

## RESEARCH ARTICLE

# Persian version of attitudes towards loss of hearing questionnaire

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### Abstract

**Background and Aim:** Investigations have shown that the patient's attitudes toward hearing loss and hearing aids impact hearing aid benefits and its use. In this regard, Saunders and Cienkowski (1996) developed the "attitudes towards loss of hearing questionnaire" to examine some of the psychosocial factors underlying the use of hearing aids. This study has focused on preparing a Persian version of this questionnaire and analyzing its validity and reliability.

**Methods:** The original English version of the questionnaire was translated into Persian, and its content and face validities were determined by related experts. The final questionnaire was administered to 100 hearing impaired people (52 males and 48 females) aged 30 to 65 years with the mean (SD) age of 54.54 (12.05) years. The test-retest reliability was assessed in 20 patients.

**Results:** The results of face validity assessment revealed that our questionnaire has a high quality in translation, intelligibility, and cultural

compatibility. The mean scores of the content validity ratio and content validity index of this questionnaire was 0.71 and 0.98, respectively. The mean (SD) total score of this questionnaire was 60.46 (10.02) and the mean scores of denial of hearing loss, negative associations, negative coping strategies, manual dexterity and vision and hearing-related esteem were 15.58, 12.10, 20.40, 5.30, and 7.08, respectively. The overall Cronbach  $\alpha$  value was 0.798. The test-retest reliability showed good results for the global score (Intraclass correlation = 0.989).

**Conclusion:** Based on the obtained results, the Persian version of the questionnaire possesses satisfactory validity and reliability.

**Keywords:** Attitudes; hearing loss; questionnaire; hearing aid; reliability; validity

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### Introduction

Pure tone and speech audiometry tests are not reliable tools for predicting the results of using

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hearing aids in the real world, and their results are not significantly related to the amount of hearing aid used in everyday life [1]. In recent years, researchers have also found that psychological attitudes toward hearing loss and hearing aids affect the outcomes of using hearing aids. Studies have shown that the use of hearing aids is lower among those who report a negative attitude toward hearing aids [2]. In other words, non-auditory factors such as expectations before using a hearing aid, motivation, and desire to have hearing aids, stigma, and individual characteristics are all related to the satisfaction of hearing aids, its usage, or benefits. For this reason, new questionnaires have been developed that are rapidly and effectively evaluate psychological attitudes [3-6].

Attitudes towards Loss of Hearing Questionnaire (ALHQ) was first published in 1996 by Saunders and Cienkowski [7]. It includes 22 questions in five subscales of denial of hearing loss, negative associations, negative coping strategies, manual dexterity and vision and hearing-related esteem. The five questions of this questionnaire differ between hearing aid users and non-hearing aid users. The questionnaire was developed with two main goals: first, as a tool to clarify some of the psychological issues that lead to the rejection of hearing aids, and second, as a counseling tool before the hearing aid is set up. Unlike most questionnaires that are available to audiologists, ALHQ is neither a tool for measuring hearing loss or hearing impairment, nor a tool for examining the outcome, but a tool to clarify some of the psychological attitudes towards hearing loss and hearing aids, which may lead to not using hearing aids [3].

When the patient's ALHQ scores on a subscale show a negative attitude, the clinician can use these models to give some advice to the patient [8]. The questionnaire has also been translated into Korean [9] and Portuguese [10]. The aim of this study was to provide a Persian version of ALHQ and to evaluate its validity and reliability.

## Methods

The present study had three parts of translation, evaluation of validity and reliability, and acquisition of the Persian version of the ALHQ.

### *Translation*

After obtaining permission from the original author, the ALHQ was translated from English into Persian by two translators separately in accordance with the international quality of life association (IQOLA) [11]. Then, the two translations were merged. In the next step, two translators were asked to translate the Persian version back to English. Again, the two back-translations were merged to produce a pre-final version of the ALHQ. The pre-final version was submitted to the original author.

### *Assessing the validity of the questionnaire*

To evaluate face and content validity, the Persian version was presented to seven audiologists to comment on the intelligibility and clarity of questions and for analyses of these data, we used content validity ratio (CVR) and content validity index (CVI).

### *Administration of the questionnaire*

After considering the comments to the ALHQ, The final version (Appendix 1) was provided to 100 hearing impaired patients consisting of 50 hearing aid users and 50 non-hearing aid users. The number of cases were recruited by convenience sampling method. The study participants of were selected among patients referring to the Audiology Clinic of Rehabilitation School of Tehran University of Medical Sciences. The participants were divided into two groups of hearing aid users (group 1) and not using hearing aids (group 2). The inclusion criteria of the study included clinical diagnosis of sensory hearing loss, lack of conductive hearing loss, aged between 30 to 65 years old and lack of otologic and neurologic diseases. After that, all participants signed the consent forms. We did tympanometry and audiometry for them and asked to complete the study questionnaire.

### *Statistical analysis*

In order to assess of the normal distribution

**Table 1. Values for the attitudes towards loss of hearing questionnaire for all data combined (n = 100)**

Score	Mean (SD)	Min	Max
<b>Total</b>	60.46 (10.02)	38	88
<b>Denial of hearing loss</b>	15.58 (5.15)	7	26
<b>Negative associations</b>	12.10 (4.67)	4	20
<b>Negative coping strategies</b>	20.40 (4.94)	11	33
<b>Manual dexterity and vision</b>	5.30 (2.85)	3	14
<b>Hearing-related esteem</b>	7.08 (2.13)	2	10

SD; standard deviation

of the variables, the Kolmogorov-Smirnov test ( $p < 0.05$ ) was used and the results showed that variables were not normally distributed. Therefore we used nonparametric statistical tests.

In order to confirm test-retest reliability, 20 individuals including 10 hearing aid users and 10 non-hearing aid users after one to two weeks completed the questionnaire again. The intra-class correlation coefficient (ICC) and t-test were used to analyze the results.

In order to examine the internal consistency of the Persian version of the questionnaire, we calculated the correlation between the subscales and the correlation of each subscale with the total score of the questionnaire with the Pearson correlation test. Also, we calculated the Cronbach  $\alpha$  value. The data were analyzed in SPSS 22 at a significant level of less than 0.05.

## Results

The number of participants in this study was 100, including 52 males and 48 females. The mean age of the participants was 54.54 with a standard deviation of 12.55 years within the age range of 30 to 65 years. The study subjects were divided into two groups of hearing aid users (group 1) and non-hearing aid users (group 2) each of which consisted of 50 individuals. On average, people in group 1 used hearing aids for  $29.52 \pm 43.31$  months and mean  $\pm$ SD duration of usage of hearing aids during the day was  $8.40 \pm 5.7$  hours. The mean  $\pm$ SD of hearing

thresholds in the right ear for subjects in groups 1 and 2 was  $48.58 \pm 12.02$  and  $41.73 \pm 19.40$ , respectively and thresholds in the left ear were  $48.19 \pm 10.98$  and  $43.20 \pm 17.62$ , respectively.

Table 1 presents the overall score of the participants' questionnaire. As the Table shows, the mean total score of the questionnaire is 60.46 and the subscale of negative coping strategies and manual dexterity and vision obtained respectively the highest and lowest scores.

The mean  $\pm$ SD value of CVR index was  $0.76 \pm 0.18$  and the mean  $\pm$ SD value of CVI index was  $0.97 \pm 0.05$ , which indicates that the Persian version of the questionnaire has proper content validity.

The ICC was 0.98 at a 95% confidence interval (0.97–0.99), i.e. it has excellent reliability.

Table 2 presents the scores of individuals in groups 1 and 2 in the first and second implementation. According to the Table, no significant difference was observed of between the first and second performances regarding the scores of any of the subscales and the overall score of the questionnaire.

The Cronbach  $\alpha$  value for each subscale and the overall score presents Table 3. As shown in the Table, the Cronbach  $\alpha$  values were high in all subscales except hearing-related esteem and Cronbach  $\alpha$  for the overall score of the questionnaire was larger than 0.7%, which reflects the good internal consistency of the questionnaire.

**Table 2. Values for the attitudes towards loss of hearing questionnaire for group 1 and group 2 (n = 100)**

Subscale	First time		Second time		p
	Group 1	Group 2	Group 1	Group 2	
Denial of hearing loss	2.38 ± 0.76	3.08 ± 0.92	2.43 ± 0.80	3.16 ± 0.96	0.235
Negative associations	2.87 ± 1.35	2.92 ± 1.06	2.43 ± 0.80	3.16 ± 0.96	0.762
Negative coping strategies	2.91 ± 0.56	2.69 ± 0.98	2.99 ± 0.60	2.72 ± 0.92	0.106
Manual dexterity and vision	1.86 ± 1.06	1.73 ± 0.69	1.89 ± 1.16	1.76 ± 0.77	0.163
Hearing-related esteem	3.80 ± 1	3.50 ± 0.81	3.75 ± 1.06	3.70 ± 0.91	0.186
Total score	60.35 ± 10.60		61.20 ± 9.83		0.589

\*Means that there is a significant relationship at the level of 0.05

\*\*Means that there is a significant relationship at the level of 0.01

Table 4 presents the correlation between the questions of each subscale and the general score of the questionnaire in of group 1, group 2, and as shown in Table 4 for group 1, all subscales except hearing-related esteem and for group 2, all subscales except of denial of hearing loss and manual dexterity and vision had a significant correlation with the overall score.

The results for the correlation between subscales are presented in Table 5. In group 1, there was a significant correlation between denial of hearing loss and negative associations ( $r = 0.427$ ,  $p = 0.002$ ) and between negative association and manual dexterity and vision ( $r = 0.317$ ,  $p = 0.025$ ). In group 2, there was a significant correlation between denial of hearing loss and negative coping strategies ( $r = -0.692$ ,  $p < 0.001$ ), between denial of hearing loss and hearing-related esteem ( $r = 0.406$ ,  $p = 0.003$ ), and between negative associations and negative coping strategies ( $r = 0.486$ ,  $p < 0.001$ ) but there was no correlation between other subscales.

## Discussion

The findings of this study are discussed in three parts of: validity of the Persian version of the questionnaire, its internal consistency, and scores of the subscales of the questionnaire.

### *The content and face validity of the Persian*

### *version of the questionnaire*

The results of statistical analysis showed that the Persian version of the questionnaire had a suitable face and content validity, i.e. it is clear, transparent, understandable, and compatible with the of Iranian society culture. Since the present studies have not changed the content of the original questionnaire, so the content validity in the Persian version is the same as in the original version of the questionnaire. In the studies conducted on the Portuguese [10] and Korean [9] versions, the CVR and CVI indicators were not investigated.

### *Internal consistency of the questionnaire*

The Cronbach  $\alpha$  values in all subscales except hearing-related esteem was high and showed that the questions of the questionnaire had a good internal consistency. In the study of Saunders et al., all subscales except hearing-related esteem had high Cronbach  $\alpha$  values [3], which is consistent with the results of this study. The low Cronbach  $\alpha$  value in the hearing-related esteem subscale could be due to the low number of questions (only two questions) in this subscale.

In the study in Brazil on the Portuguese version of this questionnaire, a significant but weak correlation was found among the subscales. There was a correlation between the subscales

**Table 3. Cronbach's  $\alpha$  value for each Persian attitudes towards loss of hearing questionnaire subscales (n = 100)**

Subscale	Cronbach's alpha
Denial of hearing loss	0.702
Negative associations	0.810
Negative coping strategies	0.781
Manual dexterity and vision	0.770
Hearing-related esteem	0.682
Total score	0.798

of denial of hearing loss with negative coping strategies and hearing-related esteem and also between negative coping strategies with negative associations and hearing-related esteem [10]. In the present study, there was a correlation between denial of hearing loss subscale with the negative coping strategies and hearing-related esteem and also between negative associations and negative coping strategies which is consistent with Bastos et al. study results in Brazil, but there was no correlation between the subscales of negative coping strategies and hearing-related esteem in this study, and in this aspect, there is an inconsistency with the study of Bastos et al. [10]. The results of the study by Saunders et al.

showed that with the exception of the correlation between the scores of negative coping strategies and denial of hearing loss which was also seen in this study, the correlation between all subscales was low [3]. In the present study, the correlation between negative coping strategies and denial of hearing loss among subscales was observed, and in this regard, it is consistent with the study by Saunders et al. results [3].

The differences observed between various studies can be due to differences in the studied populations and the characteristics of the subjects such as cultural differences or underlying diseases. In general, the results of this study showed that despite some minor overlap between subscales, they are independent of each other.

*Subscales of ALHQ*

In this research, the scores of subscales of the ALHQ were also examined and the results are as follows:

*Denial of hearing loss*

As shown in Table 1, the high scores in this subscale indicate that a person does not feel his hearing as a problem that needs hearing aids. Studies have shown that even when hearing loss, age, and gender are accounted, those who report fewer disabilities are less likely to use hearing aids than those who report more

**Table 4. Correlations between mean scores of each Persian attitudes towards loss of hearing questionnaire subscales and total score of the questionnaire (n = 100)**

Subscale	Group 1		Group 2	
	r	p	r	p
Denial of hearing loss	0.404**	0.004	0.062	0.671
Negative associations	0.827**	0.001	0.520**	< 0.001
Negative coping strategies	0.528**	0.001	0.543**	< 0.001
Manual dexterity and vision	0.542**	0.001	0.269	0.059
Hearing-related esteem	0.131	0.363	0.463**	< 0.001

\*\*Significant correlation at the level of 0.01

**Table 5. Inter item correlations for the Persian attitudes towards loss of hearing questionnaire (n = 100)**

Correlation	Group 1		Group 2	
	r	p	r	p
Denial of hearing loss and negative associations	0.427**	0.002	-0.259	0.069
Denial of hearing loss and negative coping strategies	-0.089	0.537	-0.692	< 0.001
Denial of hearing loss and manual dexterity and vision	0.041	0.777	-0.189	0.188
Denial of hearing loss and hearing-related esteem	0.178	0.216	0.406**	0.003
Negative associations and negative coping strategies	0.184	0.202	0.486	< 0.001
Negative associations and manual dexterity and vision	0.317*	0.025	-0.159	0.271
Negative associations and hearing-related esteem	-0.052	0.721	-0.141	0.330
Negative coping strategies and manual dexterity and vision	0.265	0.063	0.270	0.058
Negative coping strategies and hearing-related esteem	-0.129	0.371	-0.095	0.511
Manual dexterity and vision and hearing-related esteem	0.205	0.153	0.179	0.214

\*Significant correlation at the level of 0.05

\*\*Significant correlation at the level of 0.01

disability [12]. Therefore, the high score in this subscale is likely to result in a low hearing aid or its low usage.

#### *Negative associations*

According to Table 1, the high scores in this subscale indicate that the person associates the hearing aid with aging and shameful feelings. Studies have shown that this is a common and similar feeling among young and old people [13] and it is a problem because studies have shown that negative attitudes towards hearing aids cause low usage and less satisfaction of hearing aids [2].

#### *Negative coping strategies*

The average person's scores (Table 1) in questions related to this subscale is measured by the amount of person's use of undesirable behavior techniques such as leaving the community or pretending to hear to cope with hearing loss. A weak coping strategy with hearing loss is associated with negative psychological outcomes such as depression and loneliness [14,15].

#### *Manual dexterity and vision*

Results of this study showed that those with a high score in this subscale had handicap problems or vision problems. A large number of hearing aid users are the elderly adults and therefore may have problems using hearing aids due to limited manual skills [16]. It has been shown that this subscale is related to the outcomes of using hearing aids, the amount of using of hearing aids, and their satisfaction [12], which was the only factor that differed between the reasons for young people and the elderly in the dissatisfaction with hearing aids [17].

#### *Hearing-related esteem*

According to the results of this study, the high score in this subscale indicates losing the confidence in hearing. Studies have shown that self-esteem is associated with self-confidence and the belief that a person can be successful in a particular job [18]. Expecting to learn the skills needed to use hearing aids requires that you have the confidence to take the first step.

### *The overall score of the ALHQ*

The results of this study showed that the high score in the ALHQ indicates a lack of hearing aids or less use of the hearing aid. In this way, people who had a high score in the questionnaire were less likely to use hearing aids. Previous studies also follow the belief that attitudes and beliefs predict hearing behaviors for hearing aids [19,20].

As noted above, the findings of the subscales scores in the Persian version of the ALHQ are consistent with the results of Saunders et al. study [3].

Study of Bastos et al. in Brazil also showed that negative attitudes toward hearing loss and hearing aids called for counseling [10], which is consistent with the results of the present study. A study in Korea also indicates that the translated version of ALHQ is a valuable clinical tool for auditory rehabilitation and counseling [9], and the result of this review is in line with the results of this study.

In the present study, those who had a high score in the questionnaire and therefore had a negative attitude toward hearing loss and hearing aids received a consultation.

### **Conclusion**

The results of this study showed that the Persian version of ALHQ has a high degree of the face and content validity and reliability. This questionnaire explains some of the issues that may endanger the success of using hearing aids and can be used at the clinic for consulting the people who need hearing aids.

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### **Conflict of interest**

The authors declare that they have no conflict of interest.

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## Appendix 1. Attitudes towards loss of hearing questionnaire

## پرسشنامه نگرش نسبت به کم شنوایی (ALHQ)

## قسمت اول

برای افرادی که از سمعک استفاده نمی کنند.

کاملاً موافقم	موافقم	نه موافقم نه مخالف	مخالفم	کاملاً مخالفم	سؤال
هـ	د	ج	ب	الف	۱. صحبت کردن با من برای خانواده و دوستانم سخت است.
هـ	د	ج	ب	الف	۲. مطمئن هستم برای شنیدن تا حدودی نیاز به کمک دارم.
هـ	د	ج	ب	الف	۳. مشکل شنوایی من خیلی کمتر از آن است که نیاز به سمعک داشته باشم.
هـ	د	ج	ب	الف	۴. تصور استفاده از سمعک، به من احساس پیری می دهد.
هـ	د	ج	ب	الف	۵. اگر در موقعیتی قرار گیرم که چند نفر در حال صحبت کردن باشند، گفتگو را رها می کنم.
هـ	د	ج	ب	الف	۶. میزان اعتماد به نفسم به اندازه زمانی است که شنوایی من طبیعی بود.
هـ	د	ج	ب	الف	۷. کاملاً مطمئن هستم که به سمعک نیاز ندارم.
هـ	د	ج	ب	الف	۸. این روزها برای من بسیار دشوار است کارهای ظریفی مانند بستن دکمه و زیپ لباس را انجام دهم.
هـ	د	ج	ب	الف	۹. نگران زمانی هستم که مردم ببینند در گوش من سمعک هست.
هـ	د	ج	ب	الف	۱۰. از زمانی که کم شنوا شده ام، از ملاقات با افراد جدید واهمه دارم.
هـ	د	ج	ب	الف	۱۱. سمعک باعث می شود افراد پیرتر به نظر برسند.
هـ	د	ج	ب	الف	۱۲. شنوایی ضعیف من باعث می شود که احساس ناکارآمدی بکنم.
هـ	د	ج	ب	الف	۱۳. کم شنوایی من مشکل مهمی نیست.
هـ	د	ج	ب	الف	۱۴. فکر میکنم با گذاشتن بیج های کوچک در جای خود مشکل دارم.
هـ	د	ج	ب	الف	۱۵. من در هنگام گفتگو معمولاً ساکت هستم تا مطلبی را اشتباه نگویم.
هـ	د	ج	ب	الف	۱۶. شنوایی من مشکلی ندارد.
هـ	د	ج	ب	الف	۱۷. به علت مشکلات شنوایی، من سعی می کنم از صحبت های کوتاه دوری کنم.
هـ	د	ج	ب	الف	۱۸. از تصور اینکه مردم مرا با سمعک ببینند، خجالت می کشم.
هـ	د	ج	ب	الف	۱۹. مشکل شنوایی باری بر دوش من است.
هـ	د	ج	ب	الف	۲۰. متوجه شده ام اشیای کوچک خیلی راحت از دستم می افتد.
هـ	د	ج	ب	الف	۲۱. همانند زمان قبل از کم شنوایی خود، اجتماعی و خوش صحبت هستم.
هـ	د	ج	ب	الف	۲۲. همواره متوجه هستم که حس شنوایی من چقدر ضعیف است.

## قسمت دوم

برای کاربران سمعک سوالات ۳، ۴، ۷، ۹ و ۱۸ را با سوالات زیر جایگزین کنید.

کاملاً موافقم	موافقم	نه موافقم نه مخالف	مخالفم	کاملاً مخالفم	سوال
هـ	د	ج	ب	الف	۳. کم شنوایی من به حدی خفیف است طوری که به خوبی و بدون استفاده از سمعک میتوانم مشکلم را برطرف کنم.
هـ	د	ج	ب	الف	۴. استفاده از سمعک باعث می شود احساس کنم پیرتر هستم.
هـ	د	ج	ب	الف	۷. واقعا فکر نمیکنم به سمعک نیازی داشته باشم.
هـ	د	ج	ب	الف	۹. دوست ندارم دیگران مرا با سمعک ببینند.
هـ	د	ج	ب	الف	۱۸. وقتی در حال استفاده از سمعک دیده می شوم، خجالت می کشم.

## قسمت سوم

## • نحوه امتیازدهی

امتیاز سوالاتی که با ستاره مشخص شده اند (سؤال ۱ و ۲) را به صورت معکوس محاسبه کنید.

سوالات با امتیازات معکوس					سوالات با امتیازات مستقیم					گزینه
ه	د	ج	ب	الف	ه	د	ج	ب	الف	
۱	۲	۳	۴	۵	۵	۴	۳	۲	۱	نمره

## قسمت چهارم

امتیاز سوالات مربوط به هر خرده مقیاس را با هم جمع کنید و بر تعداد کل سوالات آن خرده مقیاس تقسیم کنید.

شماره	خرده مقیاس	امتیاز
۱	انکار کم شنوایی	$(\text{ه} + \text{د} + \text{ج} + \text{ب} + \text{الف}) / ۶$ (۱۶ + ۱۳ + ۷ + ۳ + ۵۲ + ۵۱)
۲	تداعی منفی	$(\text{ه} + \text{د} + \text{ج} + \text{ب} + \text{الف}) / ۴$ (۱۸ + ۱۱ + ۹ + ۴)
۳	راهبردهای مقابله ای منفی	$(\text{ه} + \text{د} + \text{ج} + \text{ب} + \text{الف}) / ۸$ (۲۲ + ۱۹ + ۱۷ + ۱۵ + ۱۲ + ۱۰ + ۵ + ۱)
۴	مهارت های دستی و قدرت بینایی	$(\text{ه} + \text{د} + \text{ج} + \text{ب} + \text{الف}) / ۳$ (۲۰ + ۱۴ + ۸)
۵	عزت نفس مرتبط با حس شنوایی	$(\text{ه} + \text{د} + \text{ج} + \text{ب} + \text{الف}) / ۲$ (۲۱ + ۶)