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Translation and Preliminary Validation of the Turkish Version of an Ageism Scale for Dental Students

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ABSTRACT

Aims: Ageism, also known as age-based discrimination, refers to the discrimination individuals face due to their older adult status. This type of discrimination is recognized internationally as a problem that has negative effects on individuals. The Ageism Scale for Dental Students (ASDS) was developed to evaluate dental students' attitudes toward providing oral healthcare to older adults and has been successfully implemented across different cultures. The aim of this study is to translate and validate the ASDS in Turkish (ASDS-Tr).

Methods: This study utilized the original 27-item ASDS along with five demographic questions. The study group consisted of 270 undergraduate students from the Istanbul University Faculty of Dentistry.

Results: The scale items assessing dental students' attitudes toward older adults were analyzed using Principal Component Analysis (PCA). The final PCA model comprised 15 items and five components, explaining a total variance of 58.9%. The Cronbach's α coefficient for these 15 items was 0.582, indicating acceptable internal consistency.

Conclusion: ASDS-Tr has undergone a preliminary validation study for use in Turkey, yielding positive results. The preliminary validation of ASDS-Tr produced 15 items scale with five components with acceptable validity and reliability. This scale aims to effectively assess dental students' attitudes toward older adults in Turkey.

1 | Introduction

Aging is defined by components such as the evolution of an individual's life roles, decline in mental and physical abilities, and diminished adaptability to changing conditions. This process manifests as individual's progress in chronological age. Therefore, aging is a universal experience, a natural process characterized by physical, psychological, and social dimensions, where declines in individuals will occur over time and ultimately result in death [1].

The term "ageism" refers to discrimination against older adults, manifesting in various forms throughout an individual's life. It can be observed through systematic exclusion by peers and supervisors in the workplace, demeaning treatment from family members within the home, derogatory remarks or social avoidance in public contexts, denial of access to property or land, and exclusion from medical care in healthcare settings. These examples underscore the pervasive and widespread nature of age-related discrimination, impacting individuals from childhood to old age [2].

During the later years of life—defined by the World Health Organization as 65 years and older—several factors contribute to age-related discrimination. These factors include fear of death, excessive importance placed on youth and productivity, intergenerational conflicts, and lack of empathy, all of which contribute to and reinforce biases and stereotypes against older adults [3].

Ageism is expressed through cognitive biases and emotional attitudes that characterize older adults as sick, dependent, and a burden on the working population. Both aging and ageism have emerged as international issues with significant negative impacts on individuals [4].

The World Health Organization outlines three key strategies for combating ageism at the societal level: the implementation of policies and laws, the promotion of educational initiatives, and the facilitation of intergenerational contact interventions [2].

Dental students' attitudes toward older adults represent a critical determinant in both the accessibility and quality of geriatric oral healthcare services. Understanding how students think about older patients helps build a strong base for creating educational curricula that aim to reduce negative attitudes toward older adults in dental care.

The Ageism Scale for Dental Students (ASDS), a 27-item questionnaire designed by American and European gerodontology educators, has been successfully validated across different cultures to evaluate oral health care provided to older adults, particularly among dental students [5]. It has been validated for use in different countries such as the United States (ASDS), Greece (ASDS-Gr), Brazil (ASDS-Br), Romania (ASDS-Rom), and France (ASDS-Fr).

According to the Turkish Statistical Institute (TSI), individuals aged 65 and older constitute 8,451,660 (9.9%) of Turkey's total population. In 1935, the older adult population was seen as the smallest group compared to other age groups. However, toward the present day, there has been rapid growth in the older adult population, and its share within the total population is observed to be increasing. This trend of increase is expected to continue [6].

Despite this demographic shift, the opinions of dental students in Turkey regarding ageism have not yet been examined. The aim of this study is to validate the Turkish translation of the existing ASDS for use among dental students in Turkey.

2 | Material and Methods

2.1 | Data Collection

This study utilized the original ASDS, which consists of 27 items and five demographic questions. Considering the distinct characteristics of oral health services compared to medical care, this scale was specifically developed to examine age discrimination among dental students. The scale was created by a group of faculty members specializing in geriatric dentistry education from the United States and Europe, following a comprehensive literature review of existing age discrimination scales. New questions specific to dentistry were added to the scale derived from current age discrimination scales. The scale employs a 6-point Likert scale with no neutral option (strongly disagree - 1, disagree - 2, somewhat disagree - 3, somewhat agree - 4, agree - 5, strongly agree - 6).

2.2 | Translation and Cross-Cultural Adaptation

The 27-item ASDS was translated into Turkish by a team consisting of a professor, two PhD students, and a final-year dental student. Four translations were obtained. After a consensus meeting of the four translators, a consensus Turkish translation was obtained. The questionnaire was translated back into the original language by a bilingual translator who was totally blind to original questionnaire. Ambiguous expressions in translations were checked, and a preliminary version was obtained. Six experts participated in the study, evaluating a specific measurement tool using a scale from 1 (invalid) to 6 (completely valid) to determine the content validity of each item. As a result of the evaluations, Questions 2, 4, and 5 were found to have a high content validity index (CVI) of 1.00, while the remaining items exhibited moderate validity, with CVI values ranging from 0.67 to 0.83. The validity rates were deemed sufficient, and no revisions were necessary; this indicates that the measurement tool is appropriate for its intended purpose and adequately encompasses the relevant concepts. After then, twenty dental students were asked to conduct a pilot test. Each student completed the questionnaire, and their opinions regarding each item and selected responses were discussed. The meaning of questions and answers was reviewed.

2.3 | Study Group

The population of this study consists of 270 undergraduate students from the 4th and 5th years studying at Istanbul University Faculty of Dentistry during the 2023–2024 academic year. Prior to commencing the survey, information about the study's purpose was provided. It was emphasized that participation was voluntary and anonymous. The questionnaire includes questions about students' age, gender, year of study, how they perceive their place of residence, and whether they live with older adults.

2.4 | Statistical Analysis

Kaiser–Meyer–Olkin (KMO) and Bartlett's test of sphericity were used to assess the adequacy of the sample for factor analysis. KMO greater than 0.60 and Bartlett's significance with a p value < 0.05 were considered acceptable. A correlation matrix of all 27 items was evaluated to identify items potentially irrelevant or significantly associated with other items due to multicollinearity ($r \geq |0.80|$, maximum $r < |0.30|$). Specific items were excluded before proceeding to PCA. Items with factor loadings below 0.34 and items loading on multiple components were not included. All components with Eigenvalues > 1.0 were retained (Figure 1), and then the number of components to retain was determined using Scree Plot analysis and the variance added by each component [7]. This process continued until reaching the most robust set of items. Cronbach's $\alpha \geq 0.60$ was used as acceptable for assessing internal consistency reliability of the final components
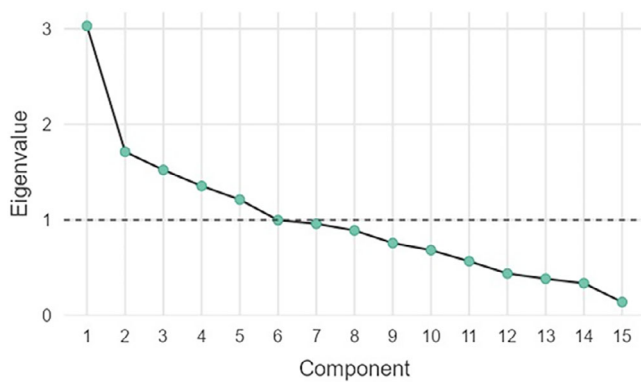
FIGURE 1 | Eigenvalue analysis.

[8]. Finally, independent samples *t*-tests were used to compare composite component scores according to basic demographic variables. All analyses were conducted using SPSS v25 developed by IBM, Inc., and all statistical comparisons were two-tailed. $p < 0.05$ was considered statistically significant.

3 | Results

This study involved 270 participants, of whom 65.6% were female and 34.4% were male. The mean age of participants was 22.804 ± 1.075 years, and their mean educational year was 4.556 ± 0.498. Of the participants, 17% reported being raised in a town/village, while 83% grew up in urban areas. Additionally, 36.3% indicated that they currently live or have lived with an older individual at home.

During the Principal Component Analysis (PCA) of the scale items regarding dental students' attitudes toward older adults, 12 items were removed as they did not show significant correlations with other items. The remaining data were deemed suitable for factor analysis, as indicated by a KMO measure of 0.616 and a significant Bartlett's Test ($p < 0.001$).

The final PCA model includes 15 items across five components, explaining a total variance of 58.9% (Table 1). The Cronbach's α reliability coefficient for these 15 items was 0.582, indicating weak but acceptable internal consistency.

The questionnaire used in the manuscript contains 32 Items and it is suggested to apply this questionnaire to 320 participants (32*10) in order to validate properly [9]. Participants of the study was conducted from a single center, and 270 participants successfully completed the questionnaire. Further studies, the sample size can be increased by multiple sample designs. This would also provide a higher Cronbach α coefficient, which is reported as 0.582, and can be increased to a value that is greater minimal acceptable Cronbach α coefficient (0.6)

Upon examining the components, Factor 1 includes items such as "Older adults often do not adhere to recommended treatment plans" and "Older adults have fixed ideas about what constitutes appropriate dental treatment," reflecting the challenges and resistance older adults present to dental students and treatment plans. Factor 2 encompasses items like "An older adult may not

live long enough to justify expensive dental treatment" and "An older adult may not live long enough to justify investing time and effort in complex dental treatments," focusing on how adults' life expectancy influences treatment decisions.

Factor 3 includes items that indicate students' sympathy and attention toward older adults, such as "I tend to show more sympathy toward my older adults compared to younger adults" (reverse coded) and "I tend to show more attention to my older adults compared to younger adults" (reverse coded). Factor 4 comprises items like "Taking medical histories from older adults is often complex" and "Taking medical histories from older adults is often time-consuming," highlighting the difficulties in obtaining medical histories from older adults.

Factor 5 includes items that reflect students' comfort and experience in dental treatments for older adults, such as "I feel comfortable treating adults with long medication lists" and "I have sufficient experience in geriatric dentistry."

When results from the five-factor ASDS were analyzed based on gender, statistically significant differences were not found between genders except for Factor 5 (geriatric dental practices). It was observed that female students (20.31 ± 2.34) scored significantly higher than male students (19.47 ± 2.92) on Factor 5 ($p = 0.011$) (Table 2).

When examined by class level, 4th-year dental students scored significantly lower on Factor 4 (difficulties in taking medical histories) with a score of 8.52 ± 2.20 compared to 5th-year students who scored 9.19 ± 2.00 ($p = 0.009$). This indicates that 4th-year students perceive more challenges in obtaining medical histories from older adults compared to their counterparts in the 5th year.

On the other hand, in Factor 5 (geriatric dental practices), 4th-year students scored significantly higher with a score of 20.41 ± 2.17 compared to 5th-year students who scored 19.71 ± 2.83 ($p = 0.027$). This suggests that 4th-year students feel more confident and have more positive attitudes toward dental practices for older adults compared to 5th-year students (Table 3).

When evaluated based on the region where students grew up, there is a significant difference in Factor 3 (empathy and interest toward older adults). Students who grew up in urban areas (10.47 ± 2.55) scored significantly higher on Factor 3 compared to those who grew up in rural areas (9.22 ± 2.77) ($p = 0.003$) (Table 4).

When evaluated based on living with older individuals, there is a significant difference in Factor 3 (empathy and interest toward older adults) of the ASDS. Students living with older individuals (9.73 ± 2.67) scored significantly lower on Factor 3 compared to students not living with older individuals (10.56 ± 2.57) ($p = 0.013$) (Table 5).

4 | Discussion

The ASDS-Turkey scale, which assesses attitudes toward older adults, consists of a structure of 15 items categorized into five different components. These components include adult compli-

TABLE 1 | Principal component analysis.

Total Cronbach α = 0.582	Factor				
	1 (α = 0.713)	2 (α = 0.918)	3 (α = 0.531)	4 (α =0.734)	5 (α = 0.218)
Q10 Older adults often do not accept recommended treatment plans	0.816				
Q11 Older adults have fixed ideas about what constitutes appropriate dental treatment	0.797				
Q14 Older adults generally do not follow dentist recommendations	0.633				
Q17 An older adult does not live long enough to justify investing in expensive dental treatment		0.931			
Q16 An older adult does not live long enough to justify spending time and effort on complex dental treatment		0.926			
Q6 I tend to feel more sympathy for my older adults than for my younger adults*			0.848		
Q5 I tend to show more interest in my older adults than in my younger adults*			0.790		
Q8 Older adults are generally in better condition in nursing homes			0.364		
Q3 Taking a medical history from older adults is often complex				0.893	
Q2 Taking a medical history from older adults is often time-consuming				0.850	
Q26 I feel comfortable treating an adult with a long medication list*					0.765
Q22 My experience in geriatric dentistry is sufficient*					0.629
Q4 I prefer to provide dental treatment to older adults rather than younger adults					−0.420
Q20 Cost is a significant barrier to dental care for many older adults					0.355
Q21 Dental treatment is generally successful in older adults*					0.347

Note: * indicates reversed items.

TABLE 2 | Comparison of factors by gender.

Factor	Gender		Mean diff. (95% CI)	p value
	Male (*n* = 93)	Female (n = 177)		
1	11.33 (2.66)	11.93 (2.50)	−0.593 (−1.237; 0.051)	0.071
2	5.30 (2.43)	5.51 (2.51)	−0.213 (−0.839; 0.413	0.503
3	10.23 (2.79)	10.28 (2.55)	−0.051 (−0.715; 0.613)	0.880
4	8.74 (2.12)	8.97 (2.11)	−0.224 (−0.758; 0.309)	0.409
5	19.47 (2.92)	20.31 (2.34)	−0.838 (−1.481; −0.195)	0.011

ance (Factor 1: 3 items), opinions about investing in treatment for older adults (Factor 2: 2 items), empathy and interest in older adults (Factor 3: 3 items), difficulties in obtaining medical history from older adults (Factor 4: 2 items), and dental practices for older adults (Factor 5: 5 items).

A discrimination scale developed in France consists of 10 items in three components, sharing seven items with the Turkish and French scales (Q14, Q11, Q10, Q17, Q16, Q22, Q26) [8]. Factor 1 in Turkey corresponds to Factor 1 in France and contains the same items (Q10, Q11, Q14). Both datasets include items in which older

TABLE 3 | Comparison of factors by educational year.

| Factor | Year of education | | Mean diff (95% CI) | *p* value |
	4th Grade (n=120)	5th Grade (n=150)		
1	11.82 (2.41)	11.64 (2.69)	0.185 (−0.434; 0.804)	0.557
2	5.32 (2.25)	5.54 (2.65)	−0.223 (−0.822; 0.375)	0.463
3	9.92 (2.64)	10.53 (2.60)	−0.617 (−1.248; 0.014)	0.055
4	8.52 (2.20)	9.19 (2.00)	−0.670 (−1.174; −0.166)	0.009
5	20.41 (2.17)	19.71 (2.83)	0.695 (0.078; 1.312)	0.027

TABLE 4 | Comparison of factors based on students' region of upbringing.

| Factor | Region of upbringing | | Mean diff. (95% CI) | *p* value |
	City (*n* = 224)	Town/village (n = 46)		
1	11.71 (2.56)	11.80 (2.61)	−0.099 (−0.918; 0.720)	0.812
2	5.49 (2.54)	5.20 (2.19)	0.295 (−0.495; 1.086)	0.463
3	10.47 (2.55)	9.22 (2.77)	1.256 (0.430; 2.082)	0.003
4	8.96 (2.14)	8.52 (1.99)	0.443 (−0.230; 1.116)	0.197
5	20.04 (2.61)	19.96 (2.46)	0.079 (−0.743; 0.902)	0.850

TABLE 5 | Comparison of factors based on living with older individuals.

| Factor | Living with an older individual | | Mean diff (95% CI) | *p* value |
	No (n = 172)	Yes (n = 98)		
1	11.80 (2.55)	11.59 (2.60)	0.205 (−0.435; 0.845)	0.529
2	5.58 (2.53)	5.19 (2.38)	0.388 (−0.229; 1.005)	0.217
3	10.56 (2.57)	9.73 (2.67)	0.823 (0.175; 1.472)	0.013
4	8.98 (2.05)	8.72 (2.22)	0.258 (−0.269; 0.785)	0.336
5	19.87 (2.58)	20.30 (2.57)	−0.430 (−1.071; 0.212)	0.188

adults do not comply with dental recommendations and do not accept proposed treatment plans, indicating a similar perception of resistance during treatment processes in both French and Turkish societies. Factor 2 in Turkey and Factor 2 in France are also identical. In both French and Turkish datasets, there is a high perception that older adults will not live long enough to justify expensive and complex dental treatments. These similarities indicate a common concern among Turkish and French dental students about the cost-effectiveness of dental care for older adults. In France, attention was also drawn to the responsibility of the government in providing dental care for older adults.

The discrimination scale developed in Switzerland consists of 11 items in four components [10], with five items overlapping with the Turkish scale. In the Turkish scale, Q10, Q11, and Q14 are included in the adult compliance component (Factor 1). In Switzerland, Q10 and Q11 are included under adult compliance (Factor 1) and Q14 under perceptions of the older adults (Factor 2). This suggests that Swiss dental students consider non-adherence to dental recommendations by older adults as part of their general health and care attitudes. While Turkish dental students focus more specifically on issues related to treatment compliance, Swiss

dental students take a broader perspective on the general health attitudes of the older adults. In Turkey, Q20 and Q22 are included under dental practices for older adults (Factor 5), whereas in Switzerland, perceptions about the older adult (Factor 2) and perspectives of dental students (Factor 4) are included.

The scale developed in Romania includes 10 items in three components [11], sharing five items with Turkey (Q5, Q6, Q16, Q2, Q22). These similarities suggest that both Turkish and Romanian students show empathy and respect for older adults but concerned about the cost of dental treatment for older adults.

In Brazil and Turkey, difficulties in obtaining medical histories from older adults and communication challenges show similarities, as Factor 4 in Turkey (difficulties in obtaining medical histories from older adults) and Factor 2 in Brazil (complexity of caring for homebound older adults) contain the same questions (Q2, Q3, Q4, Q5) [12]. This highlights similar barriers faced by dental professionals in both countries during communication and history taking. In addition, in Brazil, this factor includes an item on the cost of providing out-of-hours dental care to homebound older adults.

The ASDS developed in Iran consists of an 18-item structure divided into four components [13], with 10 items shared with Turkey. In the Iranian version, items including barriers and concerns to dental care for older adults (Factor 1). In the Turkish version, Q11 and Q14 are under adult compliance (Factor 1), while Q2 and Q3 are under difficulties in obtaining medical history from older adults (Factor 4). The Turkish focus on specific challenges in obtaining a history highlights the importance of education and awareness in this area. This suggests that Turkish dental professionals are making efforts to understand the specific challenges they face when working with older adults. In Iran, perceptions related to adult compliance are addressed within a broader context of barriers and concerns, providing a broader perspective on interactions with older adults. Q16 and Q17 are categorized in Turkey under opinion about investing in the treatment of older adults (Factor 2). In Iran, these items are included under perceptions of the older adults (Factor 2). This suggests that Turkish dental students evaluate these issues within a narrower framework, assessing the rationality of investing in treatment decisions.

In all datasets (Turkey, Greece, Brazil, Romania, the United States, France, Serbia, Iran, Malay, and Polish), the only item that appeared was Q17 ("An older adult will not live long enough to justify spending money on expensive dental treatment") [5, 8–17]. This item relates to concerns about the potential benefits of offering expensive treatments to older adults. Such concerns will persist until oral health is integrated into general health policy.

Significant differences were observed in Factor 4 (challenges in obtaining medical history from older adults) according to the results of the 4th and 5th year students. This disparity may be related to the fact that 5th year students have more clinical experience and a more intensive program of clinical practice and other academic commitments.

Factor 3 (empathy and concern for older adults) showed significant differences based students' living situations and places of upbringing. Individuals who grew up in small towns or villages and those who have lived or currently live with older adults tend to show greater empathy and concern for older adults. This may be because individuals who have not lived with older people may perceive the challenges, needs and experiences of aging as fundamentally different from their own life experiences. There are several possible reasons why people who grew up in small towns or villages might show more empathy and concern for older people than those who grew up in urban areas. First, small towns or villages tend to create smaller, more close-knit communities. In these environments, people know each other better and social ties are stronger. This can lead to more frequent interactions with older people and greater sensitivity toward them. Secondly, the fast-paced lifestyle of large cities can weaken personal connections between individuals and reduce sensitivity toward older people. As a result, a tendency toward greater empathy and concern for the older adults may be observed among those who grew up in small towns or villages. This phenomenon could be based on various components, including cultural and social differences, as well as lifestyle and social structure.

The ASDS is a valuable tool for evaluating attitudes toward older adults, but developing an international version presents unique challenges. To overcome these challenges, a culturally sensitive approach should be adopted. This approach may include cultural ethnography and focus group studies to understand how different cultural groups perceive aging and shape attitudes toward older adults. In this context, the development of an international ASDS is essential to reduce ageism and improve dental care for the older adults. A culturally sensitive scale can assess attitudes toward older adults in different cultural contexts and promote better approaches in health services. This approach can help to reduce ageism in health services for older adults and to support older adults more effectively.

An international ASDS initiative could develop strategies to improve access to dental health services for older adults at both local and global levels. For example, this initiative could improve cultural sensitivity in dental education and promote age-friendly approaches in clinical practice, enabling health professionals to communicate more effectively with older adults.

As a result, an international ASDS initiative has the potential to create an effective platform to ensure that older people receive better dental health services and reduce the health problems they face in old age. These efforts will contribute to healthier aging and enable older adults to participate more actively in society.

5 | Conclusion

The preliminary validity of the ASDS-Tr (Ageism Scale for Dental Students—Turkish version) for use in Turkey was encouraging, as it did not reveal any significant problems with translation, item relevance, or content validity. As a result, a 15-item scale with acceptable validity and reliability was established, structured around five components. This study has some limitations, such as the limited sample size and only one university participating in the study. In future studies, larger sample size, including multiple areas of the country should be used.

Conflicts of Interest

All authors have read and approved submission of the manuscript and the manuscript, or part of it, has neither been published nor is currently under consideration for publication by any other journal. The authors have no conflict of interest to declare.

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