

# Is social appearance anxiety a reason for rejecting a hearing aid in geriatric patients?

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**Abstract. – OBJECTIVE:** Hearing impairment is a global health problem due to its impact on quality of life and communication problems between individuals. Hearing aids are the recommended intervention, but use of hearing aids is low. In this study, the effect of social appearance anxiety on the decision to use a hearing aid was investigated.

**PATIENTS AND METHODS:** The study comprised 107 individuals aged 65-81 years who were offered hearing aids due to bilateral severe or moderate sensorineural hearing loss. The patients were divided into three groups, according to their hearing aid preferences and usage decisions. Social appearance anxiety scale was applied to all patients.

**RESULTS:** The mean age of the 107 patients included in the study was 70.19±5.35 years. The social appearance anxiety scores of those who did not want to use a hearing aid were much higher than those of whom desired to use a behind-the-ear or in-canal hearing aid. The social appearance anxiety scores of the patients who wanted to use in-canal hearing aids were also higher than the group who wanted to use behind-the-ear hearing aids.

**CONCLUSIONS:** In this study, which focused on the hearing aid candidate group who had never obtained a device, rather than why they stopped using a hearing aid, it was assumed that social appearance concern was relevant in the phase of receiving a hearing aid.

*Key Words:*

Hearing aid, Social appearance anxiety, Geriatrics, Hearing loss, Stigma.

## Introduction

Hearing impairment is a global health problem due to its impact on quality of life and communication problems between individuals<sup>1</sup>. Individuals with hearing loss who are unable to communicate healthily might suffer from

social isolation, loneliness, depression, anxiety, family troubles, and vocational challenges<sup>2,3</sup>. It is estimated that one out of ten people will have hearing loss by 2050. As it is known, hearing loss is generally associated with aging and its prevalence increases with age. It is stressed that hearing loss affects more than 25% of people in their sixth decade<sup>4</sup>. According to several recent research<sup>5-7</sup>, hearing loss in the elderly is linked to disorders such as dementia, dementia, and cognitive dysfunction. Auditory rehabilitation is very important in the case of aging-related hearing loss to avoid or ameliorate its detrimental consequences on quality of life<sup>8</sup>. Amplification of the sound during the rehabilitation phase is the recommended method for individuals with hearing loss. For this, technical hearing aids that have been shown to improve communication and improve quality of life are employed<sup>9,10</sup>. Despite the developments in hearing aids, in parallel with the development of technology and the negative consequences associated with hearing loss, the rate of use of hearing aids is still low. According to this viewpoint, just one out of every five persons who would benefit from hearing aids uses hearing aids, and poor use of hearing aids in older people remains a serious problem<sup>10</sup>. It is critical to determine why hearing aids are not used by those who require them in nations where audiological services are provided correctly<sup>11</sup>. In surveys of people over the age of 65 on why they do not use hearing aids, factors such as the expense of hearing aids and making the existing handicap obvious stand out. While some studies<sup>12,13</sup> reported several causes, such as a lack of perceived benefit and denial of hearing loss, it is noted that one of the most difficult reasons to overcome is the social stigma associated with device use. In their study on hearing loss and stigma, Saatçi et al<sup>14</sup> underlined that the reasons for patients not acquiring hearing aids

include external appearance issues, such as the hearing aid being observed from the outside, and the hearing aid portraying the user as elderly and crippled. Therefore, it is evident that social appearance anxiety may also be effective in the decision to use the device, since the great majority of people attempt to create a good impression on others and to appear appealing, and they try to communicate more with attractive people<sup>15</sup>. People who feel that they cannot make a good impression on the other party experience anxiety<sup>16</sup>. The idea of social appearance anxiety, according to Hart et al<sup>17</sup>, relates to a more nuanced and holistic condition that goes beyond general physical appearances such as height, weight, and muscular structure. Unfavorable body image refers to an individual's negative ideas and sentiments regarding her/his body or any organ in general, such as finding herself significantly less beautiful than other people, feeling uncomfortable about her/his body, and being embarrassed by her/his body. Positive body image expresses the satisfaction of the individual with her/his body<sup>18-20</sup>. Social appearance anxiety can be evaluated as a result of the individual's negative body image about body and appearance<sup>15</sup>.

This research included people over the age of 65 who had never used or tried a hearing aid and had moderate to severe sensorineural hearing loss based on audiometric examination. Social appearance anxiety was studied separately in individuals who refused to use in-canal or behind-the-ear hearing aids for any known cause but favored in-canal and behind-the-ear hearing aids. It was examined whether social appearance anxiety was effective in the decision to use a device.

## Patients and Methods

### *Pattern and Sample of the Study*

The research comprised 107 participants aged 65-81 years who were advised to use hearing aids owing to hearing loss and who applied to the Otorhinolaryngology Polyclinic between October 2021 and February 2022. General otolaryngological examination was performed at the first admission to the patients. After a detailed otomicroscopic examination, the patients were referred to the audiology unit. Patients who matched the inclusion criteria and were determined to have moderate to severe sensorineural hearing loss following the audiometry test were included in the research. Those who were recommended,

tried, or not used hearing aids before were excluded from the study. Hearing aids were offered to 107 patients included in the study. In-canal hearing aid and behind-the-ear hearing aid were introduced by the doctor and audiologist to the patients with video. During the presentation, the sound level was adjusted considering the hearing thresholds of the patients in pure tone audiometry. The current average cost of the devices, as well as the device procurement procedure, were detailed. Information about the advantages and disadvantages of both devices was given. Afterwards, patients were asked by the doctor if they wanted to use hearing aids. Patients who did not meet the inclusion criteria were excluded from the study. Participation in the study was selected voluntarily, and all patients who accepted to participate in the study were given an Informed Consent Form for Scientific Research. The study was conducted in accordance with the Declaration of Helsinki. All steps of the study were explained to the patients. Patients who met the inclusion criteria and agreed to participate in the study were divided into three groups. The patients included in Group 1 were determined as the control group of the study.

Group 1: Patients who wanted to use behind-the-ear hearing aids (Control Group);

Group 2: Patients who wanted to use in-canal hearing aids;

Group 3: Patients who were aware of their hearing loss but did not want to use a hearing aid for any known reason.

After this stage, the patients were referred to the psychiatrist for the second step of the study. Patients with any known psychiatric disorder were excluded from the study. All patients were evaluated by the same psychiatrist. The Social Appearance Anxiety Scale (SAAS) was administered to patients in outpatient clinic settings by a psychiatrist who was unaware of the patients' decision to wear hearing aids (without knowing which group the patients belonged to). The total scores of the patients from the scale were recorded.

### *Inclusion Criteria*

- Patients aged 65 and over (regardless of gender).
- Patients without any diagnosed psychiatric disorder.
- Patients with bilateral moderate or severe sensorineural hearing loss.

### **Exclusion Criteria from Study**

- Illiterate patients.
- Patients with clinically evaluable intellectual disability.
- Patients who declined to participate in the study once the study goal and methods were explained.
- Patients who fitted the definition of sudden hearing loss.
- Patients with one ear that had normal or near-normal hearing.
- Patients who did not want to buy a device due to financial concerns.
- Patients with pathology that prevented them from using the device anatomically.
- Patients younger than 65 years.
- Patients diagnosed with otosclerosis or chronic otitis media.
- Patients who had substantial eye issues and were unable to complete the information component of the research in the first stage.
- Patients with congenital hearing loss whose language-speech skills were not sufficiently developed.

### **Data Collection Tools**

#### *Audiological evaluation*

The same audiologist performed audiometry testing on all patients in suitable settings. The degree of hearing loss was calculated based on the average of four frequencies (500, 1,000, 2,000 and 4,000 Hz) for each ear. Normal hearing was defined as 25 dB or less, mild hearing loss 26-40 dB, moderate hearing loss 41-60 dB, severe hearing loss over 61 dB<sup>21</sup>. Patients with moderate or severe sensorineural bilateral symmetrical hearing loss were included in the study.

#### *Sociodemographic data form*

A data form consisting of four questions was applied, questioning the patients' gender, age, and how long they had had hearing loss.

#### **Social Appearance Anxiety Scale**

The SAAS was administered to the patients who volunteered after the information. The SAAS is a 5-point Likert-type scale consisting of 16 items. It has an answer key of (1) Not at all Appropriate, (2) Not Appropriate, (3) Somewhat Appropriate, (4) Appropriate, (5) Completely Appropriate. Item 1 of the scale is coded in reverse. High unidimensionally measured social appearance anxiety scores imply that appearance anxiety is severe. It is a scale developed by Hart

et al<sup>17</sup> to measure the emotional, cognitive, and behavioral concerns of the individual regarding his/her appearance. Turkish adaptation of the scale was used, and the validity and reliability study was performed by Doğan<sup>15</sup>.

#### **Statistical Analysis**

IBM SPSS 21.0 (IBM Corp., Armonk, NY, USA) for windows statistical package program was used for the statistical evaluation of our research data. Measured variables were presented as mean  $\pm$  standard deviation (SD), and categorical variables were presented as numbers and percentages (%). It was checked whether the data conformed to the normal distribution. Kruskal-Wallis H Test was used to compare more than two groups that did not show normal distribution. Bonferroni correction was made, and the Mann-Whitney U test was used for pairwise comparison of the groups. Chi-square ( $\chi^2$ ) test was used to compare qualitative variables between groups. The hypotheses were two-sided, and a statistically significant result was accepted if  $p \leq 0.05$ .

### **Results**

Of the 107 patients included in the study, 45 (42.1%) were female and 62 (57.9%) were male. The mean age of the patients was  $70.19 \pm 5.35$  years. Patients were divided into three groups according to the decision of using hearing aids. The mean age of the patients in Group 1 (who wanted to use a behind-the-ear hearing aid) was  $71.79 \pm 6.81$  and the mean duration of hearing loss was  $6.89 \pm 3.30$ . The mean age of the patients in Group 2 (who want to use a canal hearing aid) was  $68.65 \pm 2.87$ , and the mean duration of hearing loss was  $8.62 \pm 6.78$ . The mean age of the patients in Group 3, who were aware of hearing loss but did not want to use a hearing aid without stating any known reason, was  $70.19 \pm 5.03$  years and the mean duration of hearing loss was  $9.63 \pm 7.34$ . There was no significant difference between the patients in all three groups in terms of age ( $p=0.693$ ) and duration of hearing loss ( $p=0.590$ ) (Table I).

When the air and bone conduction hearing thresholds in pure tone audiometry (500, 1,000, 2,000 and 4,000 Hz) of the patients are evaluated separately for both ears. Hearing thresholds in pure tone audiometry of the patients in Group 1 were  $56.50 \pm 14.96$  for the right ear,  $53.39 \pm 13.19$

**Table I.** Evaluation of demographic data of patients.

	Group 1	Group 2	Group 3	<i>p</i>
Age (mean ± SD) (year)	71.79 ± 6.81	68.65 ± 2.87	70.19 ± 5.03	0.693
Gender				
Female (n) (%)	16 (42.1%)	8 (23.5%)	21 (60.0%)	0.009
Male (n) (%)	22 (57.9%)	26 (76.5%)	14 (40.0%)	
Total (n)	38	34	35	
Duration of hearing loss (mean ± sd) (years)	6.89 ± 3.30	8.62 ± 6.78	9.63 ± 7.34	0.590

sd: standard deviation; Group 1: Control group, group who wanted to use behind-the-ear hearing aid; Group 2: Group who wanted in-canal hearing aid; Group 3: Group who did not want hearing aid.

dB for the bone conduction. For the left ear, the airway was evaluated as 58.26±12.52 dB and the bone conduction as: 55.03±11.33 dB.

The hearing thresholds in pure tone audiometry of the patients in Group 2 airway was 54.12±10.66 dB for the right ear, the bone conduction was 50.91±9.68. For the left ear, the airway was evaluated as 53.06±8.43 dB and the bone conduction as 51.03±7.89 dB.

While the hearing thresholds in pure tone audiometry of the patients in Group 3, airway was 50.47±4.45 dB for the right ear, bone conduction was 50.17±4.42 dB. The airway for the left ear was evaluated as 52.91±7.56 dB and bone conduction 52.11±6.85 dB. There was no statistically significant difference in the mean airway and bone conduction pure-tone hearing thresholds of the three groups. Based on the mean thresholds at the frequencies indicated in all three groups, it was found that all three groups had an average of mild sensorineural hearing loss (Table I).

To investigate the influence of social appearance anxiety on the choice to wear hearing aids, the groups were compared using the SAAS scores. The SAAS ratings of the groups were found to be

statistically substantially different ( $p<0.001$ ). The ratings of patients in Group 3 who did not wish to use either in-canal or behind-the-ear hearing aids were considerably higher than those of the other two groups (Table III).

When the groups' SAAS scores were compared, it was discovered that Group 2 SAAS scores were considerably higher than Group 1 scores ( $p<0.001$ ) (Table IV). The scores of Group 3 patients were considerably higher than the scale scores of both Group 1 ( $p<0.001$ ) (Table V) and Group 2 patients ( $p<0.001$ ) (Table VI).

## Discussion

Hearing aids are now the recommended solution, particularly for people with elderly hearing loss, and with technical advancements, analog devices have been replaced with digital hearing aids. Digital hearing aids offer a number of advantages over analog hearing aids, including greater comfort. Despite advancements in hearing aid technology, however, utilization remains low, and underuse of hearing aids among older

**Table II.** Audiometric data of the patients.

Pure Tone Audiometry (500, 1,000, 2,000 and 4,000 Hz) Hearing thresholds				
	Right Ear		Left Ear	
	Air way Hearing Threshold (dB) (mean ± sd)	Bone Conduit Hearing Threshold (dB) (mean ± sd)	Air way Hearing Threshold (dB) (mean ± sd)	Bone Conduit Hearing Threshold (dB) (mean±sd)
Group 1	56.50 ± 14.96	53.39 ± 13.19	58.26 ± 12.52	55.03 ± 11.33
Group 2	54.12 ± 10.66	50.91 ± 9.68	53.06 ± 8.43	51.03 ± 7.89
Group 3	50.47 ± 4.45	50.17 ± 4.42	52.91 ± 7.56	52.11 ± 6.85
<i>p</i>	0.906	0.254	0.080	0.147

sd: standard deviation; Group 1: Control group, group who wanted to use behind-the-ear hearing aid; Group 2: Group who wanted in-canal hearing aid; Group 3: Group who did not want hearing aid.

**Table III.** Comparison of the scores of the patients on the Social Appearance Anxiety Scale according to the decision to use hearing aids.

Groups	N	(Mean $\pm$ sd)	Median	H	<i>p</i> *
Group 1	38	24.84 $\pm$ 8.63	22.00	57.659	< 0.001
Group 2	34	43.53 $\pm$ 13.74	41.50		
Group 3	35	54.71 $\pm$ 11.42	59.00		

N: number, sd: standard deviation, Group 1: Control group, group that wants to use behind-the-ear hearing aids, Group 2: Group that wants to use in-channel hearing aids, Group 3: Group that does not want hearing aids, *p*\*: Kruskal-Wallis H test statistical significance value, H: Kruskal-Wallis H Test *t* value.

**Table IV.** Pairwise comparison of Group 1 and Group 2 according to the scores obtained from the Social Appearance Anxiety Scale.

Groups	N	Median	Mean Rank	U	<i>p</i>
Group 1	38	22.00	23.53	153.00	< 0.001
Group 2	34	41.50	51.00		

N: Number, Median: Median value, Mean Rank: Mean Ranks, U: Mann-Whitney U test value, *p*: statistical significance value. Group 1: Control group, group that wants to use behind-the-ear hearing aid, Group 2: Group that wants in-canal hearing aid.

**Table V.** Pairwise comparison of Group 1 and Group 3 according to the scores obtained from the Social Appearance Anxiety Scale.

Groups	N	Median	Mean Rank	U	<i>p</i>
Group 1	38	22.00	20.80	49.500	< 0.001
Group 3	35	59.00	54.59		

N: Number, Median: Median value, Mean Rank: Mean Ranks, U: Mann-Whitney U test value, *p*: statistical significance value. Group 1: Control group, group that wants to use behind-the-ear hearing aid, Group 3: Group that does not want hearing aids.

**Table VI.** Pairwise comparison of Group 1 and Group 2 according to the scores obtained from the Social Appearance Anxiety Scale.

Groups	N	Median	Mean Rank	U	<i>p</i>
Group 2	34	41.50	27.69	346.500	<0.001
Group 3	35	59.00	42.10		

N: Number, Median: Median value, Mean Rank: Mean Ranks, U: Mann-Whitney U test value, *p*: statistical significance value. Group 2: Group that wants in-canal hearing aid, Group 3: Group that does not want hearing aids.

persons remains an unsolved issue<sup>9,22</sup>. This study aimed at investigating the relationship between social appearance anxiety and the decision to use hearing aids. When the study data were analyzed, it was shown that the group that did not want to use a hearing aid had much higher ratings in terms of social appearance anxiety than the group who wanted to use a behind-the-ear or in-canal hearing aid. The social appearance anxiety ratings of patients who wanted to use a

hearing aid but did not want it to be seen from the outside and hence chose an in-canal hearing aid were higher than those who wanted to use a behind-the-ear hearing aid in tandem with these preferences.

Although it is explicitly stated that the devices improve hearing and boost the quality of life, research on why hearing aids are not utilized in the elderly shows that the device utilization rates worldwide are not at the desired level due

to a variety of factors such as comfort, maintenance, background noise, cost-related concerns, psychological, and other aspects of the devices. Studies<sup>22,23</sup> on this subject focus more on why the device is discontinued after acquiring it. Our study, on the other hand, concentrates on the initial phase of the device acquisition process in this patient group and evaluates the hearing aid acquisition attitudes of hearing aid applicants who have never used a device and have not yet used one. Using the social appearance anxiety measure, we are the first to investigate the association between the choice to acquire a hearing aid and social appearance anxiety in this age range.

Because most of the information is delivered to the patient verbally throughout the patient examination and hearing aid using procedure, the information's durability is minimal, and most patients forget it. Providing quality information, especially for those who will use hearing aids for the first time, can help solving many of the hearing aid usage problems. Ferguson et al<sup>24</sup> study underscored the need of using hearing aids and visual materials to give information about the device, particularly in patients with hearing loss who were using a hearing aid for the first time. As a result, in this study, hearing aid user candidates were provided thorough information about how the devices could be used, their advantages, and the sorts of devices that could be desired, supported by films. It was intended to reduce the potential lack of information element in hearing aid usage decisions by raising patients' knowledge of the potential issue using this way.

There are studies<sup>25,26</sup> showing that there is a direct relationship between the degree of hearing loss and the acquisition of hearing aids. Because individuals with modest hearing loss experience fewer hearing problems than those with more severe hearing loss, they may be less conscious of these challenges<sup>25</sup>. To remove this influence on the choice to use hearing aids and prevent bias, we included only individuals with moderate to severe sensorineural hearing loss in our study. Therefore, the effect of this lack of awareness on the decision to use hearing aids was excluded by excluding patients with hearing loss at this level.

Knudsen et al<sup>26</sup> noted that gender and age had no bearing on seeking assistance for hearing loss, purchasing hearing aids, or wearing hearing aids. The impacts of gender and age parameters on the choice to use hearing aids and SAAS scores were not explored individually in our study, and a more holistic approach was taken.

One of the main problems with the hearing aid use is cost-related problems<sup>22</sup>. To eliminate bias for not using a device due to financial worries, patients who could afford to buy both in-canal and behind-the-ear hearing aids were included in the study, taking into account the typical device pricing at the time of the study elaboration.

Contrary to expectations, the rate of stating the appearance of the device as a reason for not using the device is low in patients who do not acquire or use a device. This has been found to be important, since device-induced stigma can be a more significant barrier to acquiring hearing aids. This is because persons who are concerned about their appearance may be less likely to get their hearing tested and subsequently utilize a hearing aid<sup>22,27</sup>.

In their study, Meister et al<sup>28</sup> emphasized that stigma is an important parameter in the using of hearing aids. The association between device use choice and social appearance anxiety in device use candidates was investigated in this study by removing the most significant barriers to hearing aid usage. It was suggested that the fear of stigma felt during the device using procedure was an indirect outcome of these patients' social appearance concerns. Individuals with outwardly evident differences may feel appearance anxiety, which can be upsetting and interrupt everyday functioning<sup>29</sup>.

In our study, the group that did not wish to utilize hearing aids had considerably greater social appearance anxiety levels than the other two groups. The scores of those who approved the use of hearing aids and chose to use an in-channel hearing aid were considerably higher than those of the control group (who wanted to use a behind-the-ear hearing aid). These patient group preferences to use this sort of device, which is not easily recognized even when very attentively viewed from the outside, can also be connected with social appearance concerns since, according to Hart et al<sup>17</sup>, social appearance anxiety refers to a more nuanced and holistic condition that extends beyond general physical appearances such as height, weight, and muscular structure. Based on this definition, patients may also feel anxiety for an unnoticeable situation when viewed from the outside.

### **Limitations**

The study's drawbacks include the small number of patients and the fact that psychotherapy treatment, which may be undertaken in individuals who refuse to obtain hearing aids, has not been explored with a multidisciplinary approach.

## Conclusions

Contrary to previous studies, rather than exploring why people abandoned using hearing aids, this study is focused on why the hearing aid was never acquired and emphasizes that social appearance anxiety may be the root cause of this problem. In addition, it was thought that a multidisciplinary team should work in the device acquisition process and that a psychiatrist could contribute to this team in the device acquisition process. After a comprehensive anamnesis, a multidisciplinary evaluation method can be used for individuals who are suspected of having social appearance anxiety, and a psychiatrist can be involved in the team. Although it is not the focus of this research, acceptance and commitment therapy can help with appearance anxiety by developing psychological flexibility<sup>29</sup>. Patients who do not wish to acquire gadgets owing to social appearance anxiety may be questioned again by the psychiatrist in multidisciplinary working order after acceptance and determination treatment in future research on the issue.

### Conflict of Interest

The Authors declare that they have no conflict of interests.

### Ethics Approval

This study was performed in line with the principles of the Declaration of Helsinki. Ethics committee approval for this prospective study was obtained from University Faculty of Medicine Non-Interventional Clinical Research Ethics Committee (Meeting date/number: 13.10.2021/432).

### Informed Consent

Informed consent was obtained by patients who volunteered to participate in the study.

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### Authors' Contribution

All authors contributed substantially to this study and are in agreement with the content of the manuscript. Conception/

design: Bilal Sizer, Songül Demir; Provision of study materials: Bilal Sizer, Songül Demir; Collection and/or assembly of data: all authors; Data analysis and interpretation: all authors; Manuscript writing: all authors; Final approval of manuscript: all authors.

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