-hours in a geriatric outpatient clinic.

Sample size was estimated considering a binomial distribution, a level of significance of 5%, a sampling error of 3%, and a proportion of .50

(maximum variance), resulting in a sample of 225 students from a total of 540, distributed as follows: 137/330 Medicine students, 42/100 Physical education, 17/40 Pharmacy, 17/40 Nursing, and 12/30 Speech therapy. The selection was non-probabilistic and by convenience.

The inclusion criteria used for Nursing, Speech therapy, Pharmacy, and Physical education students was that students needed to be in their last year. Medicine students in the fourth, fifth, and sixth years were included. Students who did not fill out the questionnaires correctly were excluded.

Procedures

Data collection was carried out from September to December 2019. The students were invited to participate via e-mail. All potential participants were contacted by a nursing student in the last year of the program. All students who chose to participate filled a consent form. As described below, the self-administered questionnaires were distributed to volunteer students, who took about 20 to 40 minutes to complete them.

Ethical considerations

The study was approved by the Human Research Ethics Committee at the University of Campinas and followed the tenets of the Declaration of Helsinki. All participants signed the informed consent form.

Instruments

The research team developed a questionnaire for the study addressing demographic characteristics (age and gender), contact with older people in the family (who, when and how) and at the university, questions related with the interest in geriatrics and gerontology, and questions about providing care to older people.

Aging Semantic Differential Scale (ASDS)

The ASDS was developed in Brazil to assess attitudes towards older people and achieved a good internal consistency (Cronbach's $\alpha = .89 - .94$)⁽¹³⁾. This scale comprises 30 paired adjectives, such as "wise-foolish" and "accepted-rejected" and involves the following domains: cognition with 10 items (social adaptation reflected in information processing and problem-solving); agency, 6 items (autonomy and instrumentalization to perform actions); interpersonal relationships, 7 items (social interaction, assessed by affective-motivational aspects); and persona, 7 items (social labels to designate or differentiate

older people). Scores below 3 were considered positive, 3 neutral, and 3 or above negative⁽¹³⁾.

Palmore Fact on Aging Quiz (PFAQ)

The PFAQ has 25 multiple-choice questions with 4 options and a "do-not-know" answer addressing general knowledge on older people and the aging process. The PFAQ is used worldwide^(14,15) and has been adapted and validated for the Brazilian culture with a good internal consistency (Cronbach's $\alpha = .75$)⁽¹³⁾. Its questions cover the cognitive, psychological, and social domains. For example, in the Physical domain, there is a question on lung capacity; in the Social domain, there is a question about the proportion of Brazilians over 65 living in nursing homes. The following classification was adopted according to a previous study⁽¹²⁾: 11 or less correct answers = low level of knowledge, and more than 11 correct answers = high level of knowledge.

Data analysis

SAS version 9.4 was used for data processing, with a level of significance of 5%. First, a descriptive analysis was performed. Then, the Shapiro-Wilk test was used for testing normality. For comparisons between quantitative and qualitative variables in two categories, the Mann-Whitney test was used. For comparisons with a qualitative variable in more than two categories, the Kruskal-Wallis test followed by Dunn's post-test were used. The Chi-squared test and the Fisher's exact test were used to test associations between qualitative variables.

The Spearman's coefficient was used to analyze associations among quantitative variables based on the following guidelines⁽¹⁶⁾: 0.1 to 0.29: weak correlation, 0.30 to 0.49: moderate correlation, and 0.50 and above: strong correlation.

Multiple linear regression models were developed, and the total scores obtained for attitude and knowledge were considered dependent variables. Estimates of regression coefficients, confidence intervals, and p-values were calculated. For the variable "interest in geriatrics and gerontology", the Poisson model was used, and we estimated the prevalence ratios, confidence intervals, and p-values. Variables with a p-value $\leq .20$ were selected for further analysis.

RESULTS

Participants' characteristics

In total, 244 students participated in the study, from which 19 did not fill out all scales

and were excluded. Among 225 participants, the mean age was 23.95 (SD = 3.32) years, 57.33% were female, and 60.89% were medical students. Overall, 93.33% had contact with older people in the family, and 83.04% had living grandparents, 80.27% of whom had contact with them. Contact with older people was weekly (31.84%) or monthly (25.56%) and mainly on commemorative dates. Regarding this association, 80.44% were affectionate and 72% respectful (Table 1).

At university, 85.33% reported having experiences with older people, which occurred in hospital internships, primary care or gyms in the case of physical education students (Table 1). Regarding geriatrics/gerontology, of the 196 students exposed to this specific content, 57.14% had studied it previously.

Characterization of the leading research variables

The overall attitude was negative (50.67%, mean ASDS = 11.87), and more evident in the Cognition and Social relationships domains. The Agency and the Persona domains of the ASDS had a more positive attitude. The students' mean level of knowledge about old age was high (60.55%, mean PFAQ = 11.87), mainly in the Cognition and Physical domains; and lowest in the Social and Psychological domains (Table 1). In terms of interest in geriatrics/gerontology, 71.43% of students expressed an interest, but interest in exclusively developing care for older people was 18.75% (Table 1).

Associations of the leading research variables

After Dunn's post-test ($p < .05$), we observed that nursing students had a higher PFAQ in the Physical domain than physical education (4.82 vs. 3.83, difference = .99) and medicine students (4.82 vs. 4.05, difference = .77). Medicine students showed a higher PFAQ mean than physical education students in the Psychological (2.93 vs. 2.26, difference = .67) and Psychological/Social/Physical domains (.94 vs. .60, difference = .34), and also in the PFAQ total (12.20 vs. 10.69, difference = 1.51) (Table 2).

Regarding age, older students had a higher PFAQ (Table 2). After Spearman's correlation tests, we observed a positive and weak correlation between age and knowledge in the Social domain ($r = .1378$) and in the total PFAQ ($r = .1391$) (Table 3).

A positive and weak correlation between the Psychological domain of knowledge and the Cognition domain of attitude ($r = .2150$), and between the Social domain of the PFAQ and the total ASDS ($r = .1495$) was observed (the increase in knowledge in these domains was related to a negative attitude). There was also a negative and weak correlation between Psychological knowledge and Social relationship ($r = -.1467$) indicating that high knowledge was related to a positive attitude (Table 3).

Students who did not take classes on geriatrics/gerontology showed a negative attitude in the Agency domain (3.06 vs. 2.87, $p = .0244$), and those with no interest in caring exclusively for older people showed a negative attitude in the Cognition domain (3.09 vs. 2.92, $p = .0091$) (Table 2).

We also found that contact with older people in the family ($p = .0120$) and not being interested in caring exclusively for older people ($p = .0125$) were associated with a negative attitude in the Cognition domain. Previous experience at university was associated with a negative attitude in the Social relationship domain ($p = .0398$), and students with no contact with grandparents showed a positive attitude in the Agency domain ($p = .0293$) (Table 4).

Regarding age, older students had a neutral attitude in the Persona domain (Table 2). We observed a positive and weak correlation between age and attitude in the Persona domain ($r = .1825$) and in the total ASDS ($r = .1449$). An interest in geriatrics/gerontology was associated with female gender and with interest in exclusively providing care for older people (Table 3).

Regression models of the leading research variables

No significant association was observed between independent variables and attitude. We observed a significant association between knowledge and program. There was a negative association between speech therapy and physical education with nursing (reference course for the model), decreasing the total PFAQ score to 2.32 and 2.27. In terms of interest in geriatrics/gerontology, male students showed a 22% lower probability, and those interested in exclusively caring for older people were 1.25 times more likely to be interested (Table 5).

Table 1 - Descriptive characteristics of health students (n = 225). São Paulo, SP, Brazil, 2019

Variables	n (%)	Mean (SD) ^(a)	Range
Age		23.95 (3.32)	20 - 48
Female	129 (57.33)		
Course			
Medicine	137 (60.89)		
Physical education	42 (18.67)		
Nursing	17 (7.56)		
Pharmacy	17 (7.56)		
Speech therapy	12 (5.33)		
Older people in the family			
Grandparents	186 (83.04)		
Uncles	58 (26.01)		
Parents	29 (13.00)		
Great-grandparents	6 (2.69)		
Contact with older people in the family			
Daily	15 (6.73)		
Weekly	71 (31.84)		
Monthly	57 (25.56)		
Sporadic	66 (29.60)		
Absence	14 (6.28)		
Relationship with older people in the family			
Affectionate	181 (80.44)		
Respectful	162 (72.00)		
Indifferent	11 (4.89)		
Aggressive	4 (1.78)		
Experience with older people at university	192 (85.33)		
Finished Geriatrics and Gerontology classes ^(b)	112 (57.14)		
Interest in Geriatrics and Gerontology	160 (71.43)		
Interest in exclusively caring for older people	42 (18.75)		
Attitude			
Cognition domain		3.05 (.40)	1.60 - 4.20
Agency domain		2.89 (.32)	2.00 - 3.67
Social relationship domain		3.22 (.35)	1.57 - 4.29
Persona domain		2.90 (.28)	1.86 - 4.00
ASDS total ^(c)		3.03 (.17)	2.40 - 3.57
Positive attitude	87 (38.67)		
Neutral attitude	24 (10.67)		
Negative attitude	114 (50.67)		
Knowledge			
Cognitive domain		1.41 (0.62)	0.00 - 2.00
Physical domain		4.07 (1.08)	1.00 - 6.00
Psychological domain		2.73 (1.16)	0.00 - 5.00
Social domain		1.68 (1.08)	0.00 - 5.00
Psychological, Social and Physical domain		0.83 (0.61)	0.00 - 2.00
Mixed domain		1.95 (0.96)	0.00 - 4.00
PFAQ total ^(d)		11.87 (2.44)	5.00 - 19.00
Low level of knowledge	86 (39.45)		
High level of knowledge	132 (60.55)		

Source: Elaborated by the authors, 2019.

(a) SD: Standard deviation; (b) Total: 196 (Nursing, Physical education, and Medicine students); (c) ASDS: Aging Semantic Differential Scale; (d) PFAQ: Palmore Fact on Aging Quiz.

Table 2 - Comparison of age, attitude, and knowledge scores among the students (n = 225). São Paulo, SP, Brazil, 2019

Variables Categories	Attitude				Knowledge				Total			
	Cognition	Agency	Social relationship	Personas	Total	Cognitive	Physical	Psychological		Social	Mixed	Psychological/Social/Physical
Course	Nursing	2.97	2.89	3.26	2.89	3.00	1.65	4.82 ^(d)	2.59	1.35	.71	12.53
	Medicine	3.11	2.90	3.23	2.88	3.04	1.41	4.05 ^(d)	2.93 ^(d)	1.72	.94 ^(d)	12.20 ^(d)
	Speech therapy	2.92	2.92	3.16	2.87	2.96	1.18	4.08	2.25	1.09	.92	10.80
	Physical education	2.95	2.89	3.17	3.00	3.00	1.31	3.83 ^(d)	2.26 ^(d)	1.67	.60 ^(d)	10.69 ^(d)
	Pharmacy	3.06	2.78	3.33	2.92	3.04	1.53	4.06	2.82	2.06	.53	12.25
Geriatrics and Gerontology classes	No	3.13	3.06	3.20	2.90	3.08	1.16	3.95	2.72	1.84	.95	11.61
	Yes	3.05	2.87	3.20	2.90	3.01	1.46	4.15	2.68	1.56	.83	11.81
		ns	p=.0244 ^(c)	NS	ns	ns	ns	ns	ns	ns	ns	ns
Interest in exclusively caring for older people	No	3.09	2.90	3.21	2.89	3.04	1.39	4.09	2.79	1.62	.81	11.86
	Yes	2.92	2.83	3.27	2.95	2.99	1.48	4.00	2.48	1.98	.90	11.95
		p=.0091 ^(c)	ns	ns	ns	ns	ns	ns	ns	ns	ns	ns
Age	Positive	24.15	24.33	23.93	23.58	23.87	-	-	-	-	-	23.80
	Negative	23.16	23.44	23.59	23.75	23.50	-	-	-	-	-	24.11
	Neutral	24.03	23.59	24.01	25.05	24.10	-	-	-	-	-	24.11
		ns	ns	ns	p=.0043 ^(b)	ns	-	-	-	-	-	p=.0173 ^(c)
Knowledge	Low	-	-	-	-	-	-	-	-	-	-	23.80
	High	-	-	-	-	-	-	-	-	-	-	24.11
		-	-	-	-	-	-	-	-	-	-	24.11
		-	-	-	-	-	-	-	-	-	-	p=.0173 ^(c)

Source: Elaborated by the authors, 2019.

(a) ns: not statistically significant; (b) Kruskal-Wallis test; (c) Mann-Whitney test. (d) Dunn's post-test.

Table 3 - Spearman's correlation coefficient (n = 225). São Paulo, SP, Brazil, 2019

Variables	Attitude					Knowledge						
	Cognition	Agency	Social relationship	Persona	ASDS Total	Cognitive	Physical	Psychological	Social	Psychological/Social/Physical	Mixed	PFAQ Total
Cognitive knowledge	-.0513	.0856	.0130	-.0799	.0112	1						
Physical knowledge	-.0377	.0321	.0053	-.0523	-.0253	-	1					
Psychological knowledge	.2150 ^(a)	.0668	-.1467 ^(a)	-.1274	.0797	-	-	1	-	-	-	-
Social knowledge	.1080	.1036	-.1136	.1286	.1495 ^(a)	-	-	-	1	-	-	-
Psychological, Social and Physical knowledge	-.0683	.0131	.1081	-.0817	.0152	-	-	-	-	1	-	-
Mixed knowledge	-.0338	.0405	.0854	-.0780	.0332	-	-	-	-	-	1	-
PFAQ total	.0878	.1201	-.0718	-.0713	.0912	-	-	-	-	-	-	1
Age	.0894	-.0705	.0337	.1825 ^(a)	.1449 ^(a)	-.0669	.0416	.0904	.1378 ^(a)	.1057	.0781	.1391 ^(a)

Source: Elaborated by the authors, 2019.

(a) $p < .05$.

DISCUSSION

This study assessed the knowledge and interest in geriatrics and gerontology of future health professionals and their attitudes towards old people. Although students had an adequate level of knowledge, this was not enough to generate a positive attitude or greater interest in this field, as reported in other studies⁽¹⁷⁻¹⁸⁾.

The findings show that the attitudes of health students were negative. Previous study reported mixed and contradictory findings towards older people: stereotyped, inconsistent, negative, positive in most situations^(6-7,17) or even neutral⁽¹⁸⁾. Most students had contact with older people in the family or university. Studies show that the burden of providing care, communication difficulties, and a tedious job could lead to negative attitudes⁽¹⁷⁾. We observed a negative attitude in the Cognition and Social domains among students who had contact with older people. Although the curriculum of health courses have not been examined, interventions are needed. The suggestions found include curriculum changes

with intergenerational contacts⁽¹⁹⁾, gerontological experiences at the beginning of courses⁽¹⁸⁾, innovative educational strategies⁽⁷⁾, studying with peers, and continuous programs on the topic⁽¹⁷⁾. We found a weak correlation between attitude and knowledge and a correlation between attitude and age (older students showed a negative attitude). The increased knowledge is not related to a more positive attitude towards older people⁽¹⁴⁾, and both students at a senior undergraduate level and healthcare professionals can have negative attitudes⁽¹⁰⁾. McCloskey et al.⁽¹⁸⁾ pointed out that attitude is being translated into the practice fields.

Students' knowledge toward older people and the aging process showed significantly high levels, similar to other studies⁽¹⁸⁾, despite the fluctuations⁽¹⁷⁾. Therefore, education on geriatrics needs to be promoted, since not all programs cover this subject. For the programs with no geriatrics and gerontology classes, the level of knowledge was higher in the Physical domain and lower in the Social and Psychological ones.

Table 4 - Test of association between interest and classification of knowledge and attitude (n = 225). São Paulo, SP, Brazil, 2019

Variables	Categories	Gender		Contact with older people in the family		Contact with grandparents		Interest in exclusively caring for older people		Geriatrics and Gerontology classes		Experience with older people at university	
		Female	Male	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Interest in Gerontology and Geriatrics	No	21.88	37.50	46.67	27.27	23.68	29.73	32.42	11.90	27.96	29.01	21.21	29.84
	Yes	78.12	62.50	53.33	72.73	76.32	70.27	67.58	88.10	72.04	70.99	78.79	70.16
		p=.0104 ^(a)		ns ^(b)		ns		p=.0080 ^(a)		ns		ns	
Attitude – Cognition domain	Positive	35.66	30.21	20.00	34.29	31.58	33.87	28.57	52.38	36.17	31.30	36.36	32.81
	Neutral	15.50	12.50	40.00	12.38	23.68	11.83	15.38	9.52	10.64	16.79	12.12	14.58
	Negative	48.84	57.29	40.00	53.33	44.74	54.30	56.04	38.10	53.19	51.91	51.52	52.60
		ns		p=.0120 ^(a)		ns		p=.0125 ^(a)		ns		ns	
Attitude – Agency domain	Positive	51.16	55.21	60.00	52.38	55.26	52.69	51.10	59.52	53.19	52.67	51.52	53.13
	Neutral	22.48	21.88	26.67	21.90	34.21	19.35	23.08	19.05	23.40	21.37	21.21	22.40
	Negative	26.36	22.92	13.33	25.71	10.53	27.96	25.82	21.43	23.40	25.95	27.27	24.48
		ns		ns		p=.0293 ^(a)		ns		ns		ns	
Attitude - Social relationship domain	Positive	18.60	17.71	33.33	17.14	15.79	18.82	19.23	14.29	18.09	18.32	33.33	15.63
	Neutral	13.18	10.42	6.67	12.38	18.42	10.75	10.99	16.67	11.70	12.21	6.06	13.02
	Negative	68.22	71.88	60.00	70.48	65.79	70.43	69.78	69.05	70.21	69.47	60.61	71.35
		ns		ns		ns		ns		ns		p=.0398 ^(a)	
Attitude – Persona Domain	Positive	53.49	57.29	40.00	56.19	52.63	55.91	56.04	50.00	55.32	54.96	48.48	56.25
	Neutral	26.36	17.71	26.67	22.38	26.32	21.51	21.98	26.19	21.28	23.66	21.21	22.92
	Negative	20.16	25.00	33.33	21.43	21.05	22.58	21.98	23.81	23.40	21.37	30.30	20.83
		ns		ns		ns		ns		ns		ns	
Attitude total	Positive	36.43	41.67	33.33	39.05	39.47	38.71	36.81	45.24	39.36	38.17	36.36	39.06
	Neutral	13.95	6.25	20.00	10.00	7.89	11.29	9.34	16.67	10.64	10.69	18.18	9.38
	Negative	49.61	52.08	46.67	50.95	52.63	50.00	53.85	38.10	50.00	51.15	45.45	51.56
		ns		ns		ns		ns		ns		ns	
Knowledge total	Low level	39.02	40.00	53.33	38.42	47.37	37.99	40.00	35.71	32.58	44.19	42.42	38.92
	High level	60.98	60.00	46.67	61.58	52.63	62.01	60.00	64.29	67.42	55.81	57.58	61.08
		ns		ns		ns		ns		ns		ns	

Source: Elaborated by the authors, 2019.

(a) Chi-square test; (b) ns: not statistically significant.

Table 5 - Multiple regression models (n = 225). São Paulo, SP, Brazil, 2019

Dependent variable	Independent variables	Coefficient	95%CI ^(a)		p-value ^(e)	
			LL ^(b)	UL ^(c)		
Attitude	Age	.00	-.01	.01	.5988	
	Interest in Geriatrics and Gerontology (Yes)	-.02	-.07	.03	.4642	
	Gender (Male)	.00	-.05	.04	.8728	
	Course (Medicine)	.03	-.05	.12	.4466	
	Course (Speech Therapy)	-.03	-.17	.11	.6921	
	Course (Physical Education)	.03	-.10	.15	.6973	
	Course (Pharmacy)	.01	-.10	.11	.9219	
	Gerontology/Geriatric classes in courses (Yes)	-.01	-.06	.05	.8154	
	Contact with older people in the family (Yes)	.02	-.08	.12	.7490	
	Contact with grandparents (Yes)	.02	-.05	.09	.5360	
	Experience with older people at university (Yes)	-.01	-.09	.06	.6984	
	Interest in exclusively caring for older people (Yes)	-.04	-.09	.02	.2368	
	PFAQ total	.01	.00	.01	.3002	
	Knowledge	Age	.08	-.02	.18	.1356
Interest in Geriatrics and Gerontology (Yes)		-.25	-.97	.48	.5039	
Gender (Male)		-.06	-.74	.62	.8571	
Course (Medicine)		-.66	-1.91	.60	.3044	
Course (Speech Therapy)		-2.32	-4.32	-.32	.0229	
Course (Physical Education)		-2.27	-3.72	-.81	.0023	
Course (Pharmacy)		-.86	-2.64	.91	.3390	
Gerontology/Geriatric classes in courses (Yes)		-.40	-1.15	.35	.2912	
Contact with older people in the family (Yes)		.38	-1.02	1.78	.5940	
Contact with grandparents (Yes)		.42	-.56	1.41	.3957	
Experience with older people at university (Yes)		-.30	-1.30	.71	.5617	
Interest in exclusively caring for older people (Yes)		.40	-.42	1.22	.3421	
Interest in Geriatrics and Gerontology		Age	1.01	.99	1.02	.5641
		Gender (Male)	.78	.65	.94	.0086
	Course (Medicine)	1.03	.73	1.45	.8853	
	Course (Speech Therapy)	1.25	.82	1.88	.2956	
	Course (Physical Education)	1.27	.89	1.80	.1884	
	Course (Pharmacy)	.99	.59	1.64	.9538	
	Geriatric and Gerontology classes in courses (Yes)	1.01	.83	1.24	.9095	
	Contact with older people in the family (Yes)	1.43	.87	2.34	.1575	
	Contact with grandparents (Yes)	.85	.68	1.06	.1415	
	Experience with older people at university (Yes)	.94	.75	1.18	.6059	
	Interest in exclusively caring for older people (Yes)	1.25	1.07	1.47	.0055	

Source: Elaborated by the authors, 2019.

(a) CI: confidence interval; (b) LL: lower limit; (c) UL: upper limit; (d) Multiple linear regression model; (e) Poisson regression model; in this case, the probability of "Yes" was estimated.

Although knowledge alone cannot provide integrated care to older people, these findings indicate a need to keep discussing the scope of the gerontological teaching⁽¹⁸⁾. In addition to the inclusion of geriatrics and gerontology content in healthcare programs, we need to shift the focus from diseases to multidimensional and holistic care. Nursing students showed a higher level of interest due to their course involving holistic care, explaining the differences found.

Findings regarding the interest in older people's care highlighted that a negative attitude is related to a lack of interest, as observed in previous studies⁽¹⁷⁾. Moreover, knowledge was not related to increased interest. Despite the lack of preference for a gerontological career among students⁽¹⁸⁾, interest in caring for older people was associated with interest in geriatrics/gerontology. Gender was also correlated with an interest in geriatrics and gerontology (female students showed more interest). This association is possibly linked to social issues; women are involved in professions similar to those performed in their daily lives, such as caring for parents/grandparents. This finding was also reported in other study that shows that male students tend to value

intervention and technique more than females⁽⁵⁾. The study limitations include the single-centre study design (the sample might not represent Brazil as a whole), the convenience sampling, and the fact that cross-sectional studies do not imply causality. Besides, knowledge, attitude towards older people, and interest are complex constructs that may not have been captured by the instruments used. Finally, the curriculum content of each course was not examined.

CONCLUSION

Health students showed a high level of knowledge and interest in geriatrics and gerontology, and a negative attitude towards older people's care. Knowledge on the topic was negatively associated with attitude and interest. Nursing and medical students showed more knowledge on the topic, as well as older students. Being female and interested in caring for older people increased the ratio for choosing to work in geriatrics and gerontology.

CONFLICT OF INTEREST

The authors have declared that there is no conflict of interest.

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AUTHORSHIP CONTRIBUTIONS

Project design: Borges MMR, Oliveira-Kumakura ARS

Data collection: Borges MMR

Data analysis and interpretation: Borges MMR, Saidel MGB, Nunes DP, Lima MHM, Oliveira-Kumakura ARS

Writing and/or critical review of the intellectual content: Borges MMR, Saidel MGB, Nunes DP, Lima MHM, Oliveira-Kumakura ARS

Final approval of the version to be published: Borges MMR, Saidel MGB, Nunes DP, Lima MHM, Oliveira-Kumakura ARS

Responsibility for the text in ensuring the accuracy and completeness of any part of the paper: Borges MMR, Saidel MGB, Nunes DP, Lima MHM, Oliveira-Kumakura ARS



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