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The View of Adolescents and the Elderly on Ageism and the Stereotype of Frailty

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ABSTRACT

Background: *Along with ageism, frailty is a major problem due to the aging population, especially in northeastern Slovenia.*

Aim and Methods: *By analyzing the answers in the questionnaire, we wanted to investigate the attitude of adolescents and the elderly towards ageism and age stereotypes, especially those about the frailty of the elderly. 188 adolescents aged 15-19 and 137 elderly aged 65-85 from Eastern Slovenia answered a questionnaire about knowledge of ageism and attitudes towards 31 age stereotypical statements on a three-point Likert scale, divided into six categories: (I) mood, (II) traditionalism, (III) frailty, (IV) attitude towards technology, (V) wisdom and (VI) sociability.*

Results: *18.6% of adolescents, only those with older relatives and 49.5% of the elderly knew ageism. 29.6 % of elderly have experienced it as interpersonal ageism by children and young people, slightly less (27.5 %) as interpersonal ageism from random passers. A minority (7.5 %) the elderly respondents experienced ageism from the side of the closest ones, and 7.5% as institutional ageism. Towards age stereotypes, adolescents and the elderly expressed a mixture of positive, neutral and negative attitudes. Compared to elderly, adolescents were more likely to agree that elderly have a negative mood ($p=0.045$), they are too traditional ($p=0.002$), they have prejudices about modern technology ($p<0.001$), and they are frailty ($p=0.041$). Support for negative age stereotypes decreased simultaneously with the older age of the respondents. Regarding the positive age stereotypes about the sociability of the elderly, the positive opinions of adolescents again stood out the most ($p<0.001$), which then decreased with the older age of the respondents. The differences between the generally positive view of the generations on the wisdom of the elders were insignificant.*

Conclusion: *To combat ageism, negative age stereotypes should be changed into positive ones by regular participating in formal or informal intergenerational education about aging and age from adolescence onwards, since young people cannot respect the elderly without knowledge of aging processes. Aging with less frailty would be enabled by implementing a healthy lifestyle throughout the life cycle as recommended by healthy schools.*

Keywords

Ageism, Age stereotypes, Frailty, Perception, Adolescents, Elderly.

Introduction

Globally, the number of people aged 60 and over is expected to increase from 1.1 in 2023 to 1.4 billion by 2030, particularly in developing regions [1]. In Slovenia, represents the share of residents aged 65 or over, 22.1% of all residents [1,2]. The World Health Organization (WHO) recognizes that ageism need to be removed in order to increase potential for active aging [3].

Butler (1969) defined ageism as the systematic stereotyping, prejudice and discrimination of people based solely on their age [4]. While ageism and age discrimination can occur at any age and different age groups experience different types of age discrimination (e.g. youth, later life), the focus within this paper is on ageism in later life. Among the elderly, ageism is associated with poorer physical and mental health, increased social isolation and loneliness, greater financial insecurity, decreased quality of life and premature death [3]. Researchers have increasingly turned their attention from younger individuals who hold age stereotypes to older individuals who are targeted by these stereotypes [5]. The Levys' refocused research has shown that positive and negative age stereotypes held by older individuals can have beneficial and detrimental effects, respectively, on a variety of cognitive and physical outcomes [5]. The theory by the same author of stereotype embodiment proposes that stereotypes are embodied when their assimilation from the surrounding culture leads to self-definitions that, in turn, influence functioning and health. Ageist stereotype threats toward age can impact the active aging via four pathways: the stereotypes (a) become internalized across the life span, (b) can operate unconsciously, (c) gain salience from self-relevance, and (d) utilize multiple pathways. Levy's central message is that the aging process is, in part, a social construct [5]. WHO policies on active aging are likely to be more successful if they address these pathways when tackling ageism and negative attitudes towards age [3]. Namely, ageism reinforces the mentality that old age is a period of accelerated decline in abilities, although it is equivalent to other periods of life and old age has advantages and disadvantages equivalent to other periods of life [1,3]. In Slovenia, Gerdina and Kurdija compared the prevalence of ageism in 2008 and in 2022 based on data from round four of the European Social Survey (ESS 2008) and the ESS web panel survey Cronos-2 (2022) [6]. Statistical data showed that attitudes towards older people remained relatively positive, but that there was an increase in the proportion of people who reported perceiving ageism and that there was a slight increase in awareness of the magnitude of the problem. This is similar to the thinking in Europe in general, where even the average European believes that old people are kind, trustworthy, but at the same time less capable and less competent than younger people [6]. The report by Tomanič Trivundža is also in line with this finding, since overt examples of ageism were detected in only three of the 206 analyzed written and spoken Slovenian media [7]. Namely, older judges were the target of these ageist stereotypes because they "do not understand the modern world". Rozanova reviewed 146 articles on aging published in The Globe & Mail in 2004-2006, in which the understanding of aging and the transmission of different aging experiences between generations was discussed [8]. She (ibid.) found that these articles contained three themes in the media discourse on successful aging, namely successful aging as an individual choice, individual responsibility for unsuccessful aging, and how to age successfully by maintaining engagement [8]. We must not forget that the mass media play an important role in shaping the public's attitude towards the acceptance of ageism [7,8], as it is already internalized in childhood and changes throughout life periods [9-11].

The term stereotype in the context of social psychology was defined in 1922 by the journalist Walter Lippman as a biased judgment and a simplified idea of a certain category of people [12]. According to Lippmann (ibid.), it is not the task of stereotypes to completely fit reality, but to emphasize the important and typical characteristics of a certain group of people. A stereotype about the elderly can be defined as an unreliable simplistic representation of the elderly without recognizing the individual differences between them. It includes assumptions and generalizations about how older people should behave and what they are likely to experience, regardless of individual differences or specific circumstances. In general, the positive stereotype reflects the belief that the elderly are smart, while the negative stereotype depicts the elderly as stubbornly traditional and of fragile health. Unfortunately, whether stereotypes occur into a person's social life, they can shape persons' views of others and influence person's behavior towards them. They can also affect how people perceive their own abilities and capabilities.

De Paula Couto et al. examined the views of young and old people held by young and older adults in Germany, the USA, and India [13]. Views about old and young people were mostly similar across age groups and countries. Older adults in the USA and Germany – but not in India – held slightly less negative views about elderly than did young people in some domains, possibly indicating a projection of better-than-expected own aging experiences of older adults into their in-group stereotypes in Western countries which can be explained by socialization processes that mainly support a developmental perspective on aging and age approval [13].

Ageism in Healthcare Institutions

Ageism can be defined as both benevolent and hostile, but we will discuss hostile ageism below. Hostile ageism is the most overt type of ageism, which shows up in the form of physical, financial, and verbal abuse [3]. An ageistic attitudes towards older patients persist in healthcare community, across professional disciplines, and across care settings [14-19]. Ageism is self-directed (internalized by person), interpersonal (on the micro level), or structural also called institutional (on the macro level) [14].

Self-directed ageism has harmful and wide-ranging consequences to the health and well-being of the elderly [16]. In a study of older adults in England, Jackson et al. found that ageism was associated with increased poor self-rated health and risk of serious health problems [15]. Vanleerberghe et al. explored the role of self-directed ageism in the relationship between frailty and quality of life in Belgian community-dwelling older adults [16]. Most of them were identified as mild frail, experienced self-directed ageism, and those 80 or older rated their quality of life lower.

Interpersonal ageism refers to the ways in which ageism seeps through social interactions to impact relationships and day-to-day interactions. The review by Liu et al. (2000–2011) identified that attitudes of healthcare professionals towards older people and older patients ranged from neutral to positive [17]. On the contrary, Lešnik and Tomažic found that almost half of elderly patients experienced ageism in the clinical settings of northeastern

Slovenia [18]. In 2008, hospital doctors's who worked in General Medicine or Aged Care units in two tertiary public hospitals in Victoria, Australia, were surveyed about attitudes towards older people [19]. Attitudes among physicians were complex and mixed, but doctors' characteristics that were associated with more positive attitudes towards older patients included age of 30 years or older, female gender, more senior in position, postgraduate years of 10 or more, previous working experience in Aged Care, interest in Aged Care and more frequent social contacts with healthy older people [19]. In Australia, the study by Chen et al. confirmed the presence of ageism in older nurses' workplaces where the detrimental effect of ageism on older nurses' well-being and continuation of practice was detected [20]. Inaction against ageism was detected, i.e. lack of organizational initiatives to solve the problem of aging and support older nurses. The authors' recommended (ibid.) to encourage healthcare organizations to address ageism in the workplace of older nurses and to encourage policymakers to develop age-inclusive policies that support the continued practice of older nurses, which should apply to all healthcare providers [20].

However, rather than targeting ageism only at the individual levels, the most effective way to diminish it is to target institutional or so called structural ageism [14]. This is the discrimination directed against older patients by the policies of the health care institutions and the actions of those affiliated with them [14]. A typical example of institutional ageism is the implementation of screening for the timely detection of breast cancer in older women. Namely, breast carcinoma is more common in elderly women than in previous age periods, but there is limited evidence available to make a recommendation for/against continuing breast screening beyond the age of 75 years [21]. In Slovenia, the national organized breast cancer screening programme was launched in 2008, inviting women between 50 and 69 years old to digital mammography screening every two years, with all procedures established according to European guidelines for quality assurance in breast cancer screening and diagnosis [22]. In study by Tomšič et al. breast cancer cases from the Slovenian Cancer Registry between 2008–2021 in women aged 50 to 72 were included, supplemented by data on the screening history from the breast cancer screening registry [22]. The probability of survival, which took into account the life characteristics and covariates of breast cancer patients invited to the preventive screening program, was 4.3 percentage points higher than in those not invited. More broadly, Chrisler et al. suggested that reducing the influence of ageism and promoting more realistic views of older women could improve doctor-patient relationships and reduce disparities in the care of older women [23]. Eradicating institutional ageism, however, can help achieve this goal [14].

Detrimental Effect of Age Stereotypes on Health

Old age (65+) is a period when a person matures to full human realization while declining physical and mental strength [24]. Negative age stereotypes which uncritically emphasize this weakening of the physical and mental strength of the elderly, have an impact on the self-esteem of the elderly [5,15]. Levy has turned her attention from younger individuals who hold age stereotypes to older individuals who are targeted by these stereotypes with theory of stereotype embodiment [5]. However, negative age stereotypes that older individuals assimilate from their culture predict detrimental outcomes, including worse physical function, but these are potentially reversible risk factors [25]. Levy's refocused research has shown that positive and negative age stereotypes held by older individuals can have beneficial and detrimental effects, respectively, on a variety of cognitive and physical outcomes. Cortisol tends to increase in later life among most, but not all, older individuals. Prolonged elevation of cortisol, the primary stress biomarker, is associated with impaired cognitive and physical health. The study by Levy et al. considered whether this pattern could be explained by more-positive age stereotypes acting as a stress buffer [25]. Participants aged 50 or greater and recruited from the Baltimore Longitudinal Study of Aging consented to cortisol measurements over 30 years. The cortisol of the more-negative age-stereotype group increased by 44%, whereas the more-positive age-stereotype group showed no increase. There was no association of age stereotypes and cortisol level among the younger participants. The findings of the study indicate the importance of considering the relationship between positive and negative stereotypes and biomarkers of stress over a long period of time. This was also confirmed in the review by Lyons et al. where they pointed out that chronic stress poses a significant public health threat [26]. Chronic stress is associated with systemic inflammation and means a risk factor for numerous aging-related diseases which shorten lifespan in humans. Stress promotes numerous senescence triggers, including telomere erosion, oxidative damage, and DNA damage and is associated with elevated risk for chronic aging related diseases in older adults [26]. The authors (ibid.) believe that with a better knowledge of the response of endocrine/neural mediators to stress and their influence on aging processes, the mitigation of these negative effects could be used therapeutically to reduce the pathological burden of stress on life expectancy.

Frailty in the Light of Ageism and Stereotype Threat

Frailty is recognized as one of the most important global health challenges as the population is aging, which is why in the following we devoted ourselves in detail to stereotypical claims about frailty [3,27-31]. Frailty is a geriatric clinical syndrome characterized by a diminished physiological reserve of multiple organs [27-31]. It may be present in apparently healthy persons and become evident only when a destabilising event (i.e. surgical operation) exceeds a critical stress threshold. The definition of frailty phenotype is based on the presence of three or more of five criteria (muscle weakness (grip strenght), poor endurance, weight loss, low physical activity, slow gait speed) [31]. Older adults with frailty are at increased risk of adverse health outcomes and death. Among the Slovenian population aged 65 years and older, the age-standardized prevalence of frailty is 15% with the highest prevalence in northeastern Slovenian region [27].

Literature review by Woodley indicated that approximately a quarter of individuals aged > 85 years are living with frailty

and as such the identification of those who are frail is a public health priority [28]. Given that the syndrome of frailty is defined by progressive and gradual loss of physiological reserves there is much scope to attempt to modify the trajectory of the frailty syndrome via physical activity and nutritional interventions. Unfortunately, a review of the literature on age-related frailty showed that the elderly didn't follow the recommendations of the guidelines for the prevention and mitigation of frailty. Because negative age stereotypes are potentially reversible risk factors and a source of health inequities in older adults, the existing literature on the relationship between age stereotypes and frailty needs to be explored in detail [28]. Aminu et al. reviewed the results of the prospective cohort English Longitudinal Study of Aging (ELSA) with 2385 participants with a frailty prevalence of 12.1% [29]. Perceived age discrimination was reported by 38.4 % of the participants. Both frailty progression and frailty development were significantly associated with perceived age discrimination. Age (80+ years) and long-standing illness had the strongest association with respondents' frailty progression. The authors' conclusion was that perceived age discrimination significantly increased the risk of frailty progression and frailty development among ELSA participants. From the ELSA, Gale and Cooper found on 3,505 men and women aged 60 years and over that older people who have a more positive atitude to ageing are at reduced risk of becoming physically frail or pre-frail [30]. These findings raise the possibility that interventions to change negative age stereotypes may help prevent frailty in later life.

A study by Fried et al. confirms a standardized definition of frailty in community-dwelling elders and provides concurrent and predictive validity of the definition [31]. It also finds that there is an intermediate stage identifying those at high risk of frailty. Finally, it provides evidence that frailty is not synonymous with either comorbidity or disability, but comorbidity is an etiologic risk factor for, and disability is an outcome of, frailty. This provides a potential basis for clinical assessment for those who are frail or at risk, and for future research to develop interventions for frailty based on a standardized ascertainment of frailty, Frailty and pre-frailty syndrome are related with a longer hospital stay, higher morbidity and mortality, higher risk for complication after surgery and there is a higher risk for hospital readmissions [32]. However, frailty is not an irreversible consequence of aging. There are several measures that can be taken to improve the physical and cognitive abilities or at least slow down the progression of frailty [32].

The purpose of the research was to find out the knowledge of ageism and attitudes towards age stereotypes about frailty among adolescent students and the elderly themselves. Since the literature shows that negative age stereotypes about frailty are potentially reversible, we were interested in the extent to which adolescents and the elderly perceive age stereotypes about frailty [28,30]. Present study took into account the findings of Jazbar et al. that in Slovenia frailty in the elderly occurs in the largest number in northeastern Slovenia [27]. This was the reason that we conducted the research in the area of eastern Slovenia, which includes the Savinja and Mura regions [2]. The research took place in two consecutive time phases. The first phase consisted of examining the extent to which adolescents know the term ageism and its meaning, as well as their attitude to stereotypical statements about the elderly. Based on the results of the first phase, in the second part of the research, we supplemented the investigation with the inclusion of older respondents who filled out the same questionnaire as adolescents. In this way, we were able to obtain the view of two different generations from very different periods of life on the same content.

The Aim of the Research

Based on the results of the previous research, we conducted a survey with which we wanted to check knowledge of ageism and whether the attitude of the Slovenian adolescent and older generations to age stereotypes differs. Why did we choose adolescents attending high school and older people aged 65 and over as the categories to be studied? Due to the fact that the community in which adolescents will spend their adult lives will comprise an increasing proportion of people over the age of sixty-five. Since they may even work with the elderly, it is good to know what their knowledge is about ageism and age stereotypes, especially health ones. Another reason was to to determine the possible difference in the perception of age stereotypes between adolescents and the elderly, to make intergenerational informal education interesting and effective in acquiring knowledge about aging, ageism and the correct evaluation of age stereotypes.

Because ageism remains a form of discrimination that comes silently, we wanted to confirm or deny or refute two hypotheses. The first research hypothesis was that the elderly are more familiar with ageism than adolescents. The second research hypothesis was that the elderly are more inclined to negative age stereotypes, especially health ones, than the adolescents.

Methodology

Participants

188 respondents from 2022 were aged 15 to 19 (students from Šentjur and Celje high schools in Savinja region), and 137 elderly people from 2023 were 65 – 85 years old (137 both university visitors for the third life period in the Savinja region and members of the Murska Sobota Lions Club in Mura region) [2]. The data was collected in the period from 31/03/2022 to 27/05/2022 among students and from 2/6/2023 to 21/7/2023 among the elderly.

Procedure

Ethical Consideration

On 16 March 2022, the application, No. 0120-610/2021/10 for the assessment of the ethical adequacy of the research, the Commission of the Republic of Slovenia for Medical Ethics assessed it as ethically acceptable and issued consent for the conduct of the research. In conducting the research, the researchers followed the ethical guidelines on non-experimental research and survey was conducted in accordance with the principles of the 1964 Declaration of Helsinki. This study was performed following the ethical standards as laid down in the 1964 Declaration of

Helsinki and its later amendments or comparable ethical standards. Informed consent was obtained from all participants.

Data Collection Method

We used a questionnaire prepared on the basis of a questionnaire by Marchetti et al. [9]. Stereotypical statements were grouped into the same content groups as Marcheti's, namely six groups such as the elderly's mood, traditionalism, physical fragilty, elderly's attitude to technology, wisdom and sociability [9].

Methodological Approach

The instrument of the voluntary, anonymous online survey was a questionnaire with eight closed-ended questions, of which the eighth questions consisted of 31 statements about stereotypes relating to the elderly, evaluated on a three-point Likert scale ("disagree", "neutral", "agree") and two open-ended questions. At the end of the questionnaire, participants answered four general demographic questions.

We prepared the questionnaire based on the example of the questionnaire Development and Initial Validation of the Adolescents' Ageism Toward Older Adults Scale, which was developed by Marchetti and colleagues [9]. Given the cultural characteristics of the Slovenian nation, we were able to combine two statements into one stereotypical statement namely in the field of the elderly's mood and wisdom, therefore the present structured online questionnaire contained 31 stereotypical statements about the elderly.

On the basis of individual evaluated stereotype statements, we prepared new common variables by summing individual items, and classified them into six substantive sets of stereotypes about the elderly, namely: mood, traditionalism, physical fragilty, attitude to technology, wisdom and sociability. Frailty was assessed using three statements, so the variable had values from 3 to 9, with a higher score indicating a more negative assessment of the body frailty of the elderly. This is how we proceeded with the other five sets of the stereotypes about the elderly.

The results were presented in the form of frequencies and percentages, in the bivariate analysis we used only non-parametric tests (Mann-Whitney U test, chi-square test), because the distribution of the variables deviates from normal. When the assumptions for performing the chi-square test were not met, instead of the chi-square statistic, we used the Kullback 2Î-test (Likelihood ratio). Before processing, the open-ended answers were classified into fewer content-related categories (so-called answer coding). We compiled the common variables by dimensions in such a way that we summed up the individual statements of the set, and in the event that there are negative and positive statements in the set, we recoded the positive statements before summing. SPSS (version 23.0) was used for statistical analysis. Differences with $p \leq 0.05$ were considered statistically significant.

We confirmed the appropriate reliability of the questionnaire used by Cronbach's alpha coefficient. The lowest reliability of the questionnaire was recorded for the assessment of the stereotypes about physical frailty of the elderly among student participants (0.714), and the highest for the assessment of the wisdom of elderly among older participants (0.847).

Results

In the presentation of the results, we focus in more detail on the knowledge of ageism and the attitude of the adolescent and elderly respondents towards stereotypical claims of frailty. In order to assess the knowledge about ageism and attitudes toward age stereotypes, we analysed the content a total of 325 questionnaires filled in by respondents aged 15-19 and 65-85.

Sample Information

Based on age, the respondents were divided into 4 age subgroups that represented the basis for statistical comparisons (Table 1). Adolescence is the phase of life between childhood and adulthood, from ages 10 to 19 [24]. The final sample in 2022 consists of 188 adolescent students (in the following text students) between ages of 15 and 19, the average age was 17 ± 1.4 years. Students were divided into two age subgroups namely younger (15-17 years) and older (18-19 years) students. The final sample in 2023 represented 137 elderlies between ages of 65 and 85, the average age was 72 years ± 5 years. In accordance with Ramovš, we classified the elderly into two age subgroups, namely younger elderly (65-85 years) and middle-aged elderly (76-85 years) [24].

Table 1: Basic data on the sample.

		Students 2022 (n=188)		Elderly 2023 (n=134-137)*	
		f	f %	f	f %
Gender	Male	20	*10,6 %*	28	*20,9 %*
	Female	168	*89,4 %*	106	*79,1 %*
Age group (years)	Younger students (15-17 years old)	109	*58,0%*		
	Older students (18-19 years old)	79	*42,0%*		
	Younger elderly (65 - 75 years old)			114	*83,2%*
	Middle-aged elderly (76 - 85 years old)			23	*16,8%*

*Not all respondents answered all questions, so the sample size for individual subgroups varies.

The analysis of the answers about the frequency of contacts between generations indicated that both students and the elderly the most often stated regular daily or weekly contacts with the elderly, around a tenth percents of them had monthly contacts, and only a few individuals had less frequent contacts. The answers about family ties with the elderly were similar, since the majority of students and the elderly had a relative over 65 years of age.
Attitude towards the elderly and knowledge of ageism.

Table 2 shows the results of the answers to the question about whether the respondents have already observed a negative attitude towards the elderly. Results showed that the perception of a negative attitude towards the elderly differed statistically significantly between the age groups surveyed ($\chi^2 = 13.427$, $p = 0.004$). Among students, the proportion of those who observed

a negative attitude towards the elderly was noticeably higher (younger students: 75.2%; older students: 81.0%) compared to older respondents (younger elderly: 61.1%; middle-aged elderly: 52.4%).

Tabel 2: Negative attitude towards the elderly.

	Have you ever seen a negative attitude towards the elderly?				Chi-square test (p value)
	Da		Ne		
	f	f %	f	f %	
Younger students (15-17 years old)	82	***75,2%***	27	*24,8%*	*13,427 (0,004)*
Older students (18-19 years old)	64	***81,0%***	15	*19,0%*	
Younger elderly (65-75 years old)	69	*61,1%*	41	***38,9%***	
Middle-aged elderly (76-85 years old)	11	*52,4%*	14	***47,6%***	
Total	252	*70,2%*	96	*29,8%*	

The results regarding knowledge of ageism shown in table 3 were slightly different ($\chi^2 = 42.010$, $p < 0.001$). Among students, knowledge of the term "ageism" was significantly lower, as only 18.3% of younger students (15-17 years) and 19.0% of older students (18-19 years) replied that they know ageism, compared to half or more of older respondents (younger elderly: 50.9%; middle-aged elderly: 60.9%).

Table 3: Knowledge of the concept of *ageism*.

	Do you know what ageism is?				Chi-square test (p value)
	Yes		No		
	f	f %	f	f %	
Younger students (15-17 years old)	20	*18,3%*	89	***81,7%***	*42,010 (<0,001)*
Older students (18-19 years old)	15	*19,0%*	64	***81,0%***	
Younger elderly (65-75 years old)	57	***50,9%***	55	*49,1%*	
Middle-aged elderly (76-85 years old)	14	***60,9%***	9	*39,1%*	
Total	106	*39,8%*	217	*67,2%*	

Furthermore, only 33.3% of younger elderly or 14.3% of middle-aged elderly out of all who knew the term ageism confirmed that they experienced it (Table 4). The predominant answers were that they experienced ageism mainly from children, young people or younger people and people they encountered by chance. Only individual respondents described that they experienced it from the side of the closest ones or through contact with official persons.

Table 4: The experience of ageism.

	Are you experienced ageism yourself?*						LR (p value)
	Yes		No		Without answer		
	f	f %	f	f %	f	f %	
Younger elderly (65-75 years old)	19	*33,3%*	33	*57,9%*	5	*8,8%*	*3,061 (0,216)*
Middle-aged elderly (76-85 years old)	2	*14,3%*	9	*64,3%*	3	*21,4%*	

** Only the elderly (65 years or older) who know ageism (n=71), LR, Likelyhood Ratio*

Summary table 5 shows the attitude of the respondents to all six content groups of age stereotypes where it can be seen that adolescents approve of negative age stereotypes to a greater extent than older people. The most pronounced differences between age groups appear in ratings of attitudes towards technology, sociability and traditionalism, reflecting strong intergenerational differences in experiences, values and exposure to stereotypes. The comparative analysis data revealed statistically significant differences in the perception of age stereotypes between age groups, especially regarding traditionalism ($p = 0.001$), attitude towards technology ($p < 0.001$) and sociability ($p < 0.001$). Students (15-19 years old) showed a more negative opinion about the traditionalism of the elderly (younger students: M = 22.42, SD = 4.78; older students: M = 22.91, SD = 5.10) compared to elderly respondents (65-75 years old: M = 20.57, SD = 4.19; 76-85 years old: M = 20.48, SD = 3.91), which may mean that the younger people are, the more they support negative stereotypes about the traditionalism of the elderly. Regarding the attitude towards technology, the most negative opinion was expressed among younger students (M = 8.78, SD = 2.10), while older students (M = 8.14, SD = 2.02) and younger elderly (M = 7.17, SD = 2.29) expressed to a lesser extent that the elderly are not in favor of technology. Sociability of the elderly was rated highest among younger students (younger students: M = 15.17, SD = 2.28; older students: M = 14.96, SD = 2.63), and then the ratings decrease among the elderly (65-75 years old: M = 13.79, SD = 2.57; 76-85 years old: M = 13.13, SD = 2.30), which shows to a more positive perception of sociability among students, while older people may see themselves or their peers as less sociable.

On the contrary, the differences are least pronounced in the evaluations of wisdom, mood and physical frailty, where the perceptions are more similar, but in the case of mood and physical frailty they are also statistically significant. In the following, we will focus on age-related frailty, which is increasingly common due to aging, but is partially preventable with preventive measures.

We also found statistically significant differences in the perception of frailty of the elderly ($p = 0.041$), namely: (younger students, 15–17 years: M = 6.88, SD = 1.60; older students, 18–19 years: M = 7.11, SD = 1.48) compared to older respondents (early elderly, 65–75 years: M = 6.42, SD = 1.59; middle-aged elderly, 76–85 years: M = 6.64, SD = 2.06). These findings indicated that adolescents more often perceived the elderly as physically frail, while, on the contrary, especially the younger elderly expressed that the elderly were not prone to frailty. Regarding wisdom scores, no statistically significant differences were detected between age groups ($p=0.101$).

Since frailty can threaten the lives of the elderly, but it is also preventable, we conclude the presentation of the results with an analysis of respondents' attitudes towards frailty stereotypes (Table 6), in the text also from the perspective of the respondents' gender. In addition to age differences, data analysis also revealed the influence of gender on the perception of physical frailty of the elderly, which can further contribute to the understanding of stereotypes about the elderly. Middle-aged male respondents (76-85 years) agreed to a greater extent with stereotypes about physical

frailty (M = 7.57, SD = 1.90) than women from the same age group (M = 5.85, SD = 1.95; H = 3.004, p = 0.083), but the difference is only marginally statistically significant.

The analysis of differences by gender in the perception of frailty of the elderly indicates only a borderline statistical characteristic in certain age groups. Among younger students (15–17 years old), males give a lower assessment of physical frailty (M = 5.90, SD = 1.85) than females (M = 6.98, SD = 1.55; H = 3.136, p = 0.077), which indicates a marginal statistical difference and means that females in this age group perceived older people as more fragile. For older students (18–19 years), females also rate frailty higher (M = 7.16, SD = 1.47) than males (M = 6.80, SD = 1.62), but the difference is not as pronounced (H = 0.520, p = 0.471). Among the younger elderly (65–75 years), men give a higher rating of frailty (M = 6.85, SD = 1.76) than women (M = 6.35, SD = 1.53; H = 1.676, p = 0.196), which indicates a trend that does not reach statistical significance. Among the middle-aged (76–85 years), men rated body frailty higher (M = 7.57, SD = 1.90) than women (M = 5.85, SD = 1.95; H = 3.004, p =

Discussion

Knowledge of Ageism

The first hypotesis that the concept of ageism is recognized to a greater extent among the elderly, was confirmed, as a good half of the elderly and a little less than a fifth of adolescents were familiar with the term ageism. In contrast, the second hypothesis was not confirmed, as the elderly approved of negative age stereotypes, especialy health ones, to a lesser extent than the adolescents. However, this modest knowledge of ageism also shows that the

Table 5: Comparison of mean ratings of content groups of age stereotypes about the elderly by age groups of respondents.

A group of age stereotypes according to content	Group of respondents	n	Attitude towards stereotypes (average)	Standard deviation	Kruskal-Wallis test ChiHi-square (p value)
Mood*	Younger students (15-17 years old)	109	7,30	1,93	8,062 (0,045)
	Older students (18-19 years old)	79	**7,57**	2,26	
	Younger elderly (65-75 years old)	110	6,68	1,83	
	Middle-aged elderly (76-85 years old)	23	7,26	1,89	
Traditionalism*	Younger students (15-17 years old)	109	**22,42**	4,78	15,572 (0,001)
	Older students (18-19 years old)	79	**22,91**	5,10	
	Younger elderly (65-75 years old)	105	20,57	4,19	
	Middle-aged elderly (76-85 years old)	21	20,48	3,91	
Frailty*	Younger students (15-17 years old)	109	**6,88**	1,60	8,263 (0,041)
	Older students (18-19 years old)	79	**7,11**	1,48	
	Younger elderly (65-75 years old)	113	6,42	1,59	
	Middle-aged elderly (76-85 years old)	22	6,64	2,06	
Attitude towards technology*	Younger students (15-17 years old)	109	**8,78**	2,10	29,457 (<0,001)
	Older students (18-19 years old)	79	**8,14**	2,02	
	Younger elderly (65-75 years old)	113	7,17	2,29	
	Middle-aged elderly (76-85 years old)	23	7,43	2,23	
Wisdom	Younger students (15-17 years old)	109	8,24	1,24	6,229 (0,101)
	Older students (18-19 years old)	79	7,97	1,48	
	Younger elderly (65-75 years old)	111	7,84	1,65	
	Middle-aged elderly (76-85 years old)	22	7,55	1,77	
Sociability*	Younger students (15-17 years old)	109	**15,17**	2,28	26,522 (<0,001)
	Older students (18-19 years old)	79	**14,96**	2,63	
	Younger elderly (65-75 years old)	112	13,79	2,57	
	Middle-aged elderly (76-85 years old)	23	13,13	2,30	

Table 6: Attitude towards stereotypes about the frailty of the elderly according to the age groups of respondents.

A stereotypical statement about the elderly		Younger students (15-17 years)		Older students (18-19 years)		Younger elderly (65 – 75 years)		Middle-aged elderly (76 – 85 years)		Chi square statistic or Likelihood ratio (p value)
		f	f %	f	f %	f	f %	f	f %	
Their hearing is impaired	I don't agree	11	*10,1%*	5	*6,3%*	12	*10,5%*	6	*26,1%*	7,251 (0,298)
	Neutral	53	*48,6%*	40	*50,6%*	56	*49,1%*	7	*30,4%*	
	I agree	45	*41,3%*	34	*43,0%*	46	*40,4%*	10	*43,5%*	
Their memory is impaired*	I don't agree	13	*11,9%*	4	*5,1%*	14	*12,3%*	**6**	***26,1%***	14,365 (0,026)
	Neutral	51	*46,8%*	**47**	***59,5%***	**67**	***58,8%***	7	*30,4%*	
	I agree	**45**	***41,3%***	28	*35,4%*	33	*28,9%*	**10**	***43,5%***	
They are prone to injury*	I don't agree	17	*15,6%*	6	*7,6%*	**31**	***27,4%***	4	*18,2%*	24,560 (<0,001)
	Neutral	45	*41,3%*	32	*40,5%*	**56**	***46,9%***	**10**	***45,5%***	
	I agree	**47**	***43,1%***	**41**	***51,9%***	26	*23,0%*	8	*36,4%*	

* The correlation between the variables is statistically significant (p ≤ 0.05). Applies to tables 5 and 6.

importance of ageism is still underestimated [33,34], although there are occasional studies of ageism occurring at both the structural level (in which societal institutions reinforce systematic bias against older persons) and individual level (in which the elderly take on a negative view of aging and the elderly specific to their culture) [14,18,23]. Ageism can affect self-worth and self-esteem, making people more vulnerable to stress. In accordance with the findings of various researches [34,35], a lack of knowledge of ageism was shown among the young participants of our research, especially among those who did not have an older relative. The results of our research are also consistent with the finding of Lahe and Goriup that only onefifth of Slovenian secondary school students aged 15 to 19 years has good knowledge of aging [36]. The literature shows that most students learned about ageism during school lessons, through the media and from their parents and grandparents [33,35]. Because ageism will not disappear on its own, it is important that all generations recognize it. The importance of including gerontological content in all levels of formal and informal education is necessary [36,37]. Namely, without knowing the aging process, we cannot understand ageism. In the study by Felc and Felc it was found that almost half of adolescents (43.6 %), wanted to obtain information about ageism and the process of aging from the mass media, that's why high school students could watch shows suitable for them and discuss them with a mentor educated on ageism [33]. In this way, educational institutions could make greater use of the options supported by Wangler and Jansky that a moderately positive portrayal of aging and the elderly is an appropriate presentation in mass media [38]. The present research covered adolescent respondents (Generation Z) and older respondents (Traditionalists and Babyboomers), therefore according to Gao we state the basic characteristics of the generations that participated in the present study [39]. The traditionalists value tradition, work, order and rules, they have acquired vast knowledge and extensive experience and are retired now. Babyboomers' priority is education and career; they are workaholics and like short-term planning. Members of generation Z are excellent at information technology, but have weak communication skills and poor concentration; they are spending more time on electronic devices and less time on social contacts [39]. In the present research the adolescents belonged to Generation Z whose members more easily adapt and use new digital devices and software more easily, compared to the elderly but they have proverbially insufficient social contacts which can further complicate social contact between adolescents and the elderly. Negative attitudes towards the elderly could be improved by the activities mentioned by Meschel and McGlynn that younger adolescents had more positive attitudes towards elderly after participating in positively-focused intergenerational educational activities, which included one-hour meetings for six weeks that focused on sharing stories, school experiences, hobbies, and music, participating in painting activities, and planning a talent show to be preformed the six weeks [40]. That is why it is recommended that the education of older and younger generations takes place together about ageism, its influence and how it manifests itself in society. When introducing adolescents to the basics of ageism, we must not forget that they quickly lose concentration, so the lectures should be short and concise with a lot of contact with the elderly.

Returning again to the results of our study, barely a good half of younger elderly and middle-aged elderly respondents knew the term ageism. On socio-demographic comparisons, the percentage of those who have already seen ageistic attitude towards the elderly was higher among women, and among the most highly educated elderly. Out of 71 elderly who knew ageism, less than a tenth noticed signs of institutional ageism during a visit to the outpatient clinic of the health center. This is otherwise a small proportion, which may mean that in Slovenian primary health care the relationship between the patient and the selected doctor is very good, or that there is insufficient knowledge of ageism among the elderly. But, in more in-depth research in this area by Lešnik and Tomažič, it was also found that 44% of the elderly patients experienced ageism in the Slovenian hospital environment [18]. Equally worrying is that 50% of our elderly research population experienced ageism from children, adolescents and young people. This is consistent with the findings of European authors that ageism appears already in three-year-old children [10,11]. In accordance with Lahe and Goriup it is appropriate to implement teaching about aging and the prevention of ageism in school programs as early as possible [36]. In Slovenia, health promoting schools are schools that implement a structured and systematic plan for the health and well-being of all pupils and of teaching and non-teaching stuff [41]. In 2021, the European Commission launched a green paper on ageing, called “Fostering solidarity and responsibility between generations” which is also implemented by Slovenian health promoting schools [41]. The Green paper on ageing recognized that what we learn and experience in early childhood affects us for the rest of our lives. Living a "healthy childhood" generally shapes our future prospects, health and well-being. If we want the life expectancy and participation of the elderly in society to increase, we must consider the aging process from birth to death. In this way, intergenerational solidarity will remain a defining characteristic of Europe, and the factors associated with the emergence of ageism will be reduced [42]. Namely Marques et al. systematically reviewed the literature for a period of 47 years (1970–2017) and found 13 factors strongly associated with interpersonal ageism such as “anxiety of ageing” and “fear of death” and only one, i.e. »older adults’ health status« associated with self-ageism [43].

Ageism and Negative Age Stereotypes in the Health Care System

Although only 7.5 % of elderly respondents in our study experienced ageism in the health facility, we should not turn a blind eye to the problem of ageism in healthcare. Lešnik and Tomažič confirmed the existence of ageism in Slovenian clinical settings [18]. Their study sample comprised users of health services in a clinical environment, aged between 65 and 90, able to communicate clearly. At least one discriminatory event was experienced by 69.0 % of the elderly people. Of these, 44.0 % of the elderly patients felt ageism at least once [18]. Consequently the authors (ibid.) proposed to implement basic methods of communication with the elderly in education programs of all healthcare programs. Similarly, Dahlke et al. stated that in Canada, ageism extends through many organizations and institutions, including healthcare [44]. While

ageism extends throughout professions and social institutions, we expect nurses—the largest and most trusted group of healthcare professionals—to provide non-ageist care to older people. To properly raise awareness about aging in Canada, a test study with three innovative e-learning modules (gamification, videos and simulations) was conducted among nursing students. The aim was to provide accurate general information about the elderly and ageism, and as a result, eliminate negative stereotypes about the elderly [44]. In 2022 Dahlke et al developed an advisory group consisting of older adults and gerontological experts to review the findings of the first stage of their study Awakening Canadians to Ageism and provide guidance on knowledge mobilization and next steps [44,45]. They interviewed 12 older adults and 6 gerontological experts from their advisory group to learn about their experiences with the group and provide suggestions for future groups. Participants provided feedback on group organization, management and processes, in addition to their experiences and strategies for future advisory groups. Both groups suggested enhancing the social diversity of the group, both in terms of racial/ethnic/cultural representation and gender [45]. Older adults wanted more meeting time dedicated to getting to know the other groups members and gerontological experts wanted more details about the research process and their role [45].

Negative Age Stereotypes about Frailty

Since frailty is an increasing problem due to the aging of the population, in the discussion we will focus on stereotypes about frailty. In the present study, findings indicated that adolescents more often perceived the elderly as physically frail, while, on the contrary, especially the younger elderly expressed that the elderly are not prone to frailty. In addition to age differences, data analysis also revealed the influence of gender on the perception of physical frailty of the elderly. Middle-aged male respondents agreed to a greater extent with stereotypes about physical frailty than women from the same age group ($p = 0.083$), but the difference is only marginally statistically significant.

The analysis of differences by gender in the perception of frailty of the elderly indicates only a borderline statistical characteristic in certain age groups. Among younger and older students, males gave a lower assessment of physical frailty than females ($p = 0.077$), which indicates a marginal statistical difference and means that females in this age group perceived olderly as more fragile. Among the younger and middle-aged elderly, men gave a higher statistical insignificant rating of frailty than women ($p = 0.196$).

Salguero et al. showed that neither explicit nor implicit ageist attitudes were associated with frailty in community dwelling Veterans. Therefore, they recmmended additional longitudinal and larger studies for evaluating the independent contribution of ageist attitudes to frailty in older adults [46]. Cramm et al. emphasized that self-management abilities and frailty are important for healthy aging among community-dwelling older people in the Netherlands. Particularly vulnerable are the lower educated older adults. Interventions to improve self-management abilities may help older people age healthfully and prevent losses as they age further [47]. Čebron Grosek also emphasized that frailty is not an irreversible consequence of aging [48]. There are several measures that can be taken to improve the physical and cognitive abilities or at least slow down the progression of frailty. Due to the rising number of elective surgeries among the elderly, the routine assessment of frailty seems reasonable. The study by Comerford et al. also highlights the daily presence of ageism experienced by a cohort of community-dwelling older people with frailty and multimorbidity [49]. In the context of further projected demographic changes in coming decades, with increasingly higher proportions of older people worldwide, these findings highlight an important societal issue that needs to be addressed.

In our study, statistically significantly ($p=0.026$) more adolescents (from 35.4% to 41.3%) than older people (from 28.9% to 43.5%) agreed with the stereotypical statement that memory impairment occurs in old age. There may be a grain of truth in this statement, as the loss of memory for recent things is an important symptom of a Alzheimer's disease, which requires diagnosis and appropriate treatment. On the other hand, Yun and Maxfield think that strong ageist attitudes stigmatize older adults as those who are forgetful and this may contribute to dementia-related anxiety, as age is a major risk factor for developing dementia [50].

As people age, they are more prone to injuries, especially hip fractures, which was agreed by as many as 43.1 to 51.9% of adolescents and only 23 to 36.4% of the elderly. With the aging of society, it is increasingly common to deal with ethical dilemmas that involve decision making in the elderly patient with a hip fracture. Based on the study by Herrera-Perez et al., the so-called ageism due to ignorance can influence the surgical delay and therefore the mortality of elderly [51]. Between 2017 and February 2019, a total of 415 patients with a diagnosis of hip fracture were admitted to hospital. The most common comorbidities were: arterial hypertension (61%), diabetes (41%), dementia (40 %), more than 3 comorbidities were present in 24 % patients with hip fracture. Of patients with a hip fracture, 75% were women, with an average age of 88.2 (62–102 years), and 25% were men, with an average age of 84.3 (67–98 years). For the purposes of differentiated analysis, the series was split into three age groups: <90 years of age: 382 cases; 90–100 years of age: 25 cases; >100 years of age: 8 cases. Of the entire series, only 18 patients did not undergo surgery (4.5% of the total), meaning 95.5% of the cases opted for an operation. In the study by Barrett-Lee et al. a total of 60 centenarians were included, with a median age of 101 years (range 100-108 years), 85% of whom were female; 29 were admitted from their own home or sheltered housing and 31 from nursing or residential care; 33 had some outdoor mobility, 26 only mobilised indoors, and 1 had no mobility [52]. Common comorbidities were renal and heart disease and dementia. Of the total, 56 underwent surgery, 51 within 36 hours. In terms of accommodation, 63.4% returned to their pre-injury level of independence. At 30 days, three months, and one year, mortality rates were 27% ($n = 16$), 40% ($n = 24$) and 55% ($n = 33$), respectively.

In any case, a healthy lifestyle from birth is important in the

prevention of frailty. Aging with less frailty would be enabled by implementing a healthy lifestyle throughout the life cycle as recommended by healthy schools [41].

In the following, we list certain shortcomings of our research. The research was conducted at the end of the COVID-19 epidemic, which may have influenced the lower response of both students and the elderly. The size of the students' sample (n = 188) is adequate in relation to the size of the target population (n = 539), but it does not provide enough data to be able to more accurately determine how the quality of the sample corresponds to the size of the population in terms of the structure of key sociodemographic parameters. The same applies to older survey participants. Although the survey covered respondents from rural and urban areas, we did not manage to capture a representative sample of the study population. The reason was the small number of adolescent and elderly respondents and regional limitation of the sample. That's why the findings of this research cannot be considered to be generally applicable, but they can be applied to the population of students from two high schools in the Savinja region, who participated and visitors to universities for the third period of life in the Savinja region and members of the Lions Club in the Mura region. However, the findings of the research can be the basis for further research with a larger and more diverse sample, which would contribute to a better understanding of the topic. It's necessary to include content on the course of aging and the harmfulness of ageism and negative stereotypes about elderly in formal and informal educational programs for adolescents, and to expand education to the field of intergenerational cooperation with elderly.

Conclusions

The education about aging and ageism of the young and the elderly should take place together, taking into account the characteristics of each generation. In this way, young people will be able to learn about ageism and its impact from those who experienced it and be able to get to know how it is hidden in society. At the same time, they will experience social contact in real life. Such education will encourage participants to think about their own biases and assumptions about the elderly. And that at the same time they will encourage others not to label the elderly with unrealistic age stereotypes. According to the ideology and practice of healthy schools, a healthy lifestyle should be the basis from childhood and the way to reduce age-related frailty. In healthy schools, there could be an even greater theoretical and practical emphasis on appropriate healthy aging throughout the entire life cycle. In this way, all generations will be able to recognize the dangers of ageism and negative age stereotypes for the elderly.

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