

Research Article

Volume 10 Issue 3 – September 2017
DOI: 10.19080/GJO.2017.10.555790

Glob J Otolaryngol

Copyright © All rights are reserved by Jasenka Broz Frajtag

Communication Problems and Quality of Life People with Hearing Loss



Jasenka Broz Frajtag^{1*} and Jagoda Doko Jelinic²

¹Clinical Hospital Center Zagreb, University of Zagreb

²University of Zagreb, School of Medicine

Submission: September 11, 2017; **Published:** September 19, 2017

***Corresponding author:** Jasenka Broz Frajtag, Clinical Hospital Center Zagreb, University of Zagreb, ZAGREB, Europe, Tel: 00385992545707.

Abstract

Introduction: Communication difficulties arising from damage to hearing directly affect quality of life. Difficulties in communication may result in deviations in the emotional and social development and can have a significant impact on the quality of life of every person.

Objective: To evaluate the communication skills and the quality of life of people with hearing impairments with regard to the degree of hearing impairment, as well as social and emotional difficulties they face.

Patients and Methods: The study included 50 patients with hearing loss at the age of 25-55 years who came to regular hearing control at the Clinic for diseases of the ear, nose and throat and head and neck surgery in the period from 2012. to 2015. years. Medical history review, examining the existing medical records and the results of the diagnostic procedures were the general data, the possible cause of hearing damage, when the damage occurred, lasting duration, mode of communication in the family and the environment, the quality of life for each subject. Test for the social and emotional difficulties of people with hearing impairments was used HH1a questionnaire, and SF36 questionnaire assessing quality of life.

Results: Most of the respondents have hearing loss in both ears, which have been classified as one of the moderate hearing losses. Testing distinction of words frequency and intensity balanced at standard rate showed that most respondents understand the words that are used in everyday communication, the harder they understood the words that contain a group of consonants "dn", "pr" and "št" because the frequency of less frequently used in our language and have relatively low levels of language competence. Self-assessment of quality of life related to health is the worst in the field of health that reflect the vitality, mental health and general health perception. HH1a questionnaire and the social and emotional domain differs significantly individual auditory threshold levels in all of the observed frequencies and in both ears.

Conclusion: Difficulties in communication may result in deviations in the emotional and social development and can have a significant impact on the quality of life of every person. Regular checks of hearing and timely diagnosis contribute to improvement of speech understanding and therefore better functioning in everyday life as a successful factor in resolving further emotional, social and psychological conditions. With modern hearing aids hard of hearing people achieve improvement in speech understanding and a better quality of life. Due to modern lifestyles and the increasing number of factors that can cause hearing loss is necessary to carry out preventive measures to prevent hearing damage.

Keywords: Hearing loss; Communication; Quality of life

Introduction

Communication difficulties arising from damage to hearing directly affect quality of life. Difficulties in communication may result in deviations in the emotional and social development and can have a significant impact on the quality of life of every person. It is well recognized that hearing is critical to speech and language development, communication, and learning. People with listening difficulties due to hearing loss or auditory processing problems continue to be an underidentified and underserved population. The earlier the problem is identified and intervention begun, the less serious the ultimate impact [1].

Hypothesis: Communication skills and quality of life in people with hearing impairment affect their social and emotional disabilities.

Objective of Investigation

The aim of this study is to evaluate communication skills and quality of life in people with hearing impairment who regularly undergo auditory hearing at the Clinic for Ear, Nose, Throat and Surgery at KBC Zagreb in Zagreb.

Research Methods

The study included 50 patients with hearing loss at the age of 25-55 years who came to regular hearing control at the Clinic for diseases of the ear, nose and throat and head and neck surgery in the period from 2012. to 2015. years. Medical history review, examining the existing medical records and the results of the diagnostic procedures was the general data, the possible cause of hearing damage, when the damage occurred, lasting duration, mode of communication in the family and the environment, the quality of life for each subject. Test for the social and emotional difficulties of people with hearing impairments was used by HHIA questionnaire, and SF36 questionnaire assessing quality of life [2].

Anamnesis: Otorhinolaryngological examinations are performed using specific aids such as speculum, ear canal, fiberoptic and otomicroscope (Figure 1).



Figure 1: View an Otorhinolaryngological Examination with the Otoscope.

Tonal Audiometry: Hearing condition analysis was performed by a tonal audiometry that determined and compared the average hearing threshold of individual audiometric frequencies at 500 Hz, 1000 Hz, 2000 Hz, 4000 Hz, 6000 Hz, 8000 Hz. For the right and left ear of each examine (Figure 2).



Figure 2: Hearing with Tonal Audiometry.

Speech Audiometry: Speech understanding was conducted in a silent, acoustically isolated room where the audiogram measures the percentage of speech scattering in background. In a free field, at a distance of 1 m from the subject, a word list is played. These commonly included single words (mono- or bisyllabic words), sentences or phonemes (vowels and consonants). It is preferable to assess speech perception in a patient's native language [3,4]. A 10 word list is given to the respondent, each of which is estimated

at 10% and is the result of speech audiometry as a percentage understanding. Patients had to repeat a list of words to determine your Speech Reception Threshold (SRT) and audiologist was measured Speech Discrimination or Word Recognition ability (Figure 3).

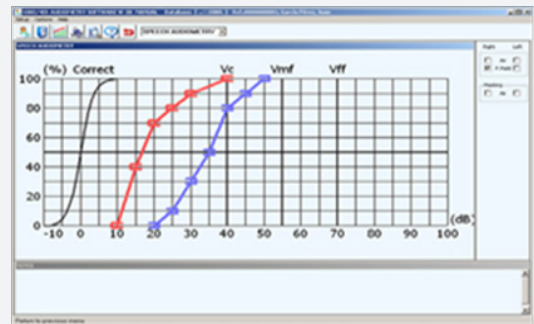


Figure 3: Speech Audiometry.

Quality of life of people with hearing loss: The questionnaire was used for self-assessment of the quality of life associated with health. The data collected by the SF-36 questionnaire are transformed and summarized in a scale of 0 to 100% for each of the eight dimensions (Physical Functionality, Physical Limitations, Emotional Restrictions, Social Functioning, Mental Health, Energy and Vitality, Pain, general Perception health). Data were analyzed descriptively and presented should read arithmetic means and standard deviations and higher mean values indicate better self-reported health.

Social and emotional disabilities in hearing impaired: The HHIA questionnaire was used to examine social and emotional difficulties in our respondents. The purpose of the scale is to identify hearing loss issues where respondents have to answer every question with „Yes“, „No“ or „Sometimes“ in situations when they are not using hearing aids (Figure 4).

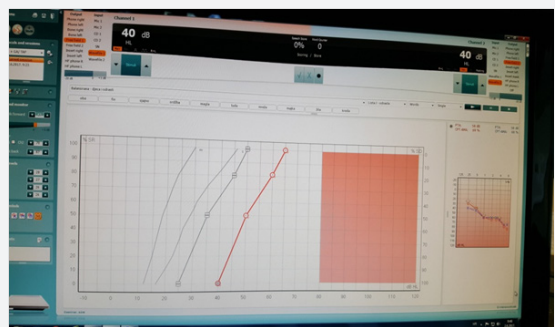


Figure 4: Speech Audiometry Curve in balanced conditions.

Results

Causes of hearing impairment Anamnestic data shows that among the subjects the most common cause of hearing loss is genetic impairment, than illnesses which include meningitis, otosclerosis, ear inflammation, polyps and viruses. Anamnestic data shows that among the subjects, the most common cause of hearing loss is genetic impairment of hearing in 18 subjects, followed by

diseases in 15 subjects including meningitis, otosclerosis, ear inflammation, polyps and viruses. Hearing impairment analysis showed occupational hearing impairment in all professions, and the highest percentage of hearing impairment is registered with workers exposed to high levels of noise [5]. Most of the respondents have hearing loss in both ears, which have been classified as one of the moderate hearing losses. Testing distinction of words frequency and intensity balanced at standard rate showed that most respondents understand the words that are used in everyday communication, the harder they understood the words that contain a group of consonants «dn», «pr» and «št» because the frequency of less frequently used in our language and have relatively low levels of language competence.

Self-assessment of quality of life related to health is the worst in the field of health that reflect the vitality, mental health and general health perception. HHIA questionnaire and the social and emotional domain differs significantly individual auditory threshold levels in all of the observed frequencies and in both ears. The cause of hearing impairment of the respondents who were exposed to high levels of work during the workplace was 9 and the injures cause hearing impairment in 2 [6]. Hearing impairment analysis showed occupational hearing impairment in professions and the highest percentage is registered with workers exposed to high noise levels. Moderate hearing loss was the most common hearing impairment among respondents and the least represented among respondents

was severe hearing loss. Speech understanding show that most respondents have better understanding of the words they use in communication everyday than those less used.

Quality of life of people with hearing loss: In the total sample of two dimensions of health that describe physical function and limitation for emotional problems, the average values were above 70 % , while lower average values were measured for health dimensions that describe vitality, mental health and perception of general health ranging from 51,00 % to 54,04 % [7-11] .

Social and emotional disabilities in hearing impaired: The HHIA questionnaire was used to examine social and emotional difficulties in our respondents. The analysis of responses to the social domain (yes, sometimes, no) of the questionnaires collected showed that 13 (26,0%) of the respondents did not have a handicap, the moderate handicap had 17 (34,0%) , while the pronounced handicap had 20 (40,0%). For the emotional domain, the HHIA questionnaire analysis showed that the smallest number of respondents showed significant handicap 15 / 30,0 %) and 19 (38,0%) respondents without handicap (Table 1). The analysis of questions related to the HHIA social domain has shown that the highest handicap has the highest number of N= 20 , while the largest number of N= 19 disabled is on the emotional domain (Tables 2 & 3). Table 3.shows no significant differences between SF-36 domain and HHIA social domain and emotional domain (Table 4).

Table 1: Social and emotional difficulties in hearing impaired respondents to HHIA questionnaire.

		N	%
HHIA social domain	Without handicap	13	26,0%
	Moderate handicap	17	34,0%
	Severe handicap	20	40,0%
HHIA emotional domain	Without handicap	19	38,0%
	Moderate handicap	16	32,0%
	Severe handicap	15	30,0%
HHIA summary	Without handicap	16	32,0%
	Moderate handicap	16	32,0%
	Severe handicap	18	36,0%

Table 2: Descriptive statistics of respondents with regard to category variables (N=50).

	Arithmetic mean	SD	Min	Max	Centil		
					25.	Medijan	75.
Age	46,2	8,5	30,0	62,0	37,8	48,0	53,0
Disease duration(y)	7,3	9,4	0,3	44,0	1,0	5,0	10,0
Right ear 500 Hz (dB)	41,5	26,5	10,0	95,0	20,0	37,5	65,0
Right ear 1000 Hz (dB)	49,7	27,8	10,0	100,0	30,0	47,5	75,0
Right ear 2000 Hz (dB)	53,9	28,3	10,0	100,0	35,0	55,0	80,0
Right ear 4000 Hz (dB)	60,8	30,2	10,0	110,0	38,8	62,5	90,0

Right ear 6000 Hz (dB)	66,3	30,5	10,0	110,0	45,0	70,0	90,0
Right ear 8000 Hz (dB)	66,1	32,1	10,0	110,0	45,0	67,5	90,0
Left ear 500 Hz (dB)	43,0	26,5	10,0	100,0	20,0	42,5	55,0
Left ear 1000 Hz (dB)	49,9	27,0	10,0	110,0	35,0	50,0	71,3
Left ear 2000 Hz (dB)	54,7	28,8	10,0	110,0	28,8	57,5	80,0
Left ear 4000 Hz (dB)	61,4	28,9	10,0	110,0	42,5	65,0	86,3
Left ear 6000 Hz (dB)	72,3	29,1	15,0	110,0	55,0	75,0	95,0
Left ear 8000 Hz (dB)	69,4	30,0	10,0	110,0	55,0	70,0	95,0
Sound detection threshold	35,3	16,8	5,0	75,0	23,8	35,0	45,0
100% speech understanding	52,8	17,7	15,0	85,0	37,5	62,5	65,0

Table 3: Interaction of SF-36 Individuals domains and HHIA social domain: Kruskal-Wallis Test.

HHIA social domain		N	Centile			P
			25.	Medijan	75.	
SF-36: Physical functioning	Without handicap	13	57,50	90,00	95,00	0,678
	Moderate handicap	17	52,50	70,00	100,00	
	Severe handicap	20	60,00	65,00	85,00	
SF-36: Limitations of physical problems	Without handicap	13	0,00	75,00	100,00	0,163
	Moderate handicap	17	75,00	75,00	100,00	
	Severe handicap	20	25,00	50,00	100,00	
SF-36: Limitations of emotional problems	Without handicap	13	50,00	100,00	100,00	0,880
	Moderate handicap	17	50,00	100,00	100,00	
	Severe handicap	20	33,33	100,00	100,00	
SF-36: Social functioning	Without handicap	13	43,75	62,50	75,00	0,506
	Moderate handicap	17	50,00	62,50	68,75	
	Severe handicap	20	50,00	56,25	62,50	
SF-36: Mental health	Without handicap	13	48,00	52,00	62,00	0,975
	Moderate handicap	17	46,00	52,00	56,00	
	Severe handicap	20	44,00	52,00	59,00	
SF-36: Energy and vitality	Without handicap	13	47,50	55,00	60,00	0,250
	Moderate handicap	17	47,50	50,00	57,50	
	Severe handicap	20	45,00	50,00	50,00	
SF-36: Pains	Without handicap	13	55,00	70,00	80,00	0,376
	Moderate handicap	17	30,00	50,00	60,00	
	Severe handicap	20	42,50	60,00	70,00	

SF-36: General perception of health	Without handicap	13	44,50	57,00	74,50	0,778
	Moderate handicap	17	46,00	52,00	54,50	
	Severe handicap	20	47,00	52,00	55,75	

Table 4: Interaction between SF-36 and HHIA emotional domains: Kruskal-Wallis test.

HHIA emotional domain		N	Centil			P
			25.	Medijan	75.	
SF-36: Physical functioning	Without handicap	19	60,00	75,00	90,00	0,461
	Moderate handicap	16	52,50	77,50	100,00	
	Severe handicap	15	55,00	65,00	85,00	
SF-36: Limitations of physical problems	Without handicap	19	0,00	75,00	100,00	0,759
	Moderate handicap	16	31,25	75,00	100,00	
	Severe handicap	15	25,00	75,00	100,00	
SF-36: Limitations of emotional problems	Without handicap	19	66,67	100,00	100,00	0,421
	Moderate handicap	16	8,33	66,67	100,00	
	Severe handicap	15	33,33	100,00	100,00	
SF-36: Social functioning	Without handicap	19	37,50	62,50	75,00	0,694
	Moderate handicap	16	50,00	62,50	62,50	
	Severe handicap	15	50,00	62,50	75,00	
SF-36: Mental health	Without handicap	19	48,00	52,00	60,00	0,748
	Moderate handicap	16	45,00	52,00	56,00	
	Severe handicap	15	44,00	48,00	56,00	
SF-36: Energy and vitality	Without handicap	19	45,00	50,00	55,00	0,550
	Moderate handicap	16	50,00	50,00	58,75	
	Severe handicap	15	50,00	50,00	50,00	
SF-36: Pains	Without handicap	19	40,00	70,00	70,00	0,685
	Moderate handicap	16	50,00	60,00	67,50	
	Severe handicap	15	40,00	60,00	60,00	
SF-36: General perception of health	Without handicap	19	47,00	57,00	67,00	0,838
	Moderate handicap	16	45,50	52,00	52,00	
	Severe handicap	15	45,00	52,00	57,00	

Statistically significant differences are not associated with the SF-36 and the social and emotional domains of HHIA (Tables 3 & 4). Analysis of the results obtained with the HHIA questionnaire shows that the HHIA questionnaire in its social domain significantly differentiates the individual's levels of the auditory threshold

at all observed frequencies and on both ears (Table 5). HHIA questionnaire in its emotional domain significantly differentiates the individual auditory levels at all observed frequencies and on both ear (Table 6).

Table 5: Differences in the level of hearing thresholds of the social handicapped by an estimated HHIA questionnaire.

HHIA social					P
		Medijan	25. centil	75. centil	
r500	Without handicap	10,0	10,0	40,0	0,003
	Moderate handicap	35,0	30,0	45,0	
	Severe handicap	55,0	25,0	80,0	
r1000	Without handicap	10,0	10,0	45,0	0,001
	Moderate handicap	45,0	30,0	65,0	
	Severe handicap	72,5	42,5	85,0	
r2000	Without handicap	15,0	10,0	50,0	0,001
	Moderate handicap	50,0	40,0	65,0	
	Severe handicap	77,5	50,0	87,5	
r6000	Without handicap	35,0	20,0	60,0	0,001
	Moderate handicap	70,0	50,0	85,0	
	Severe handicap	82,5	60,0	100,0	
r8000	Without handicap	30,0	10,0	55,0	0,001
	Moderate handicap	65,0	50,0	90,0	
	Severe handicap	87,5	67,5	105,0	
r4000	Without handicap	20,0	10,0	50,0	0,001
	Moderate handicap	70,0	60,0	80,0	
	Severe handicap	82,5	55,0	92,5	
l500	Without handicap	10,0	10,0	35,0	0,004
	Moderate handicap	40,0	35,0	50,0	
	Severe handicap	52,5	35,0	82,5	
l1000	Without handicap	15,0	10,0	40,0	<0,001
	Moderate handicap	50,0	35,0	65,0	
	Severe handicap	65,0	50,0	80,0	
l2000	Without handicap	20,0	10,0	25,0	<0,001
	Moderate handicap	55,0	40,0	65,0	
	Severe handicap	70,0	62,5	87,5	
l4000	Without handicap	20,0	10,0	45,0	<0,001
	Moderate handicap	70,0	45,0	85,0	
	Severe handicap	72,5	62,5	92,5	
l600	Without handicap	25,0	20,0	75,0	<0,001
	Moderate handicap	75,0	65,0	95,0	
	Severe handicap	90,0	72,5	97,5	
l8000	Without handicap	35,0	15,0	70,0	<0,001
	Moderate handicap	70,0	55,0	90,0	
	Severe handicap	85,0	67,5	97,5	
Sound detection threshold	Without handicap	10,0	10,0	35,0	<0,001
	Moderate handicap	35,0	30,0	40,0	
	Severe handicap	45,0	37,5	55,0	
100% speech understanding	Without handicap	30,0	25,0	62,5	0,024
	Moderate handicap	65,0	55,0	65,0	
	Severe handicap	65,0	50,0	70,0	

Table 6: Hearing threshold differences in relation to the type of emotional handicap estimated by the HHIA questionnaire: Kruskal-Wallis test.

		HHIA social domain			P
		Medijan	25. centila	75. centila	
r500	without handicap	20,0	10,0	45,0	0,002
	moderate handicap	35,0	25,0	47,5	
	severe handicap	65,0	40,0	80,0	
r1000	without handicap	25,0	10,0	50,0	0,001
	moderate handicap	45,0	35,0	70,0	
	severe handicap	75,0	50,0	85,0	
r2000	without handicap	35,0	10,0	60,0	0,001
	moderate handicap	52,5	42,5	77,5	
	severe handicap	80,0	55,0	90,0	
r6000	without handicap	45,0	25,0	70,0	0,004
	moderate handicap	82,5	57,5	102,5	
	severe handicap	80,0	65,0	100,0	
r8000	without handicap	45,0	15,0	65,0	0,001
	moderate handicap	75,0	60,0	102,5	
	without handicap	85,0	65,0	110,0	
r4000	without handicap	20,0	10,0	50,0	0,001
	moderate handicap	70,0	60,0	80,0	
	severe handicap	82,5	55,0	92,5	
l500	without handicap	20,0	10,0	50,0	0,002
	moderate handicap	40,0	35,0	47,5	
	severe handicap	55,0	45,0	85,0	
l1000	without handicap	35,0	10,0	45,0	<0,001
	moderate handicap	50,0	35,0	75,0	
	severe handicap	70,0	50,0	80,0	
l2000	without handicap	25,0	10,0	50,0	0,001
	moderate handicap	65,0	50,0	75,0	
	severe handicap	70,0	60,0	95,0	
l4000	without handicap	35,0	10,0	60,0	0,001
	moderate handicap	67,5	62,5	87,5	
	severe handicap	85,0	60,0	95,0	
l6000	without handicap	55,0	20,0	75,0	<0,001
	moderate handicap	85,0	70,0	102,5	
	severe handicap	90,0	70,0	100,0	
l8000	without handicap	45,0	20,0	70,0	<0,001
	moderate handicap	80,0	60,0	95,0	
	severe handicap	85,0	70,0	110,0	
Sound detection threshold	without handicap	15,0	10,0	35,0	<0,001
	moderate handicap	35,0	27,5	40,0	
	severe handicap	50,0	40,0	55,0	
100% speech understanding	without handicap	45,0	30,0	65,0	0,022
	moderate handicap	65,0	50,0	65,0	
	severe handicap	67,5	65,0	70,0	

Discussion

Hearing loss is the common problem in all ages and represents a significant medical-social problem. Hearing impairment directly affects the quality of life and is the most often manifested in communication difficulties that can result in deviations in emotional and social development. Of the 32,432 persons who had undergone hearing impairment of hearing loss for five years were found in 4,356 (13,43%) of the respondents. Among the subjects with some form of hearing loss was slightly higher number of males $N = 2,300$ than women $N = 2,056$. According to the data of the registry of persons with disabilities in the Republic of Croatia living 13 609 persons with the cause of hearing impairment and is more common in males 8,047 compared to women 5,562. The prevalence of hearing loss in the world according to WHO data is over 5 % and includes 360 million people, whom 328 million adults. The largest numbers of people with disabilities have their permanent residence in the City of Zagreb and in the City of Split.

The results of Speech audiometry used to examine the frequency of speech frequency, showed better results in words which they used every day. The list of words followed by the height of the voice- for example: the voice, which is a very high voice, gives a certain weight of words (word „smoking“), while the word „wine“ is classified into the category of light words. It was difficult to understand words with consonants „d, p, r, t „ because some of that words are rarely used in our language. The main problems people with hearing loss are communication problems that can result in deviations in the quality of life as confirmed among our respondents. Such persons have cognitive and social disabilities in the form of irritability, tension, stress, feelings, and often depression and feelings of loneliness. Hearing loss affects the individual but also his family. It has been repeatedly shown that any inability has a significant stress potential for other members, although any illness or disability is a unique challenge.

Comparison of the results of the self- assessment of the quality of life obtained by the SF-36 questionnaire among our respondents similar to the quality of life compared to the results obtained on the population of the Republic of Croatia in all domains except in the domains of social functioning and mental health. The questionnaire HHIA is used to examine the social and emotional disabilities in the hearing impaired person, which based on the responses found, identifies the problems of mild to moderate or pronounced hearing loss. HHIA analysis obtained among our respondents shows that social domain significantly differentiates the individual levels of the auditory threshold at all observed frequencies and on both ears. HHIA analysis obtained among our respondents shows that emotional domain significantly differentiates the individual auditory levels at all observed frequencies as well as on both ears.

HHIA domain correlates significantly with all examined parameters (frequencies), while SF-36 domains do not correlate significantly with either. Analysis of the answers obtained from the

HHIA questionnaire, referring to the social domain, showed that 13 respondents did not have a handicap; a moderate handicap had 17 respondents, while the pronounced handicap had 20 respondents. For the emotional domain, the analysis of responses showed that the smallest number of respondents 15 showed a marked handicap while without a handicap 19 respondents.

Hearing impairment due to lack of accumulation during life is growing daily, which will result in an increase in the population of hearing impairment. Diagnostic and diagnosis is important for defining the cause and prognosis of the disease, but the function restriction information is often used in planning the intervention. After detailed audiological processing, we are quite confident in the existence, type and strength of hearing impairment and can begin functional therapy for all patients who have hearing problems and those who have hearing aids. People who have hearing aids show improvements in interpersonal communication, reduced anger and frustration. Such results lead to an improvement in the quality of life of hearing impaired people as well as communication programs such as hearing aid rehabilitation programs that seem to have good potential for reducing activity limitations and better quality of life.

Conclusion

Difficulties in communication may result in deviations in the emotional and social development and can have a significant impact on the quality of life of every person. Regular checks of hearing and timely diagnosis contribute to improvement of speech understanding and therefore better functioning in everyday life as a successful factor in resolving further emotional, social and psychological conditions. With modern hearing aids hard of hearing people achieve improvement in speech understanding and a better quality of life. Analysis of the answers obtained from the HHIA questionnaire, referring to the social domain, showed that 13 respondents did not have a handicap, the moderate handicap had 17 respondents, while the pronounced handicap had 20 respondents. For the emotional domain, the analysis of responses showed that the smallest number of respondents showed a marked handicap 15 while without a handicap 19 respondents. SF-36 showed that health dimensions that describe physical function and limitation for the most rated emotional problems, while the worst rated health dimensions describing vitality, mental health, and perception of the general Health. This results can contribute to further research on improving the quality of life and well-being vulnerable populations. We believe to include more numbers in this research, these differences were more pronounced and possibly more significant.

References

1. Aras I, Stevanović R, Vlahović S (2014) Health related quality of life in parents of children with speech and hearing impairment. *Pediatric Otorhinolaryngology* 78(2): 323-329.
2. Newton VE (2009) *Paediatric Audiological Medicine*. University of Manchester.

3. Jusczyk PW (2002) Some critical developments in acquiring native language sound organization during the first year. *Ann Otol Rhinol Laryngol* 111: 11-15.
4. Maslić Seršić D, Vuletić G (2006) psihometrijskih Evaluacija i uspostavljanje normi hrvatskog SF-36 Health Survey: Okvir za subjektivnog Health Research. *Croat Med J* 47(1): 95-102.
5. Dalton DS, Cruickshanks KJ (2003) The impact of hearing loss on quality of life in older adults. *The Gerontological Society of America* 43(5): 661-668.
6. Dobie RA, Van Hemel S (2009) Hearing Loss: Determining Eligibility for Social Security Benefits. National Research Council (US) Committee on Disability Determination for Individuals with Hearing Impairments. Washington. *J Speech Lang Hear Res* 52(4): 973-989.
7. Hallberg LR, Hallberg U (2008) Self-reported hearing difficulties, communication strategies and psychological general well-being (quality of life) in patients with acquired hearing impairment. *Interdisciplinary disability studies* 30(3): 203-212.
8. Perlmutter MS, Bhorade A (2010) Cognitive, visual, auditory, and emotional factors that affect participation in older adults. *Am J Occup Ther* 64(4): 570-579.
9. Genther DJ, Betz J (2015) Association of Hearing Impairment and Mortality in Older Adults. Health ABC Study. *J Gerontol A Biol Sci Med Sci* 70(1): 85-90.
10. Rand DC (2010) Socioeconomic Status, Family Processes, and Individual Development Family Research Group, Human & Community Development. University of California 72(3): 685-704.
11. Herman R, Morgan G (2010) Deafness, Language and Communication. The Impact of communication Disability across the Lifespan. City University London.UK, pp101-121.



This work is licensed under Creative Commons Attribution 4.0 License
DOI: [10.19080/GJO.2017.10.555790](https://doi.org/10.19080/GJO.2017.10.555790)

Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats
(Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

Track the below URL for one-step submission

<https://juniperpublishers.com/online-submission.php>