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Original Article

Relationship Between Ageist Attitudes and Adverse Childhood Experiences of Health Sciences Students: A Multicenter Study

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Abstract

Introduction: As the global population continues to age, ensuring older adults' well-being and promoting healthy aging have become increasingly important. In this context, ageism has emerged as a growing public health concern. This study aimed to investigate the relationship between ageist attitudes and adverse childhood experiences among health sciences students.

Methods: In this cross-sectional study, 1,064 undergraduate students from four universities in Turkey completed an online survey including a personal information form, the Ageism Attitude Scale (AAS; possible range 23–115, higher scores indicating more positive attitudes), and the Adverse Childhood Experiences Questionnaire (ACE-Q; possible range 0–10, higher scores indicating more ACEs). Group comparisons in ACE-Q scores by selected characteristics were conducted using independent samples t-test, and the association between AAS total score and ACE-Q total score was examined using Pearson correlation (two-tailed).

Results: The mean (SD) scores were 66.29 (9.44) for the AAS and 0.85 (1.49) for the ACE-Q. The most commonly reported ACE item was psychological abuse (21.1%). Pearson correlation showed no significant association between AAS and ACE-Q scores ($r=0.036$, $P=0.247$). ACE-Q scores were significantly higher among participants living with an older adult and among those who did not wish to live with an older adult family member in the future ($P<0.05$).

Conclusion: Students demonstrated moderately positive attitudes toward older adults, and approximately one in three participants reported at least one adverse childhood experience. Although AAS and ACE-Q scores were not significantly correlated, higher ACE-Q scores were observed in subgroups defined by living arrangements with older adults and future co-residence preferences.

Introduction

The population tends to age worldwide;[1,2] Therefore, it is now even more imperative to ensure older adults' well-being and active aging. Nevertheless, ageism - a noteworthy public health problem - may be a significant barrier to active aging.[3,4] Definitions of ageism refer to an undesirable view of older people and aging.[5] Indeed, ageism refers to one's stereotypes against others or themselves (cognitive dimension), bias (affective dimension), and discrimination (behavioral dimension) depending on age.[3,6] Globally, it is estimated that one in two people exhibit negative attitudes against older adults, including ageism.[7] Substantial evidence shows that ageism adversely affects older adults' health and well-being.[8,9] A previous systematic review including 422 studies from 45 countries reported that ageism is associated with many undesirable outcomes, including premature death, poor quality of life, unhealthy diet, risky health behaviors (e.g., medication non-adherence, excessive alcohol use, and smoking), and cognitive impairment.[10]

Although the term adverse childhood experiences (ACEs) is used interchangeably with terms childhood maltreatment and childhood trauma, it covers many aspects of childhood, such as five types of child abuse (physical abuse, sexual abuse, emotional abuse, emotional neglect, and physical neglect) and family problems (parental

Research Highlights

What is the current knowledge?

- Ageist attitudes have been reported among health science students in various contexts.
- Adverse childhood experiences (ACEs) are prevalent in young adult populations.

What is new here?

- No statistically significant association was identified between ageist attitudes and ACE scores among health sciences students.
- Higher ACE scores were observed in certain subgroups, including students living with an older adult and those not wishing to live with an older adult in the future.

divorce, spousal violence, family mental health problems, substance use in the family, and parent's confinement).[11] ACEs are rather prevalent worldwide,[12-14] and a plethora of studies since the CDC-Kaiser study conducted in the late 1990s have demonstrated that ACEs are associated with physical, mental, and affective symptoms that can persist into adulthood, including premature death.[15-17] Children with such undesirable experiences may have changes in their hormonal regulatory systems and neural patterns associated with reduced emotional resilience as well as elevated emotional reactivity, leading to the appearance of problematic behavior patterns.[18] In addition, it is known that ACEs lead one to adopt negative beliefs about others and the world.[19] Such negative beliefs about others and the social world may also extend to perceptions of specific social groups, suggesting a possible theoretical link between adverse childhood experiences and attitudes toward older adults. Although the relevant literature hosts many studies scrutinizing the relationship between ACEs and adverse health outcomes in the later stages of life, it seems to have missed revealing a possible connection between ACEs and ageist attitudes. Thus, the present study attempted to uncover the relationship between ageist attitudes and adverse childhood experiences of health sciences students.

Materials and Methods

This cross-sectional study was conducted among undergraduate students enrolled in health sciences programs at four different state universities in Turkey. The target population consisted of 5,495 students. The required sample size was calculated using Epi Info 7.2 software, assuming a 50% expected prevalence, a 3% margin of error, and a 97% confidence interval (CI), resulting in a minimum required sample of 1,057 participants.

Data were collected online between September 20 and November 20, 2022, using a structured questionnaire. A non-random convenience sampling method was employed. The survey link was initially distributed through student representatives and subsequently shared via WhatsApp groups of relevant academic programs.

A total of 1,118 students accessed the survey. Of these, 54 questionnaires were excluded due to incomplete responses (>20% missing data). The final analytic sample consisted of 1,064 students, corresponding to a response rate of 19.4% (1,064/5,495). Participants were eligible for inclusion if they were aged 18 years or older, enrolled in a health sciences undergraduate program, provided informed consent, and completed the questionnaire. Participants who submitted incomplete questionnaires or withdrew their consent were excluded from the analysis.

The questionnaire shared with the participants covers a demographic information form, the Ageism Attitude Scale (AAS), and the Adverse Childhood Experiences (ACEs) Questionnaire.

Demographic information form

The form, generated relying on the current literature, includes questions inquiring about some relevant demographic characteristics of the participants, such as gender, department, year of study, marital status, having a child, place where they have spent most of their life, perceived income status, smoking, alcohol use, regular physical activity, psychiatric disorder, psychological help status, perceived family monthly income, parental education, parents' living together, parent-child relationship, living with an older adult, and desiring to live with an older adult family member in the future.[20-22]

Ageism Attitude Scale (AAS)

The scale, developed by Yılmaz and Terzioğlu[20] consists of 23 items within three subscales: restricting life of the elderly, positive ageism, and negative ageism. While the items with positive statements are scored on a 5-point Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree), those with negative statements are reversely coded. The authors reported no cut-off value for the AAS, but the highest and lowest scores on the AAS are 115 and 23, respectively. Higher scores on the scale indicate more positive attitudes toward older adults. In the original study, Cronbach's alpha was calculated to be 0.80 for the total score.[20] In the current study, Cronbach's alpha for the total AAS score was 0.82, indicating good internal consistency.

Adverse Childhood Experience Questionnaire (ACEs)

The scale was developed by Felitti et al[15] and adapted to Turkish by Gündüz et al.[21] The instrument consists of 10 questions oriented to physical, emotional, and sexual abuse, emotional and physical neglect, and family dysfunctions. Each "Yes" response to the questions corresponds to one point. The scale offers no cut-off score, but higher scores point out increased ACEs. Cronbach's alpha was calculated to be 0.74 for the total score. In the current study, Cronbach's alpha was 0.76, demonstrating acceptable internal consistency.

Ethical approval was obtained from the Scientific Research Ethics Committee of the Graduate School

of Çanakkale Onsekiz Mart University (Decision No: 15/18; Date: 25.08.2022; Project No: 2022-YÖNP-0618). Institutional permissions were obtained from the participating universities. Electronic informed consent was obtained from all participants prior to participation.

Descriptive statistics were reported as means, standard deviations, and percentages. The normality of distribution was assessed using histograms, stem-and-leaf plots, skewness–kurtosis values, and the Kolmogorov–Smirnov test. The AAS and ACE-Q total scores were found to be approximately normally distributed ($P > 0.05$; skewness and kurtosis values within ± 1). Therefore, parametric tests were used. Independent samples t-tests and one-way ANOVA (with Tukey HSD or Games–Howell post-hoc tests where appropriate) were performed for group comparisons. Pearson correlation analysis was conducted to examine the association between AAS and ACE-Q total scores. A P value < 0.05 was considered statistically significant. All analyses were performed using SPSS version 23.0.

Results

The mean (SD) age of the participants was 20.1 (1.8) years. The majority were female (82.5%) and single (86.2%). Most participants (77.3%) had spent the majority of their lives in urban areas (Table 1).

Familial characteristics are presented in Table 2. Most participants (61.8%) reported that their monthly family income matched their expenses. Approximately half (50.7%) lived with an older adult, and 48.2% expressed a desire to live with an older adult family member in the future.

The mean (SD) total AAS score was 66.29 (9.44). Subscale mean (SD) scores were 19.80 (4.34) for restricting life of the elderly, 28.21 (5.65) for positive ageism, and 18.28 (3.96) for negative ageism. The mean (SD) ACE-Q total score was 0.85 (1.49).

Finally, the Pearson correlation analysis yielded no significant association between the participants' AAS and ACE-Q scores ($r = 0.036$, $P = 0.247$).

Table 3 summarizes the relationships between the participants' characteristics and their AAS scores. Accordingly, we discovered that the students enrolled in the Emergency Aid and Disaster Management (EADM) program and those not receiving psychological help had significantly higher AAS scores.

The distribution of adverse childhood experiences was as follows: psychological abuse was the most frequently reported form of child abuse (21.1%), followed by psychological neglect (14.7%) and physical abuse (12.7%). Sexual abuse was reported by 6.2% of participants and physical neglect by 1.6%. Regarding family dysfunction, parents' divorce or death was reported by 8.4%, followed by having a family member with mental health problems (7.3%), domestic violence (5.2%), substance abuse in the family (4.2%), and incarceration of a family member (4.1%). Overall, 36.8% of participants reported at least one ACE.

Table 1. Participants' demographic characteristics

Variables	N (%)
Gender	
Female	878 (82.5)
Male	186 (17.5)
Academic program	
Emergency Aid and Disaster Management	308 (28.9)
Nursing	481 (45.2)
Midwifery	188 (17.7)
Nutrition and Dietetics	60 (5.6)
Medicine	27 (2.5)
Year of study	
First-year	340 (32.0)
Second-year	259 (24.3)
Third-year	277 (26.0)
Fourth-year	188 (17.7)
Marital status	
Single	917 (86.2)
Married	12 (1.1)
Other romantic relationship	135 (12.7)
Income source*	
Family	916 (86.1)
Paid job	126 (11.8)
Scholarship	350 (32.9)
Smoking	
Yes	185 (17.4)
No	879 (82.6)
Alcohol use	
Yes	158 (14.8)
No	906 (85.2)
Regular physical activity	
Yes	336 (31.6)
No	728 (68.4)
Psychiatric disorder	
Yes	34 (3.2)
No	1030 (96.8)
Receiving psychological help	
Yes	102 (9.6)
No	962 (90.4)

*More than one option was marked as an income source

The relationships between the participants' above-mentioned characteristics and their ACEs scores are summarized in Table 4 below. In this regard, we concluded significantly higher ACEs scores among fourth-year students, smokers, alcohol users, those with a psychiatric disorder, those receiving psychological help, those with perceived family income less than expenses, those with an illiterate father, and those with separated parents, those with a bad parent-child relationship, those living with an older adult, those not desiring to live with an older adult in the future.

Table 2. Participant familial characteristics

Variables	N (%)
Perceived monthly family income	
Income less than expenses	315 (29.6)
Income matching expenses	658 (61.8)
Income more than expenses	91 (8.6)
Maternal educational attainment	
Illiterate	105 (9.9)
Primary school	545 (51.2)
Secondary school	176 (16.5)
High school	182 (17.1)
Undergraduate	48 (4.5)
Postgraduate	8 (0.8)
Paternal educational attainment	
Illiterate	13 (1.2)
Primary school	411 (38.6)
Secondary school	203 (19.1)
High school	294 (27.6)
Undergraduate	130 (12.2)
Postgraduate	13 (1.2)
Family structure	
Core family	922 (86.7)
Extended family	136 (12.8)
Other	6 (0.6)
Living with an older adult	
Yes	539 (50.7)
No	525 (49.3)
Parents' living together	
Together	960 (90.2)
Separated or divorced	59 (5.5)
Deceased	45 (4.2)
Parent-child relationship	
Good	775 (72.8)
Moderate	262 (24.6)
Bad	27 (2.5)
Desiring to live with an older adult family member in the future	
Yes	513 (48.2)
No	551 (51.8)

Discussion

The primary aim of this study was to examine the relationship between ageist attitudes and adverse childhood experiences among health sciences students. The results showed that participants demonstrated moderately positive attitudes toward older adults, with a mean total AAS score of 66.29, and that no statistically significant association was found between total AAS and ACE scores. In addition, certain demographic and educational characteristics were associated with differences in ageist attitude scores. The mean AAS score of 66.29 should be interpreted in the context of the possible score range (23-115) and the absence of an established cut-off value in the original validation study. Given that this value is above the theoretical midpoint of the scale, it may be considered indicative of moderately positive attitudes rather than strong positive ageism. Previous studies conducted among undergraduate health students have reported both negative and positive ageist tendencies depending on the instrument used and sample characteristics.[23-26] Our findings appear to fall within the range reported in earlier Turkish samples. Regarding subgroup differences, students enrolled in the Emergency Aid and Disaster Management program demonstrated comparatively lower attitude scores. Earlier research has similarly suggested that academic program and educational context may influence attitudes toward older adults.[22] However, given the cross-sectional design of this study, these differences should be interpreted cautiously, as unmeasured sociodemographic or contextual factors may contribute to the observed variation. Although students not receiving psychological help showed higher scores on the positive ageism subscale, psychological well-being was not directly measured in this study. Therefore, this finding should not be interpreted as evidence of a causal relationship but rather as a pattern that warrants further investigation.

Adverse childhood experiences (ACEs) encompass various forms of abuse, neglect, and household dysfunction occurring during childhood.[27] In the present study, 36.8% of participants reported at least one ACE. Although this prevalence appears lower than the rates reported in some previous studies 49.7%-86.7%,[13,14,28-30] it nevertheless indicates that exposure to childhood adversity is not uncommon among university students. Psychological abuse was the most frequently reported ACE, consistent with earlier findings in similar populations.[13,31] Consistent with prior research, higher ACE scores were observed among smokers and alcohol users,[14] participants with a psychiatric disorder,[13,30] those reporting lower income,[32] lower parental education,[13,14,32] parental separation,[33] and poorer parent-child relationships.[14] These findings align with established associations between early adversity and later psychosocial and behavioral outcomes. Importantly, no statistically significant association was identified between total AAS and ACE scores in this study. Although participants living with an older adult and those not wishing to live with an older adult in the future demonstrated higher ACE scores, these findings should be interpreted cautiously. The cross-sectional design does not allow determination of temporal or causal relationships, and unmeasured contextual or interpersonal factors may account for these subgroup differences. Therefore, while early life adversity and intergenerational attitudes may theoretically intersect, the present findings do not support a direct association between ACE exposure and ageist attitudes. One possible explanation for the absence of a significant association is that adverse childhood experiences may be more closely linked to trauma-related psychological outcomes than to socially constructed attitudes such as ageism. Furthermore, ageist attitudes may be influenced more strongly by current

Table 3. Comparison of some characteristics of the participants and their AAS scores

Variables	AAS							
	Restricting Life of the Elderly		Positive Ageism		Negative Ageism		Total Score	
	Mean (SD)	*P*	Mean (SD)	*P*	Mean (SD)	*P*	Mean (SD)	*P*
Program								
EADM	20.88 (5.24)		27.96 (6.12)		19.17 (4.33)		68.01 (11.53)	
Nutrition and Dietetics	18.95 (3.93)		27.93 (4.68)		17.93 (3.58)		64.82 (6.75)	
Midwifery	19.02 (3.96)	*0.001	28.54 (5.85)	‡0.571	17.46 (3.93)	*0.001	65.01 (9.30)	*0.002
Nursing	19.54 (3.81)		28.34 (5.28)		18.12 (3.62)		66.00 (8.03)	
Medicine	19.56 (3.17)		26.96 (6.87)		17.44 (4.45)		63.96 (9.85)	
Alcohol use								
Yes	20.30 (4.76)	†0.122	27.38 (5.44)	†0.046	19.11 (3.53)	†0.002	66.78 (8.90)	†0.473
No	19.72 (4.26)		28.35 (5.67)		18.13 (4.01)		66.20 (9.53)	
Receiving psychological help								
Yes	19.57 (4.91)	†0.566	27.00 (5.78)	†0.023	17.57 (4.48)	†0.057	64.14 (10.96)	†0.015
No	19.83 (4.28)		28.33 (5.62)		18.35 (3.89)		66.52 (9.24)	
Parent-child relationship								
Good	19.73 (4.20)		28.57 (5.55)		18.26 (3.88)		66.05 (9.02)	
Moderate	19.86 (4.57)	‡0.115	27.27 (5.95)	0.003	18.13 (4.18)	§0.032	65.26 (10.47)	‡0.067
Bad	21.48 (5.79)		26.96 (4.19)		20.22 (3.51)		68.67 (10.14)	
Living with an older adult								
Yes	20.07 (4.43)	†0.042	28.37 (5.83)	0.334	18.31 (4.00)	†0.816	66.75 (9.90)	†0.107
No	19.53 (4.24)		28.04 (5.46)		18.25 (3.92)		65.82 (8.92)	
Desiring to live with an older adult family member								
Yes	19.23 (3.94)	†0.001	29.42 (5.62)	0.001	18.00(3.92)	†0.027	66.65 (8.77)	†0.228
No	20.33 (4.63)		27.08 (5.44)		18.54(3.97)		65.95 (10.02)	

EADM: Emergency Aid and Disaster Management.
*One-way ANOVA and Games-Howell's test, ‡One-way ANOVA, †Independent samples t-test, §One-way ANOVA and Tukey HSD test

Table 4. Comparison of some characteristics of the participants and their ACEs scores

Variables	ACEs Scores	
	Mean (SD)	*p*
Year of study		
First-year	0.58 (1.52)	
Second-year	0.96 (1.57)	*0.001
Third-year	0.99 (1.62)	
Fourth-year	1.01 (1.71)	
Smoking		
Yes	1.34 (1.83)	†0.001
No	0.75 (1.39)	
Alcohol use		
Yes	1.26 (1.72)	†0.001
No	0.78 (1.44)	
Psychiatric disorder		
Yes	1.56 (1.48)	†0.005
No	0.83 (1.49)	
Receiving psychological help		
Yes	1.51 (1.76)	†0.001
No	0.78 (1.44)	
Perceived monthly family income		
Income less than expenses	1.17 (1.88)	
Income matching expenses	0.74 (1.30)	*0.001
Income more than expenses	0.55 (1.07)	
Paternal educational attainment		
Illiterate	2.00 (1.73)	
Primary school	0.90 (1.59)	
Secondary school	0.76 (1.42)	*0.024
High school	0.78 (1.46)	
Undergraduate	0.99 (1.35)	
Postgraduate	0.23 (0.43)	
Parents' living together		
Together	0.70 (1.28)	
Separated/Divorced	2.69 (2.17)	*0.001
Deceased	1.64 (2.53)	
Parent-child relationship		
Good	0.54 (1.09)	
Moderate	1.58 (1.94)	*0.001
Bad	2.93 (2.25)	
Living with an older adult		
Yes	0.96 (1.61)	†0.025
No	0.75 (1.35)	
Desiring to live with an older adult family member in the future		
Yes	0.63 (1.31)	†0.001
No	1.06 (1.62)	

*One-way ANOVA and Games Howell's test, †Independent samples t-test

educational, cultural, and socialization processes than by early life adversity. It is also possible that the relative homogeneity of the student sample limited variability in both constructs. Longitudinal and multivariate studies are needed to further clarify potential pathways.

Study Limitations

This study has several limitations that should be considered when interpreting the findings. First, the cross-sectional design precludes establishing temporal or causal relationships between ageist attitudes and adverse childhood experiences. Second, data were collected using self-report measures, which may be subject to recall bias, particularly regarding retrospective reporting of childhood adversity. Third, the use of a non-random convenience sampling method may limit the generalizability of the findings beyond the participating institutions. Finally, multivariate analyses were not

performed; therefore, potential confounding variables could not be fully controlled. Despite these limitations, the multicenter design and relatively large sample size strengthen the descriptive contribution of the study.

Conclusion

This study found that health sciences students demonstrated moderately positive attitudes toward older adults and that more than one-third reported at least one adverse childhood experience. No statistically significant association was identified between ageist attitudes and ACE scores. Although higher ACE scores were observed in certain subgroups, these differences do not indicate a direct relationship between early adversity and ageist attitudes. Overall, the findings suggest that ageist attitudes in this population may be influenced by factors other than adverse childhood experiences. Future longitudinal and multivariate research is needed to further explore potential mechanisms underlying attitudes toward aging.

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Authors' Contribution

Conceptualization: Melike Yalçın Gürsoy.
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Competing Interests

None of the authors has any conflict of interest with this study.

Data Accessibility

The datasets generated during the current study are not publicly available. Data may be made available from the corresponding author upon reasonable request and with the permission of the relevant institution.

Ethical Approval

Ethical approval for this study was obtained from the Scientific Research Ethics Committee of the Graduate School of Çanakkale Onsekiz Mart University (Decision No: 15/18, Date: 25.08.2022, Project No: 2022-YÖNP-0618). Institutional permissions were also obtained from all universities where the study was conducted. Participation was voluntary, and informed consent was obtained electronically from all participants via the consent form presented on the first page of the online questionnaire. The study was carried out in accordance with the principles of the Declaration of Helsinki.

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