RESEARCH

Geriatrics-gerontology training and negative stereotypes towards older adults among physiotherapy students in Chile: A cross-sectional study

Gonzalo Bravo-Rojas[a]*⦿, Ignacio Castellucci[b]⦿, Gabriela Yévenes[a]⦿, Crihsna Marín[a]⦿, María Fernanda Arriagada[c]⦿

[a]Escuela de Kinesiología, Facultad de Salud, Universidad Santo Tomás, Viña del Mar, Chile; [b]Centro de Estudio del Trabajo y Factores Humanos, Facultad de Medicina, Universidad de Valparaíso, Valparaíso, Chile; [c]Facultad de Medicina, Universidad Andrés Bello, Viña del Mar, Chile

ABSTRACT

INTRODUCTION Ageism refers to the set of stereotypes, prejudices, and discrimination based on age, which negatively affects healthcare for older adults. In Chile, there is limited evidence on this phenomenon among physiotherapy students.

OBJECTIVE To determine the presence of negative stereotypes towards older adults among physiotherapy students at a private university in the Valparaíso region, and to compare these stereotypes according to the level of knowledge in geriatrics and gerontology.

METHODS A cross-sectional observational study was conducted using an online survey of physiotherapy students. The Questionnaire of Negative Stereotypes Towards Ageing was administered, and knowledge in geriatrics and gerontology was assessed based on the completion of specific modules. Descriptive analyses, Student's t-test, and multiple linear regression adjusted for age and sex were performed.

RESULTS A total of 96 students participated in the study. The average score for negative stereotypes towards ageing was 38.8 (SD = 5.8), classified as a low level, although it was close to the threshold for a high level. 42.7% of students presented high levels of negative stereotypes. Students who had passed both modules scored on average 4.3 points lower in negative stereotypes than those who had passed neither (95% CI: -7.4 to -1.3; p = 0.006).

CONCLUSIONS Physiotherapy students exhibit negative stereotypes towards ageing, especially those without specific training in geriatrics and gerontology. Including these modules in professional education could contribute to improving future healthcare and reducing ageism towards older adults.

KEYWORDS Ageism, Stereotyping, Health Occupations Students, Physiotherapy Specialty, Geriatrics

INTRODUCTION

Physiological aging is a progressive process that involves morphological and functional changes in different systems of the human body. At the muscular level, it weakens the muscles, causing loss of strength, fragility, and an increased risk of falls. In the cardiovascular system, arterial stiffness and ventricular remodeling predispose individuals to hypertension and a reduced response to exercise. In the nervous system, decreased brain volume impacts memory and executive function. However, aging is not a uniform phenomenon, as it varies among individuals and can be influenced by genetic, environmental, and lifestyle factors [1]. In recent decades, population aging has become a global demographic and social challenge. In Latin America, Chile is projected to be one of the most aged countries by 2050, with approximately 22% of its population over 65 and 7% over 80 [2]. This demographic change imposes the need to prepare healthcare systems to provide adequate care free of stereotypes, prejudices, and discrimination toward the elderly population.

Ageism, defined by the World Health Organization (WHO) as the set of stereotypes, prejudices, and discrimination based

MAIN MESSAGES

- Ageism in healthcare is a critical issue that can affect the quality of care provided to older adults.
- In Chile, there is little evidence of negative stereotypes among physiotherapy students.
- This study used a census approach and a validated scale to assess stereotypes toward old age.
- Limitations include the cross-sectional design and the fact that it was conducted at a single university, which limits the external validity of the findings.

on age, can occur at all stages of life, affecting both young and older people [3]. However, its impact is particularly harmful to older people, especially in the field of healthcare, where it represents a significant barrier to adequate care. This social phenomenon manifests itself at different levels: institutional, interpersonal, and intrapersonal, and can be expressed implicitly or explicitly. In clinical practice, ageism negatively influences the quality of treatment and professionals' perceptions of their older patients, which can have a significant impact on clinical outcomes [4]. Studies have shown that ageism can lead to the underestimation of symptoms, a lack of access to appropriate treatments, and reduced investment in the rehabilitation of older adults [5].

Training in geriatrics and gerontology is key to changing stereotypes and attitudes toward older adults. Research indicates that students with greater knowledge about aging have more positive attitudes [6,7]. In Chile, León et al. [8] analyzed the perceptions of students and teachers in health universities. They found neutral stereotypes toward aging, highlighting the influence of academic training and personal experience in shaping these perceptions. However, despite growing international evidence, research on ageism among physiotherapy students in Chile remains limited.

This research aligns with international initiatives, such as the WHO Decade of Healthy Aging (2020-2030) and the United Nations (UN) International Plan of Action on Aging, which aim to transform the social view of aging (Pan American Health Organization, PAHO, 2021). However, in Chile, scientific evidence on ageism is limited, which hinders its understanding and the development of effective strategies [9,10].

Given this problem, the question arises:

Is there a link between the level of knowledge in geriatrics and gerontology and the level of negative stereotypes toward older people?

To answer this question, this study has two objectives:

1. To estimate the frequency of negative stereotypes toward older adults among physiotherapy students at a university in the Valparaíso Region.
2. To compare these stereotypes based on the students' level of knowledge in gerontology and geriatrics.

This research will contribute to the understanding of ageism among future health professionals. Furthermore, it may inform strategies for mitigating ageism within academic physiotherapy training.

METHODS

Design

This study employed a cross-sectional observational design, allowing for the description and analysis of negative stereotypes toward older adults in a single sample of physiotherapy students at a specific point in time. This design was chosen because it allows for the simultaneous collection of exposure and outcome variables. This makes it an efficient alternative in terms of time and resources for estimating the frequency of phenomena and exploring associations between variables, without requiring longitudinal follow-up [11]. The cross-sectional design allows us to quantify the prevalence and distribution of negative stereotypes, identifying what proportion of participants express certain perceptions about old age. At the same time, its analytical capacity facilitates the identification of associations between variables, allowing us to examine the relationship between negative stereotypes and the level of knowledge in geriatrics and gerontology. This approach makes it easier to detect possible differences between groups, providing an empirical basis for evaluating the influence of academic training on the perception of old age.

Background

This study was conducted at a private university in the Valparaíso Region, Chile, in the physiotherapy program. Recruitment took place between August and September 2024, through invitations sent to the personal and institutional email addresses of all students. The message included a link to the SurveyMonkey platform, where they could respond to the survey anonymously and voluntarily.

Participants

Active physiotherapy students enrolled in any year during the data collection period who voluntarily agreed to participate and provided their informed consent before responding to the survey were included.

Selection was carried out using census sampling, considering all students enrolled during the study period.

Variables

Dependent variable: negative stereotypes toward older adults

Stereotypes are cognitive structures and, therefore, reflect what is thought about another person. These can be negative or positive. For example, the idea that older people

have difficulty using technology or that older people are wise [3]. Negative stereotypes toward older people were measured using the Questionnaire on Negative Stereotypes toward Old Age (CENVE), originally developed in Spain by Blanca et al. [12], identifying a three-factor structure and adequate internal consistency ($\alpha = 0.83$). However, subsequent studies have evaluated its factor structure in young and adult populations, concluding that the CENVE has a unidimensional structure in this age group and recommending its use as a single global scale [13]. In line with these findings, in the present study, we chose to analyze the CENVE as a unidimensional scale.

In Chile, the CENVE has shown good reliability in studies with university students in the health field. Díaz Dávila et al. [9] reported an α of 0.808 in nursing students, and Sequeira and Jiménez [14] reported an α of 0.884 in students and teachers in the field. This background supports its use in the Chilean context.

This instrument consists of 15 items. Each item follows a 4-point Likert response format (1: strongly disagree, 2: disagree, 3: agree, 4: strongly agree). The total score for the questionnaire ranges from 15 to 60 points. In addition to analyzing the total score, the results were categorized according to the cut-off points proposed by Rello et al [15]: very low (15 to 29), low (30 to 39), high (40 to 49), and very high (50 to 60). This classification was used to describe the distribution of negative stereotype levels in the sample.

Additionally, the distribution of responses for each item in the questionnaire was presented descriptively. This strategy sought to illustrate the most frequent stereotypes among students, without these items being considered as independent variables in the inferential analyses.

Independent variable: knowledge about geriatrics-gerontology

In this study, knowledge of geriatrics and gerontology was operationalized through self-reporting of passing grades in two specific courses in the curriculum: gerontology and geriatric rehabilitation. To this end, the questionnaire included two direct questions:

1. Did you pass the gerontology course?
2. Did you pass the geriatric rehabilitation course?

The gerontology course is taught in the fifth semester and is a prerequisite for geriatrics, which is taught in the sixth semester. Each course consists of 72 teaching hours.

Once this information was obtained, the variable was grouped in three different ways for bivariate analysis, to explore possible differences in negative stereotypes according to the level of training:

- Students who have not passed any of the subjects.
- Students who have passed gerontology.
- Students who have passed gerontology and geriatric rehabilitation.

In each case, students who did not pass any of the subjects were used as the reference group, comparing them with the other two groups to assess possible differences in levels of negative stereotypes toward older adults. For the regression analysis, a dichotomous version of the variable was used, focusing on the comparison between those who passed both subjects and those who did not pass either. This was because this category represents the highest level of education and showed the most consistent effect in the bivariate analysis.

Covariates: sociodemographic variables

The covariates measured to characterize the sample in this study were age, gender, and year of entry into the degree program.

Statistical analysis

For the first objective, a descriptive analysis was performed to summarize negative stereotypes toward old age and sociode-mographic variables. For quantitative variables, the mean and standard deviation were calculated; for categorical variables, frequencies and percentages were calculated.

To achieve the second objective, the mean scores on the negative stereotypes questionnaire were compared between two groups: students who passed geriatrics-gerontology courses and those who did not, according to three previously defined levels of knowledge. Initially, the statistical assumptions were evaluated using the Shapiro-Wilk (normality) and Levene (homogeneity of variances) tests. Once both conditions were met, the student's t-test for independent samples was applied to compare the means between groups.

Finally, a multiple linear regression model adjusted for gender and age was carried out to provide depth to the analysis of the relationship between knowledge of geriatrics-gerontology and negative stereotypes. In this model, only the category "both subjects passed" was included as an independent variable, compared with the group without training. The reasons for this were that it represents the highest level of formal knowledge and showed the most consistent effect in the bivariate analysis. All analyses were performed using Stata version 18 software, with a significance level of $\alpha = 0.05$. In addition, the results were reported with 95% confidence intervals. This approach ensures an adequate and robust comparison of negative stereotypes toward older adults among different student groups [16].

RESULTS

The survey was sent to all physiotherapy students at the university (129 students), of whom 100 responded (response rate of 77.5%). Four students indicated that they did not wish to participate in the research, resulting in a sample of 96 students for this study. The average age of the participants was 21.9 years (standard deviation 3.6). As shown in Table 1, the gender distribution was slightly higher for women, who represented 54.2% of the students, compared to 45.8% for men. In terms of knowledge of geriatrics and gerontology, 56.3% of the students

had not passed both subjects. In comparison, 22.9% had passed only the gerontology subject, and 32.5% of the students had passed both subjects.

The average score for negative stereotypes toward old age among the 96 students surveyed was 38.8 (standard deviation 5.8), ranging from a minimum of 26 to a maximum of 53 points. Table 2 reflects the categorization of levels of negative stereotypes toward older adults among the students surveyed, showing that half of the students had low levels of negative stereotypes toward old age. However, 42.7% had high levels. Finally, it should be noted that the questionnaire used showed high reliability ($\alpha = 0.84$), indicating that its measurements are stable and consistent across the items in the instrument.

Table 3 presents the descriptive analysis of each item. It can be seen that a high percentage of respondents associate aging with cognitive decline, behavioral rigidity, irritability, and functional dependence, reflecting the persistence of negative stereotypes. According to the results, 67.7% of respondents agree or strongly agree that, after the age of 65, people begin to experience considerable memory impairment. Similarly, 81.3% agree or strongly agree that older people become more rigid and inflexible with age. In addition, 71.9% of students agree or strongly agree that older people are easily irritated and "grumpy." Another relevant finding is that 64.6% of respondents agree or strongly agree that a large proportion of older people are "senile." Finally, 58.3% of students agree or strongly agree that people over the age of 65 have many disabilities that make them dependent on others. Finally, 61.5% of respondents agree or strongly agree that older people have less interest in sex, while 60% agree or strongly agree that older adults are, in many cases, like children.

The results presented in Table 4 show the average scores for negative stereotypes toward older adults, according to the level of knowledge in geriatrics and gerontology. The group of students who did not pass any of the subjects obtained the highest score (40.7) and was used as the reference group. Compared to this group, students who passed only the gerontology subject obtained an average score 3.5 points lower (95% confidence interval: 0.43 to 6.51; $p = 0.0255$), while those who passed both subjects had a score 4.9 points lower (95% confidence interval: 2.35 to 7.35; $p = 0.0002$). Both differences were statistically significant, suggesting a lower presence of negative stereotypes among those who have studied both areas.

The crude and adjusted multiple linear regression analyses are presented in Table 5. Even after adjusting for students' gender and age, the model remained statistically significant, explaining approximately 16.3% of the variability in negative stereotypes. Along these lines, it was found that those who passed both geriatrics and gerontology courses had an average of 4.3 points less in the total negative stereotype score compared to those who did not pass these courses. This finding indicates a statistically significant association between training

Table 1. Summary of student characteristics.

	n	%
Year of admission to the degree program		
2018	2	2.1
2019	6	6.3
2020	8	8.3
2021	8	8.3
2022	26	27.1
2023	22	22.9
2024	24	25.0
Gender		
Male	44	45.8
Female	52	54.2
Knowledge		
Failed subjects	54	56.3
Only gerontology passed	16	16.6
Gerontology and geriatrics passed	26	27.1

Source: Prepared by the authors based on data from the study.

Table 2. Categorization of negative stereotypes toward old age.

Negative stereotypes[1]	n = 96	%
Very low	5	5.2
Low	48	50
High	41	42.7
Very high	2	2.1

Notes: [1]Classification according to the Questionnaire on Negative Stereotypes toward Old Age scores: very low (15 to 29), low (30 to 39), high (40 to 49), and very high (50 to 60).
Notes: Sample composed of 96 students.
Source: Prepared by the authors based on data from the study.

in geriatrics and gerontology and the reduction of negative stereotypes toward old age.

DISCUSSION

Negative stereotypes toward older adults among physiotherapy students

The first objective was to determine the presence of negative stereotypes among physiotherapy students, obtaining an average score of 39, corresponding to a low level according to the classification used [15], although located at the upper limit of that category. This score is higher than that reported in previous studies in Chile with nursing students [9] and students in health-related fields in general [17]. Similarly, studies in Spain have reported lower scores in physical therapy students [15] and students in health-related fields [18]. These results suggest that physiotherapy students may be more predisposed to negative stereotypes than other groups of future healthcare professionals.

In addition, it was observed that 43% of the sample had a high level of negative stereotypes, while only 50% fell into the category of low negative stereotypes. Among the most prevalent stereotypes among physiotherapy students, a greater presence of beliefs reinforcing the idea that cognitive impairment, behavioral rigidity, irritability, lack of interest in sexuality, and dependence on others are common characteristics

Table 3. Distribution of responses and descriptive statistics for each item in the CENVE questionnaire.

Item	Average	SD	Strongly disagree	Disagree	Agree	Strongly agree
Most people, when they reach (approximately) 65 years of age, begin to experience considerable memory loss.	2.729	0.62	2.08%	30.21%	60.42%	7.29%
Older people have less interest in sex.	2.625	0.62	3.12%	35.42%	57.29%	4.17%
Older people are easily irritated and are "grumpy."	2.864	0.67	1.04%	27.08%	56.25%	15.62%
Most people over 65 have some mental illness serious enough to impair their normal abilities.	2.260	0.65	10.42%	54.17%	34.38%	1.04%
Older people have fewer friends than younger people.	2.447	0.75	9.38%	42.71%	41.67%	6.25%
As people age, they often become more rigid and inflexible.	2.989	0.70	3.12%	15.62%	60.42%	20.83%
Most adults maintain an acceptable level of health until (approximately) age 65, but after that, there is a sharp decline in health.	2.572	0.58	--	46.88%	48.96%	4.17%
As people age, they often lose interest in certain things.	2.427	0.64	3.12%	56.25%	35.42%	5.21%
Older people are often like children.	2.604	0.81	10.42%	29.17%	50.00%	10.42%
Most people over the age of 65 have several disabilities that make them dependent on others.	2.593	0.69	5.21%	36.46%	52.08%	6.25%
As people age, they often lose the ability to solve the problems they face.	2.541	0.72	6.25%	40.62%	45.83%	7.29%
People's flaws become more pronounced with age.	2.531	0.68	4.17%	44.79%	44.79%	6.25%
Cognitive decline (memory loss, disorientation, confusion, etc.) is an inevitable part of aging.	2.729	0.83	6.25%	32.29%	43.75%	17.71%
Almost no one over the age of 65 performs as well as someone younger would.	2.187	0.73	13.54%	59.38%	21.88%	5.21%
A large proportion of people over the age of 65 are "senile."	2.666	0.69	5.21%	30.21%	57.29%	7.29%

CENVE: Questionnaire on Negative Stereotypes toward Old Age. SD: standard deviation.
Notes: Sample of 96 kinesiology students.
Source: Prepared by the authors based on data from the study.

Table 4. Average score for negative stereotypes directed toward older adults according to level of knowledge in geriatrics-gerontology.

Categories	N	Average score	SD	Average score 95% CI	Differences from the reference	Difference 95% CI	P value
No subjects passed (reference)	54	40.7	5.1	39.3 to 42.1	--	--	--
Only gerontology passed	16	37.2	6.2	33.9 to 40.5	3.5	0.43 to 6.51	0.0255[1]
Geriatrics and gerontology passed	26	35.8	5.6	33.6 to 38.1	4.9	2.35 to 7.35	0.0002[1]

95% CI: 95% confidence interval. SD: standard deviation.
Notes: [1] p < 0.05 indicates statistically significant differences compared to the reference group (no subjects passed).
Notes: The values correspond to the average score obtained in the Questionnaire on Negative Stereotypes toward Old Age (CENVE). Comparisons between groups were made using Student's t-test for independent samples.
Source: Prepared by the authors based on data from the study.

in older adults was identified. It is necessary to examine these results closely, as they reveal a significant discrepancy between social perception and the epidemiological reality of cognitive impairment in older adults. While 68% of physiotherapy students in our study believe that cognitive impairment is a common feature of old age, 65% of older adults in Chile also share this belief [19]. However, empirical evidence shows that the actual prevalence in people over 60 is only 10% [20].

Similarly, in this study, 58% of physiotherapy students and 54% of older adults in Chile [19] associate old age with disability and dependence. However, this contrasts with the 86% of older adults who have no difficulty performing basic and instrumental activities of daily living [21] or the 78% reported by the National Survey on Disability and Dependency [22].

Sexuality in old age continues to be an invisible issue, creating social and institutional barriers to the full exercise of sexual

Table 5. Effect of knowledge in geriatrics-gerontology on negative stereotypes toward older adults.

Model[1]	R^2	R^2a	Variable	Coefficient	P value[2]	95% CI
Crude[3]	0.1610	0.1502	Both subjects passed	-4.9	0.0001	-7.4 to-2.4
			Constant	40.7	0.0001	39.2 to 42.1
Adjusted[4]	0.1947	0.1629	Both subjects passed	-4.3	0.006	-7.4 to-1.3
			Constant	46.7	0.0001	37.3 to 56.1

CI 95%: 95% confidence interval. R^2: coefficient of determination. R^2a: adjusted R^2 (coefficient of determination).
Notes: [1]The analysis was performed using simple linear regression (crude model) and multiple linear regression, in which the estimates were adjusted for sex and age (model with covariates). In both models, only the category "both subjects passed" was included as an independent variable, compared to the reference group (no subjects passed), because it represents the highest level of academic training and showed the most consistent effect in the bivariate analysis. [2]A statistical significance level of $p < 0.05$ was considered. [3]Crude model: $F_{(1.78)} = 14.96$; $p = 0.0002$. [4]Adjusted model: $F_{(3.76)} = 6.12$; $p = 0.0009$.
Notes: Crude and adjusted estimates.
Total number of observations: n = 80.
Source: Prepared by the authors based on data from the study.

rights. Evidence shows the persistence of stereotypes that link sexuality solely to youth, reinforcing the misconception that older people have no sexual interest or capacity [23], a perception shared by 62% of the students in our study. However, this contrasts with 40% of older adults in the Metropolitan Region and O'Higgins Region in Chile, who, when interviewed, indicate that their sexuality is as important as when they were young [24]. It also differs from the one-third of the older adult population who report having an active sex life [19]. These misperceptions reinforce taboos and limit access to timely professional care and information. Therefore, it is essential that physiotherapy training not only provides up-to-date knowledge about aging but also promotes strategies to challenge stereotypes and foster a more realistic and diverse view of old age.

Level of knowledge in geriatrics-gerontology and influence on negative stereotypes

The second objective of this study sought to compare negative stereotypes toward older adults among students who had passed courses in geriatrics and/or gerontology and those who had not yet done so. The results confirm that students who have passed at least one of these subjects exhibit significantly fewer negative stereotypes compared to those who have not passed any of them. This effect is even more pronounced in students who have passed both subjects, and remains even after adjusting for covariates such as age and gender. These findings support previous research indicating that training in geriatrics and gerontology is associated with fewer negative attitudes and stereotypes toward old age among university students. A study conducted on nursing students in Chile and Mexico using the same questionnaire showed that the nursing course on gerontology-geriatrics significantly reduced negative stereotypes among students, lowering their scores from 35 to 30 after participating in the course. This result is attributed to the combination of up-to-date content on healthy aging, together with interaction with older adults in clinical practice. However, this was not found in Mexican students [9]. Similarly, in Saudi Arabia, knowledge about aging was identified as

the main predictor of favorable attitudes toward older people [6]. Furthermore, evidence suggests that the duration and depth of academic training influence perceptions of aging. A 2016 study by Turan et al. of physical therapy and nursing students enrolled in four-year programs revealed significantly more positive attitudes compared to those enrolled in two-year programs. This suggests that more extensive training enables more comprehensive learning and greater exposure to older adults in clinical settings [25].

Similarly, a study in Spain showed that first-year physical therapy and occupational therapy students had higher levels of negative stereotypes compared to fourth-year students and professionals in the field, suggesting that education and professional experience contribute to the modification of stereotypes [15]. Therefore, the findings of this research underscore the importance of incorporating training in geriatrics and gerontology into physiotherapy curricula to mitigate the prevalence of negative stereotypes and enhance future care for the elderly population.

Practical implications

The results of this study support the need for educational interventions that reduce stereotypes, prejudices, and ageist attitudes among health students. Evidence indicates that combining theoretical training with clinical experiences is particularly effective. For example, integrating geriatric content with nursing home placements has significantly reduced stereotypes among nursing students [26].

In the case of physical therapy students, various interventions have sought to reduce ageism, particularly those involving direct contact with older adults. While formal programs tend to have limited and transient impact, practical experiences with meaningful interactions, such as community service or companionship, show more consistent effects. This highlights the importance of fostering human and empathetic connections, in addition to conveying theoretical content [27].

On the other hand, the use of simulations and narrative games has proven effective in promoting empathy and transforming perceptions of aging. Experiences such as the

use of aging simulation suits have allowed physical therapy students to experience the physical limitations associated with old age, which translates into a more understanding attitude toward older people [28,29]. However, it is necessary to reflect critically on these approaches. From a predominantly biological and quantitative perspective on aging, these types of suits aim to evoke empathy by simulating the physical limitations of old age [30,31]. Despite their good intentions, these devices can reinforce a homogeneous and disabling view of aging, contributing to its stigmatization. By associating old age solely with functional decline, through restrictive collars, fatigue-inducing bands, or weighted accessories, there is a risk of perpetuating negative stereotypes that do not reflect the functional diversity of older people.

Along the same lines, strategies such as educational podcasts, playful narratives, and positive education about aging, combined with intergenerational contact, show potential for raising awareness among students and promoting more dynamic and less stereotypical representations of this stage of life [32–35]. However, although physical therapy students tend to have positive attitudes, they have little knowledge about aging and little intention of working with this population [36].

Therefore, it is essential to implement innovative and sustained educational methodologies that generate a profound and lasting change in the perception of older people in the healthcare field. Reducing negative stereotypes not only has ethical implications but also improves the quality of care and well-being of this population. To address population aging, comprehensive academic training is required that goes beyond biology and incorporates interdisciplinary approaches from geriatrics and gerontology. In this context, the Decade of Healthy Aging (2021 to 2030) represents a key opportunity to promote dignified, active, and healthy aging [37].

Strengths and limitations

This study has some limitations that should be considered when interpreting its results. Although a response rate of 77.5% was achieved, there may be non-response bias, as participants may differ from non-participants. However, the high participation rate improves the representativeness of the sample. The sample size may limit the generalizability of the findings and reduce the power to detect more subtle associations. However, a census sampling was used, including all students enrolled during the study period, which improves its representativeness within the institution. The cross-sectional design prevents establishing causality or evaluating changes over time. Therefore, future research should incorporate longitudinal designs to analyze the evolution of attitudes toward older adults and the sustained effects of gerontological training, as well as qualitative approaches to explore in greater depth the underlying perceptions, motivations, and experiences surrounding ageism. Another limitation was the exclusion of variables such as contact with older adults, socioeconomic status, or caregiving experience, which could have enriched the

analysis of ageism among students. Furthermore, as the study was conducted at a single private university in the Valparaíso Region, the results cannot be generalized to other institutions or regions. It is recommended that future studies be expanded to different universities and health-related degree programs. Despite these limitations, the study has significant strengths. Among them, it used a validated instrument in Chile with high reliability and applied robust statistical analyses adjusted for age and gender. In addition, it addresses a topic that has been little explored in physiotherapy students, providing useful evidence to guide curricular improvements and training strategies that contribute to reducing ageism in healthcare.

CONCLUSIONS

This study shows the presence of negative stereotypes toward older adults among physiotherapy students, with a considerable prevalence among those who have not received formal training in geriatrics and gerontology. The association between greater knowledge in these disciplines and a lower prevalence of stereotypes reinforces the need to explicitly and systematically integrate gerontological content into professional health training. Reducing ageism toward older adults from the training stage not only contributes to more dignified, empathetic, and stereotype-free care but also prepares future professionals to face the challenges of population aging. These findings provide relevant evidence for redesigning curricula and promoting health training that aligns with the principles of the Decade of Healthy Aging, as promoted by international organizations such as the WHO.

REFERENCES

1. Felipe Salech M, Rafael Jara L, Luis Michea A. Cambios fisiológicos asociados al envejecimiento. Revista Médica

Clínica Las Condes. 2012;23: 19–29. https://doi.org/10.1016/S0716-8640(12)70269-9

2. OECD, The World Bank. Health at a Glance: Latin America and the Caribbean 2023. OECD. 2023. https://www.oecd.org/en/publications/health-at-a-glance-latin-america-and-the-caribbean-2023_532b0e2d-en.html https://doi.org/10.1787/532b0e2d-en

3. World Health Organization. . 1st ed. Global Report on Ageism. Geneva: World Health Organization; 2021.

4. Bozanic Leal A, Ortiz Ruiz F. Estereotipos sobre el envejecimiento entre profesionales de salud en Chile: una exploración en tiempos de pandemia. ANTHRO. 2021;39: 183–220. https://doi.org/10.18800/anthropologica.202102.007

5. Hobbs C, Dean CM, Higgs J, Adamson B. Physiotherapy students' attitudes towards and knowledge of older people. Aust J Physiother. 2006;52: 115–9. https://doi.org/10.1016/s0004-9514(06)70046-0

6. Almarwani M. Does Ageism Exist Among Multidisciplinary Rehabilitation Students? Predictors of Attitudes Toward Older Adults. J Multidiscip Healthc. 2023;16: 181–189. https://doi.org/10.2147/JMDH.S398994

7. Podhorecka M, Pyszora A, Woźniewicz A, Husejko J, Kędziora-Kornatowska K. Empathy as a Factor Conditioning Attitudes towards the Elderly among Physiotherapists-Results from Poland. Int J Environ Res Public Health. 2022;19. https://doi.org/10.3390/ijerph19073994

8. León S, Correa-Beltrán G, Giacaman RA. Negative ageing stereotypes in students and faculty members from three health science schools. Gerodontology. 2015;32: 141–8. https://doi.org/10.1111/ger.12065

9. Díaz Dávila MM, Rendón Torres L, Benavides Guerrero C, Sequeira Daza D. Estereotipos negativos asociados a la vejez en los estudiantes de Enfermería chilenos y mexicanos. Efecto de la asignatura «Enfermería Geronto-Geriátrica» Educ Médica. 2022;23: 100765. https://doi.org/10.1016/j.edumed.2022.100765

10. Henríquez F, Retamal N, Silva F, Morales C. Actitudes hacia el envejecimiento por parte de los estudiantes de Fonoaudiología de una Universidad Chilena. Codas. 2020;32: e20190010. https://doi.org/10.1590/2317-1782/20192019010

11. Cataldo R, Arancibia M, Stojanova J, Papuzinski C. General concepts in biostatistics and clinical epidemiology: Observational studies with cross-sectional and ecological designs. Medwave. 2019;19: e7698. https://doi.org/10.5867/medwave.2019.08.7698

12. Blanca M, Sánchez C, Trianes M. Cuestionario de evaluación de estereotipos negativos hacia la vejez. Rev Multidiscip Gerontol. 2005;15: 212–221.

13. Menéndez Álvarez-Dardet S, Cuevas-Toro AM, Pérez-Padilla J, Lorence Lara B. Evaluación de los estereotipos negativos hacia la vejez en jóvenes y adultos. Revista Española de Geriatría y Gerontología. 2016;51: 323–328. https://doi.org/10.1016/j.regg.2015.12.003

14. Sequeira D, Silva Jiménez D. Estereotipos sobre la vejez en estudiantes y docentes de la Facultad de Ciencias de Salud, Universidad UCINF. rakad. 2017;15: 103–119. https://doi.org/10.61144/0718-9397.2016.140

15. Rello CF, Bravo MDL, Plata RMM. Estereotipos sobre la edad y el envejecimiento en estudiantes y profesionales de Ciencias de la Salud. Rev Prisma Soc. 2018;Available: 108–122. https://revistaprismasocial.es/article/view/2425

16. Martínez González MÁ, Sánchez Villegas A, Toledo Atucha E, Faulin Fajardo J, editors. Bioestadística amigable. . 3rd ed. Elsevier; 2014.

17. Pizarro-Mena R, Arce-Álvarez A, Araya-Quintanilla F, Bernasconi-Barrios P, Concha-Muñoz C, Duran-Aguero S, et al. Attitudes toward aging and negative stereotypes about old age in Chilean university students according to previous experiences with older people: An cross-sectional study. Educ Gerontol. 2024; 1–14. https://doi.org/10.1080/03601277.2024.2444487

18. Gutiérrez M, Mayordomo T. La discriminación por edad: un estudio comparativo entre estudiantes universitarios. Actacolombpsicol. 2019;22: 53–61. https://doi.org/10.14718/ACP.2019.22.2.4

19. In: Pontificia Universidad Católica de Chile, Caja Los Andes. Sexta Encuesta Nacional de Calidad de Vida en la Vejez 2022 [Internet]. Santiago, Chile: Pontificia Universidad Católica de Chile y Caja Los Andes; 2023. https://encuestacalidaddevidaenlavejez.uc.cl/wp-content/uploads/2023/08/Libro-completo-VI-Encuesta_compressed.pdf

20. Ministerio de Salud. In: Encuesta Nacional de Salud 2016-2017: Primeros resultados [Internet]. Santiago, Chile: Ministerio de Salud; 2017. https://redsalud.ssmso.cl/wp-content/uploads/2018/02/ENS-2016-17_PRIMEROS-RESULTADOS-ilovepdf-compressed.pdf

21. Ministerio de Desarrollo Social y Familia. In: Encuesta de Caracterización Socioeconómica Nacional (CASEN) 2017 [Internet]. Santiago, Chile: Gobierno de Chile; 2019. https://observatorio.ministeriodesarrollosocial.gob.cl/encuesta-casen-2017

22. Ministerio de Desarrollo Social y Familia. In: Encuesta Nacional de Discapacidad y Dependencia (ENDIDE) 2022: Resultados Nacionales [Internet]. Santiago de Chile: Gobierno de Chile; 2023. https://observatorio.ministeriodesarrollosocial.gob.cl/endide-2022

23. Acevedo Ayala J, Bartolucci Konga K, Molero Rodríguez F, Vásquez León M, Espinoza Alarcón E. Sexuality of the Elderly: territorial exploration and importance for Primary Health Care in Chile. Public Health and Healthcare. 2024. https://doi.org/10.20944/preprints202412.1651.v1

24. Sepúlveda Concha C, López López C, Lozano Ortiz P, Acevedo Ayala J, Buccioni BadulliR. Rev Chil Aten Primaria Salud Fam. 2024. https://doi.org/10.5354/2735-7805.2024.76112

25. Turan E, Yanardag M, Metintas S. Attitudes of students of health sciences towards the older persons. Nurse Educ Today. 2016;36: 53–7. https://doi.org/10.1016/j.nedt.2015.07.011

26. San-Martín-Gamboa B, Zarrazquin I, Fernandez-Atutxa A, Cepeda-Miguel S, Doncel-García B, Imaz-Aramburu I, et al. Reducing ageism combining ageing education with clinical practice: A prospective cohort study in health sciences students. Nurs Open. 2023;10: 3854–3861. https://doi.org/10.1002/nop2.1643

27. Kalu ME, Abaraogu UO, Norman KE. Do Physiotherapy Students Demonstrate Ageist Attitude? A Scoping Review of Literature. Physical & Occupational Therapy In Geriatrics. 2018;36: 72–89. https://doi.org/10.1080/02703181.2018.1440040

28. Lee D, Willoughby A, Pignotti M, McNulty B, Fagan N, Kapoutsos A, et al. One day you too will be older: Teaching empathy to physical therapy students with an older adult simulator suit. Gerontol Geriatr Educ. 2024;45: 248–258. https://doi.org/10.1080/02701960.2023.2171031

29. Özdemïr K, Tuğral A, Günay İsmaïloğlu E, Bakar Y, Taşkiran N, Erdem Önder H, et al. Empathy and Attitude upon An Aged Body: Aged Simulation Suit Among Undergraduate Physiotherapy Students. Journal of Basic and Clinical Health Sciences. 2023;7: 301–313. https://doi.org/10.30621/jbachs.1106052

30. Lavallière M, D'Ambrosio L, Gennis A, Burstein A, Godfrey KM, Waerstad H, et al. Walking a mile in another's shoes: The impact of wearing an Age Suit. Gerontol Geriatr Educ. 2017;38: 171–187. https://doi.org/10.1080/02701960.2015.1079706

31. Massachusetts Institute of Technology. In: AGNES (Age Gain Now Empathy System). MIT AgeLab [Internet]. https://agelab.mit.edu/methods/agnes-age-gain-now-empathy-system

32. Auais M, Cameron J, Turnnidge J, Dalgarno N, Kolomitro K, Pelland L. GeroCast: Using podcasting to deliver living cases in gerontology education. Health Educ J. 2023;82: 129–142. https://doi.org/10.1177/00178969221145351

33. Rosa M, Frontini R, Martins N. Physiotherapy students' perceptions of ageing – Playing narratives as a pedagogical innovation. Revista Española de Geriatría y Gerontología. 2023;58: 148–154. https://doi.org/10.1016/j.regg.2023.04.006

34. Levy S, Lytle A, Macdonald J, Apriceno M. Reducing Ageism: PEACE (Positive Education about Aging and Contact Experiences) Model. Innovation in Aging. 2020;4: 647–647. https://doi.org/10.1093/geroni/igaa057.2226

35. Lytle A, Macdonald J, Apriceno M, Levy SR. Reducing Ageism With Brief Videos About Aging Education, Ageism, and Intergenerational Contact. Gerontologist. 2021;61: 1164–1168. https://doi.org/10.1093/geront/gnaa167

36. Omaña H, Sureshkumar A, Äijö M, Hunter SW. Attitudes and Beliefs of Physical Therapists and Physical Therapist Students Toward Working With Older Adults: A Systematic Review. Phys Ther. 2024;104: zae052. https://doi.org/10.1093/ptj/pzae052

37. Organización Mundial de la Salud. Propuesta de plan para la Década del Envejecimiento Saludable (2020-2030). Organización Mundial de la Salud. 2020;Available. https://www.who.int/es/publications/m/item/decade-of-healthy-ageing-plan-of-action

Formación en geriatría-gerontología y estereotipos negativos hacia personas mayores en estudiantes de kinesiología en Chile: estudio transversal

RESUMEN

INTRODUCCIÓN El edadismo es el conjunto de estereotipos, prejuicios y discriminación basados en la edad, que afecta negativamente la atención en salud hacia personas mayores. En Chile, existe escasa evidencia sobre este fenómeno en estudiantes de kinesiología

OBJETIVO Determinar la presencia de estereotipos negativos hacia las personas mayores en estudiantes de kinesiología de una universidad privada de la Región de Valparaíso, y comparar dichos estereotipos según el nivel de conocimiento en geriatría y gerontología.

MÉTODOS Se realizó un estudio observacional transversal mediante encuesta en línea a estudiantes de kinesiología. Se aplicó el Cuestionario de Estereotipos Negativos hacia la Vejez y se clasificó el conocimiento en geriatría-gerontología según la aprobación de asignaturas específicas. Se realizaron análisis descriptivos, prueba t de Student y regresión lineal múltiple ajustada por edad y sexo.

RESULTADOS Participaron 96 estudiantes. El puntaje promedio de estereotipos negativos hacia la vejez fue 38,8 (desviación estándar 5,8), clasificándose como nivel bajo, aunque cercano al umbral de nivel alto. Un 42,7% de los estudiantes presentó niveles altos de estereotipos negativos. Los estudiantes que aprobaron ambas asignaturas obtuvieron en promedio 4,3 puntos menos en estereotipos negativos que quienes no aprobaron ninguna (intervalo de confianza al 95%: -7,4 a -1,3; p = 0,006).

CONCLUSIONES Los estudiantes de kinesiología presentan estereotipos negativos hacia la vejez, especialmente aquellos sin formación específica en geriatría y gerontología. La inclusión de estas asignaturas en la formación profesional podría contribuir a mejorar la futura atención en salud y reducir el edadismo hacia las personas mayores.