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Research Paper

Investigating the Quality of Life Via the WHO QoL Questionnaire-short Form in Hearing-impaired Older Adults

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ABSTRACT

Background and Objectives: Hearing loss is the third most common condition in older adults, becoming one of the most significant determinants of quality of life (QoL). Despite several studies, limited research has focused on older people with hearing loss living in nursing homes, especially in Iran. This study aimed to assess the QoL of older people with hearing loss living in nursing homes.

Methods: This study was conducted among the residents of nursing homes in Isfahan City, Iran. Accordingly, 30 subjects with mild to severe sensorineural hearing loss were selected as the case group, and 30 subjects with normal hearing were selected as the control group. The QoL was measured using the standardized Iranian version of the WHO QoL questionnaire-short form (WHOQOL-BREF) questionnaire.

Results: Participants with hearing loss gained significantly lower scores in all questionnaire domains, except for the environmental (physical: P<0.001, psychological: P<0.001, social: P=0.012, environment: P=0.582) aspects. The mean score of the QoL was higher in the control group than in the case group (P<0.001). In the hearing-impaired group, the mean scores of the QoL were higher in subjects who used hearing aids (P<0.001), and women had significantly higher scores than men (P=0.002). No significant relationship was found between the QoL and the marital status or length of stay in the nursing home (P>0.05). Age was significantly associated with the physical domain (P=0.031) and the overall score (P=0.04).

Conclusion: There was a significant relationship between hearing loss and reduced QoL among elderly residents in nursing homes. This relationship was evident in the mean score and three domains of the WHOQOL-BREF questionnaire. Gender and the use of hearing aids were also identified as determinants of the QoL in older people with hearing loss.

Keywords: Older adult, Hearing loss, Quality of life (QoL), Nursing homes

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Function & Disability Journal

What is "already known" in this topic:

Age-related hearing loss is one of the most prevalent chronic conditions in older adults, associated with reduced QoL across physical, psychological, and social domains. Previous studies have largely focused on community-dwelling elderly, with limited evidence from nursing home populations in Iran. Cultural and environmental factors may influence these outcomes, highlighting the need for context-specific research.

What this article adds:

This study provided evidence that elderly nursing home residents with hearing loss have significantly lower QoL scores in physical, psychological, and social domains compared to those with normal hearing. It also identified gender and hearing aid use as significant determinants of the QoL in this population, emphasizing the importance of accessible hearing interventions within institutional care settings.

Introduction

Aging is a natural phenomenon representing an inevitable stage in the human life cycle. It is a process that occurs in all human beings. Nearly 1.2 billion people worldwide are over 60 years old, indicating a rapid shift in demographic trends toward an aging population [1]. The World Health Organization (WHO) estimates that the older population will reach 2.5 billion by 2050. The United Nations' forecast is 2.1 billion older people for the same year [2], implying that 1 in 5 people worldwide is old. The demographic department of this organization also estimates that the share of the older population worldwide will rise from approximately 10.5% in 2007 to about 21.8% in 2050 [3]. This figure is projected to reach more than 26 million people (21.7%) for Iran [4].

The primary issues in promoting the health and quality of life (QoL) of older people are related to maintaining independence in physical and cognitive activities, thereby enabling an active life. Chronic diseases and health conditions can hinder the elderly's daily activities [5].

Hearing loss is one of the most common chronic diseases associated with increasing age [6]. It is even the third major complication in the elderly after heart disease and arthritis [7]. According to statistics, the prevalence of age-related hearing loss in people between 60 and 69 years old is approximately 49%, increasing to more than 80% in those over 85 years old. Hearing loss is generally reported to be the second most debilitating factor in life after depression. Approximately 278 million people worldwide have moderate to severe hearing loss [5]. Presbycusis, age-related hearing loss, has been proven to be associated with communication, family, and economic issues, and even mortality, so that it can lead to limited participation in social activities, isolation, dementia, depression, and consequently decreased QoL [5-9].

Today, there are growing concerns about the QoL of older adults worldwide. As defined by the WHO, the QoL is the perception of individuals about their position in life, in terms of culture, values, and assessing their living environment, expectations, life priorities, goals, and standards. As a result, it is an entirely personal concept that cannot be observed or felt by others [10]. Based on the definition, the QoL is a multidimensional concept that includes a range of social, emotional, cognitive, and physical aspects of a person's life and must be evaluated by subjective and individualized tools [11]. Questionnaires are one of the most common tools used for this purpose.

Hearing impairment in older adults has been consistently associated with diminished health-related QoL. Studies employing questionnaires such as the short form 36 health survey (SF-36), the WHOQoL questionnaire, and the hearing handicap inventory indicate that individuals with hearing difficulties exhibit lower physical and mental health scores [12]. Dalton et al. also investigated the effect of hearing loss on the QoL of older adults. They selected the participants with a mean age of 69 years from both genders and monitored their daily activities. The results indicated that the severity of hearing loss was directly associated with the reduced QoL in older adults [13].

In a study by Tsuruoka et al. on the relationship between hearing impairment and the QoL of older people living in a nursing home, 60 people with a mean age of 79 years completed a questionnaire designed based on physical, social, communication, and psychological status. It was

concluded that hearing loss affects the extent and quality of communication, as well as the psychological aspects of the QoL in older people [14]. Similar results are also reported in a study on the QoL and its determinants in the Indian elderly by Ganesh Kumar et al. Based on the results obtained from the WHOQoL questionnaire–short form (WHOQOL-BREF), hearing loss was significantly associated with low QoL in individuals [15].

Today, many researchers concur that hearing loss is becoming one of the most serious determinants of the general health of society and, consequently, the QoL. Hearing loss is known to significantly impact the quality of daily life, particularly in older adults, as it can disrupt the exchange of information, communication, and social participation.

Numerous questionnaires have investigated the QoL of individuals from various aspects. Still, the QoL questionnaires developed by the WHO have received greater attention in this field due to their special and unique features [10]. One reason for the extensive application of the WHOQOL-BREF is its small number of items, which makes it easier to use. This QoL measurement tool has been translated and standardized in more than 40 countries. Considering that this questionnaire is designed using information collected from more than 15 different countries and cultures, the concepts of the questions are generalized and can be applied to different cultures [16]. The WHOQOL-BREF questionnaire has also been frequently used to assess the QoL among different adult populations in Iran. The Persian version of the WHOQOL-BREF questionnaire was initially translated, validated, and culturally adapted by Nejat et al. [10]. Its psychometric properties were further evaluated and confirmed by Yousefy et al. in an Iranian adult population. This version demonstrated acceptable reliability and validity for use in health-related QoL assessments in Iran [17].

Despite previous studies on the impact of hearing loss on the QoL in older people, further investigation is still warranted. Many earlier studies have focused on community-dwelling older adults, while less attention has been paid to those residing in nursing homes, particularly within the Iranian context. Cultural, social, and economic differences across populations can influence perceptions of the QoL [18]; thus, the use of tools that are standardized and validated for the Iranian population is essential. The WHOQOL-BREF questionnaire was selected not only due to its brevity and ease of administration but also because of its strong theoretical foundation. This questionnaire, designed by the WHO, evaluates 4 key domains (physical, psychological, social relationships, and environmental), thereby allowing for a more comprehensive assessment of older people's lived experience [10].

Given the statistics and information on the importance and prevalence of hearing loss in older people, as well as the importance of optimal qualitative assessment of hearing loss along with quantitative assessment, the present study adopts the standardized Iranian version of WHOQOL-BREF to assess the QoL of older people with mild-to-severe sensorineural hearing loss.

Materials and Methods

This research was conducted in Isfahan City, Iran. After visiting nursing homes, the medical records of people were studied, and the elderly over 60 years of age without noticeable neurological lesions, Alzheimer disease, depression, Parkinson diseae, multiple sclerosis, a history of stroke, and middle ear conditions (conductive hearing loss) were selected. Otoscopy (Riester, Jungingen, Germany), tympanometry (AT235, Interacoustics, Denmark), and pure-tone audiometry (AD629, Interacoustics, Denmark) were performed on individuals willing to participate in the study.

Overall, 30 individuals from both genders with mild to severe sensorineural hearing loss (mean pure tone thresholds at 500, 1000, 2000, and 4000 Hz ranging from 26 to 90 dB) and intact outer and middle ears, as determined by otoscopy and tympanometry, were randomly included in the study. A control group of approximately the same age and gender, with mean pure tone thresholds of less than 26 dB, was also selected.

First, the experiment procedure, its objectives, and the voluntary and non-invasive nature of the study were explained to the participants. Informed consent for participation in the research was obtained from all participants. All parts of this study were conducted in accordance with the ethical considerations set by Isfahan University of Medical Sciences. The study design was approved by the Research Center for Communication, Speech, Language, and Hearing Disorders of Isfahan University of Medical Sciences.

The selected individuals filled out the standardized Iranian version of the WHOQOL-BREF questionnaire. The participants were asked to select the responses that best suited their thoughts and situation over the past 4 weeks. They needed to complete the questionnaire considering

Table 1. Demographic information of the participants

Demographic Information		No. (%)	
		Normal Hearing	Hearing Loss
Gender	Female	15(50)	13(43.3)
	Male	15(50)	17(56.7)
Age (y)	60-70	15(50)	17(56.7)
	71-80	12(40)	8(26.7)
	>80	3(10)	5(16.7)
Duration of stay in a nursing home (y)	<1	8(26.7)	11(36.7)
	1-5	16(53.3)	15(50)
	>5	6(20)	4(13.3)
Marital status	Married	9(30)	6(20)
	Single	3(10)	5(16.7)
	Divorced	4(13.3)	3(10)
	Deceased partner	14(46.7)	16(53.3)

their interests, values, aspirations, joys, and concerns. The participants were also assured data confidentiality.

WHOQOL-BREF is a shortened version of the 100-item QoL questionnaire developed by the WHO (WHOQOL-100), which examines QoL in 4 health-related areas: Physical health, psychological health, social relationships, and environment. This questionnaire contains 26 items, the first of which is about the QoL in general, and the second one is related to the general health status. The next 24 items assess the QoL in the aforementioned domains.

Descriptive statistics related to the central tendency indices (Mean±SD) and dispersion indices (ranges) were used to review the results of this study. The independent t-test was also employed to analyze the effect of variables, and a paired t-test was utilized to examine the differences in variables between the experimental and control groups. The significance level of all tests was about 95%. All data were analyzed by SPSS software, version 19 (IBM Corporation, Armonk, New York, United States).

Results

According to the analysis, the group with hearing loss consisted of 17 men (56.6%) and 13 women (43.4%), with a mean age of 69.1±6.0 years. The control group consisted of 15 men and 15 women, with a mean age of 72.9±8.7 years. The demographic information of the participants in both the experiment and control groups is provided in Table 1.

The Shapiro-Wilk test results indicated that the data distribution follows a normal distribution. Participants in the group with hearing loss had pure-tone average thresholds ranging from 26 to 90 dB, which were categorized into mild, moderate, severe, and profound subgroups (Figure 1).

Among these participants, 12 used hearing aids, while 18 did not utilize any hearing aids. In analyzing the questionnaire's scores, a significant difference was observed between the group with hearing loss and the control group. This difference was noticeable in all domains, except for the environmental domain, where participants in the hearing loss group scored lower. The mean scores of the WHOQOL-BREF questionnaire for both study groups are listed in Table 2.

The total questionnaire score was 46.98±4.86 in the older group with hearing loss and 55.17±5.91 in the control group (P<0.001).

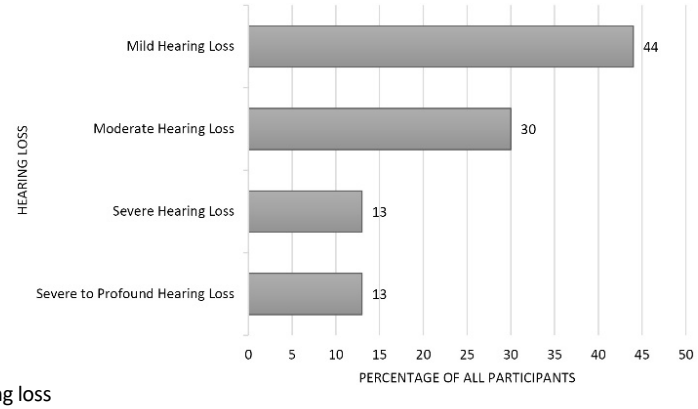

Figure 1. Participants' hearing loss

Table 2. Mean scores of the WHOQOL-BREF questionnaire

Variables	Mean±SD		P
	Normal Hearing (n=30)	Hearing Loss (n=30)	
Physical	14.97±1.62	11.42±2.29	<0.001
Psychological	13.87±1.68	11.20±1.38	<0.001
Social	13.20±3.1	11.42±2.12	0.012
Environment	13.13±1.01	12.93±1.7	0.582

WHOQOL-BREF: The world health organization QoLquestionnaire–short form.

In the hearing loss group, the mean QoL score was higher in participants who used hearing aids compared with those not using any hearing aids (P<0.001) (Figure 2). Within the same group, the mean score for women was significantly higher than that for men (P=0.002).

One-way analysis of variance tests were conducted to evaluate the association between QoL scores and demographic variables, such as marital status and length of stay in the nursing home. The results showed no statistically significant differences across the subgroups of either variable (P>0.05). Further univariate analysis suggested that the age of participants with hearing loss was significantly associated with lower scores only in the physical domain (P=0.031) and the average QoL score (P=0.04) of the WHOQOL-BREF.

Discussion

After a review and comparison of the results of the questionnaire, it was revealed that there was a significant difference between older people with hearing loss and those with normal hearing in terms of their QoL. Similar previous studies reported decreased QoL in older people with hearing loss using two different types of questionnaires.

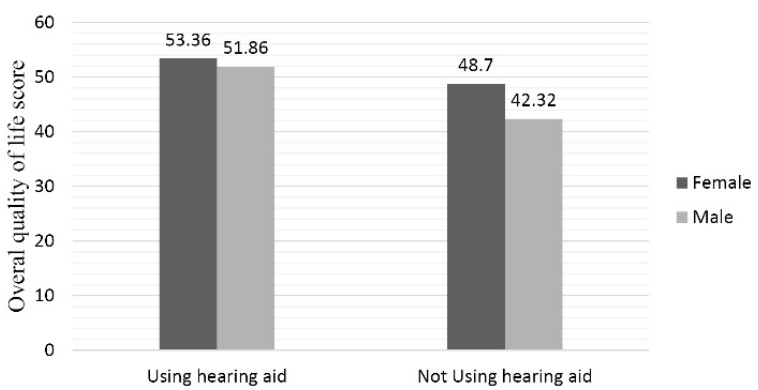

Figure 2. Mean score of the overall QoL in participants using hearing aids compared to the rest of the older people with hearing loss

The first type includes general QoL questionnaires, such as the medical outcomes study short-form 36-item health survey [13, 19] or the WHOQOL-BREF questionnaire [14, 20]. These questionnaires, rather than exploring any specific injuries or disabilities, examine the QoL in different groups of older people with hearing loss. The second type encompasses specific hearing impairment questionnaires used in the older population, such as the hearing handicap inventory for the elderly [13, 21]. The results obtained from different types of questionnaires also corroborate the effect of hearing loss on reducing the QoL of older people.

In this study, a significant difference was found between the two groups of older individuals with normal hearing and those with hearing loss in terms of QoL scores across all domains, except for the environmental domain. Considering that individuals in the experiment and control groups were both residents of nursing homes, it seems that hearing loss did not have a significant effect on their QoL concerning the environment. This is because the environmental domain does not contain items directly related to hearing loss.

The use of hearing aids had a significant effect on the mean scores of QoL of older adults with hearing loss. This finding aligns with the findings reported by Mondelli and de Souza [22]. They also reported a significant difference in the QoL between hearing aid users and other people with hearing loss [23]. Recent evidence also highlights the broader health implications of hearing aid use. Choi et al. found that regular hearing aid use was associated with a 24% reduction in the risk of early mortality among older adults with hearing loss, further emphasizing the importance of hearing interventions in elderly populations [2].

The results of this study also revealed that the QoL score was higher in older women than in men with hearing loss. Some studies did not consider gender as a determinant of the QoL [24] or reported a higher QoL for men [25, 26]. These discrepancies in results can be attributed to differences in mean age, literacy level, and years of stay in nursing homes between men and women in previous studies, as compared to the present study.

Additionally, no significant associations were observed between QoL scores and other demographic variables (e.g. length of stay in the nursing home or marital status). These findings may indicate that in this population, hearing-related factors play a more prominent role in determining QoL. However, this interpretation should be made with caution, as the small number of participants in each subgroup might have reduced the statistical power to detect potential differences.

In the group with hearing loss, the age of participants was only associated with reduced QoL in the physical domain and the mean score. This finding aligns with the findings of Teixeira et al., who emphasize the significant effect of age on the physical and social relationship domains of OoL in patients with hearing loss [24]. Ganesh Kumar et al also highlighted the effect of age on the overall QoL [15].

Conclusion

The results confirmed a significant relationship between hearing loss and decreased overall QoL in the older people living in nursing homes in Isfahan City, Iran. This relationship was significant in three aspects: Physical, psychological, and social, as well as in the mean score of the WHOQOL-BREF questionnaire. In this study, gender and the use of hearing aids were identified as determinants of the QoL in older people with hearing loss.

Limitations of the study

One limitation of the current study was the small number of participants in each category of hearing loss severity, which limited the possibility of conducting a meaningful statistical analysis based on the degree of hearing loss. Another limitation was the low level of literacy, knowledge, or willingness among some older people to participate in the research and complete the questionnaires.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Research Center for Communication, Speech, Language, and Hearing Disorders of Isfahan University of Medical Sciences, Isfahan, Iran (Code: IR.MUI.RESEARCH.REC.1397.193).

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Authors' contributions

Conceptualization and methodology: Mahsa Sepehrnejad, Mohammad Hosein Nilforoush, and Mitra Ghorbani; Data curation: Maryam Nasrollahiv and Elham Farahmandnasab; Investigation, formal analysis, software, visualization, and writing: Mitra Ghorbani; Project administration: Mahsa Sepehrnejad and Mohammad Hosein Nilforoush; Supervision and resources: Mohammad Hosein Nilforoush; Validation: Mahsa Sepehrnejad.

Conflict of interest

The authors declared no conflict of interest.

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