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ORIGINAL ARTICLE

Quality of Social and Sexual Life in Males with Hearing Loss

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Objective: Hearing loss(HL) is a very common medical condition that leads to a decline in quality of social and sexual life. This study aimed to assess the quality of social and sexual life in male patients with HL.

Materials and Methods: We studied two groups: (1) adult men with acquired, bilateral, sensorineural hearing loss(SNHL), and (2) healthy, adult, married men that have normal hearing levels, as the control group. Quality of social life was assessed using the The Hearing Handicap Inventory for Adults (HHIA) and 36-Item Short Form Health Survey (SF-36) and quality of sexual life was assesssed using the International Index of Erectile Function(IIEF) questionnaire.

Results: There was statistically significant differences between the groups regarding the scores for HHIA,SF-36 and IIEF questionnaire.

Conclusion: Our results indicate that men with SNHL have poorer social and sexual life.

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Introduction

Hearing loss (HL) is a very common condition among genereal population [1]. Epidemiological studies indicate that the prevalence of hearing impairment ranges from 14.1 to 20.6 percent in middle-aged adults, and up to 90 percent in adults older than 80 years [2,3]. Hearing impairment strongly affects communication. The negative results of hearing loss are not limited to disturbed communication but also can include limitations on activity and participation, increased reliance on family support, negative wellbeing and depressive symptoms [4,5]. These social limitations and emotional problems are largely related to a deterioration in quality of life [6]. It must be also kept in mind that communication problems related to hearing impairment may also affect a person's sexual life [7]. Many studies have investigated the psychosocial affects of hearing loss in elderly [8,9]. Studies to assess the affect of hearing loss on younger people are rare [10,11]. Also the effects of hearing loss on sexual health still remain unstudied. There is only one study investigating sexual health of patients with hearing loss [12].

In this study we used the The Hearing Handicap Inventory for Adults (HHIA) and 36-Item Short Form Health Survey (SF-36) to investigate sociological domains and the International Index of Erectile Function questionnaire to assess the sexual health of males with acquired, bilateral and sensorineural hearing loss (SNHL), and compared the results with a similar group of healthy men.

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Materials methods

Study design and study population

This is a prospective study carried out by an ENT and urology clinician. Ethics committee approval was obtained and the study was conducted adhering to the Declaration of Helsinki. Informed consent was obtained from all participants.

Males between 20-50 years old; with a history of acquired, bilateral, sensorineural hearing loss over a year; married and able to complete the study were included in the study. The exclusion criteria were: ages below 20 years or over 50 years ; prelingual hearing loss; acute hearing loss; unilateral sensorineural hearing loss; use of a hearing device; widowed or unmarried; lack of mental capacity; previous any other disease; previous sexual or psychiatric disorders; use of any medication ; BMI of 30 kg/m^2 or more; a history of ear or urologic surgery. The control group were healthy, adult, married males who have normal hearing levels with a similar distribution.

Audiological examination

Examination of all subjects included in the study involved a detailed story, otoscopic evaluation and audiological assessment. Pure –tone audiometry (PTA) was performed by the same audiologist in soundproof booth. Pure-tone air-conduction thresholds were obtained for

each ear at 500, 1000, 2000, 3000, 4000, 6000 and 8000 Hz. Bone-conduction thresholds were measured at 500, 2000 and 4000 Hz. We determined hearing impairment as the pure-tone average of audiometric hearing thresholds at 500, 1000, 2000, and 4000 Hz in the better of the two ears. We used the following guideline when describing the severity of hearing loss [13].

- Normal hearing (0 to 25 dB HL)
- Mild hearing loss (26 to 40 dB HL)
- Moderate hearing loss (41 to 70 dB HL)
- Severe hearing loss (71 to 90 dB HL)
- Profound hearing loss (greater than 91 dB HL)

Assessment of Quality of Life

The Hearing Handicap Inventory for Adults (HHIA) was employed [14]. This 25-item questionnaire is derived from the original Hearing Handicap Inventory for the Elderly (HHIE) by Ventry and Weinstein and is composed of a 13-item emotional subscale and a 12-item socio-situational subscale [15]. A *yes* answer to an item is awarded 4 points, a *sometimes* 2 points and a *no* 0 points. Therefore, scores range from 0 to 100 points indicating an increasing level of perceived handicap.

Furthermore to investigate the quality of psychosociological life, the 36-Item Short Form Health Survey (SF-36) was used. This scale consists of 36 items subdivided into 8 subscales. These subscales are *physical functioning, rolephysical, bodily pain, general health, vitality, social functioning, role-emotional and mental health* [16,17]. Each subscale separately scored using item weighting and additive scaling. Summed data were then transformed into a 0 to 100-point scale, higher score indicating better.

Assessment of sexual function

Sexual function was assessed using the International Index of Erectile Function questionnaire.

This questionnaire has been widely used to evaluate male sexual function. It consists of 15 items grouped into 5 sexual function domains: *erectile function* (six questions); *orgasmic function* (two questions); *sexual desire* (two questions); *sexual intercourse satisfaction* (three questions); and *overall satisfaction* (two questions) [18]. Each question was scored from 1 to 5. The individual scores in each domain were rated to indicate the degree of clinical dysfunction; rating numbers were defined as follows: 5= no dysfunction, 4= mild dysfunction, 3= mild-to-moderate, 2= moderate and 1= severe. Lower question scores indicates higher degrees of dysfunction, while higher scores means healthier sexual function.

Data analysis

SPSS version 15.0 was used for statistics. Both descriptive and analytic statistics were used. Descriptive statistics were stated as percentage, mean ± SD (standard deviation) and number. Continues variables were stated as mean ± SD, whereas categorical variables as number and frequency. Normal distribution of continues variables were tested with Kolmogorov-Smirnov test. Mann-Whitney *U* test, Student's *t* test and Kruskal-

Wallis test was used for the comparison of the groups. Statistically significant level was acceptes as p value <0.05.

Results

A total of 85 adult subjects were recruited in this study. All subjects were males between 20 and 50 years old , married and sexually active. İn the study group there were 45 subjects with acquired bilateral sensorineural hearing loss with a mean age of 35.06 ± 7.71 (minimum 23- maximum 49). The control group were 40 healthy adults with normal hearing levels with a mean age of 34.3 ± 7.09 (minimum23- maximum 48). The body mass index of the study group and control group were 23.6 ± 2.09 and 24.05 ± 2.07 respectively. When the groups were compared in terms of age and body mass index, they were similar (p=0.38, p= 0.32 respectively).

Comparison of scores of The Hearing Handicap Inventory for Adults (HHIA) and its subscales between hearing loss (HL) group and control group are shown in Table 1 . The scores of HHIA and its subscales were significantly different between the two groups (p=0.0001).

Table 2 summarises the comparison of the results of the 36-Item Short Form Health Survey (SF-36) for hearing loss(HL) group and control group. The hearing loss(HL) group had significantly worse scores for social functioning (p=0.0001) and physical role difficulty(p=0.007) domains whereas the scores for other domains of the 36-Item Short Form Health Survey (SF-36) were similar for the groups.

Comparison of results for International Index of Erectile Function questionnaire between hearing loss(HL) group and control group are summarized in Table 3. The hearing loss(HL) group had significantly lower scores for orgasmic function (p=0.0001), sexual desire (p=0.0001) and overall satisfaction (p=0.0001) domains whereas the scores for erectile function (p=0.357) and intercourse satisfaction(p=0.677) were similar.

To investigate whether age affects the scores of The Hearing Handicap Inventory for Adults (HHIA) , 36-Item Short Form Health Survey (SF-36) and International Index of Erectile Function questionnaire, the hearing loss (HL) subjects were classified into three groups. Group 1 were the subjects between 20-30 years old, Group 2 were the subjects between 30-40 years old and Group 3 were the subjects between 40-50 years old. All of the groups consisted of 15 subjects (%33.3). Comparison of age groups for the scores of The Hearing Handicap Inventory for Adults (HHIA) , 36-Item Short

Table 1. Comparison of scores of The Hearing Handicap Inventory for Adults (HHIA) and its subscales between hearing loss (HL) group and control group

	HL Group (n=45)	Control Group (n=40)	p
HHIA(total score)	40.1 ±11.3	0.35 ±0.76	p=0.0001
HHIA(sociosituational)	16.5 ±5.22	0.07 ±0.26	p=0.0001
HHIA (emotional)	23.6 ±6.56	0.27 ±0.64	p=0.0001

Table 2. Comparison of the results of the 36-Item Short Form Health Survey (SF-36) between hearing loss (HL) group and control group

	HL Group (n=45)	Control Group (n=40)	p
Physical functioning	84.6 ± 13,7	88.0 ± 9.29	0.966
Physical role difficulty	56.7 ± 17,8	86.2 ± 11.7	0.007
Bodily pain	84.3 ±8.03	86.9 ±14.4	0.768
General health perception	84.9 ± 5.96	81.9 ±7.16	0.222
Vitality	81.3 ± 13.8	86.7 ± 7.32	0.295
Social functioning	61.8 ± 11.9	86.9±6.67	0.0001
Emotional role difficulty	57.2 ± 11.2	83.0± 9.55	0.311
Mental health	85.1 ± 10.7	85.6 ± 11.4	0.609

Form Health Survey (SF-36) and International Index of Erectile Function questionnaire are shown in Table 4, Table 5, and Table 6 respectively.

The total score (p=0.833), the sociosituational score(p=0.347) and the emotional score(p=0.789) of The Hearing Handicap Inventory for Adults (HHIA) were similar for groups 1,2 and 3.

The scores for all domains of the 36-Item Short Form Health Survey (SF-36) were similar for the groups.

Table 6 summarises the results of International Index of Erectile Function questionnaire. The domains except orgasmic function (p=0.019) were similar for the groups.

Also we grouped the hearing loss(HL) subjects according to the severity of hearing loss. We used american speech-language-hearing association guidelines. Group A were the subjects with mild hearing loss, group B were the subjects with moderate hearing loss, Group C were the subjects with severe hearing

Table 3. Comparison of results for International Index of Erectile Function questionnaire bwtween hearing loss (HL) group and control group

	HL Group (n=45)	Control Group (n=40)	p
Erectile function	21.4 ± 2.75	26.2 ± 3.32	0.357
Orgasmic function	7.75 ± 1.33	9.02 ± 0.94	0.0001
Sexual desire	5.33 ± 1.22	9.22 ± 0.65	0.0001
Intercourse satisfaction	9.93 ± 1.30	12.9 ± 1.45	0.677
Overall satisfaction	6.17 ± 1.15	9.15 ± 0.89	0.0001

Table 4. Comparison of the scores of The Hearing Handicap Inventory for Adults (HHIA) between Groups 1,2 and 3.

	Group 1 (n=15)	Group2 (n=15)	Group 3 (n=15)	p
HHIA(total score)	39.4 ± 9.06	39.8 ± 14.9	41.2 ± 9.82	0.833
HHIA(sociosituational)	17.0 ± 4.18	14.9 ± 6.37	17.7± 4.78	0.347
HHIA (emotional)	22.4 ± 5.26	24.8 ± 8.72	23.5± 5.34	0.789

Table 5. Comparison of the scores of 36-Item Short Form Health Survey (SF-36) among Groups 1,2 and 3.

	Group 1 (n=15)	Group2 (n=15)	Group 3 (n=15)	p
Physical functioning	84.6 ± 6.16	85.3 ± 6.24	84.1± 22.6	0.371
Physical role difficulty	51.2 ± 17.5	55.2 ± 15.6	63.8± 19.0	0.155
Bodily pain	80.9 ± 10.3	83.9 ± 5.93	88.0± 5.73	0.078
General health perception	85.1 ±5.69	86.3± 5.86	83.2± 6.31	0.329
Vitality	79.4± 22.3	81.9± 6.76	82.7 ±7.08	0.935
Social functioning	61.6 ±13.8	64.4±10.0	59.6± 11.9	0.498
Emotional role difficulty	60.6± 11.6	57.5± 11.9	53.6± 9.64	0.221
Mental health	82.2± 10.1	88.4± 11.3	84.6± 10.4	0.176

Table 6. Comparison of the scores of International Index of Erectile Function questionnaire amongGroups 1,2 and,3.

	Group 1 (n=15)	Group2 (n=15)	Group 3 (n=15)	p
Erectile function	22.1± 3.37	21.8± 2.26	20.2±2.24	0.092
Orgasmic function	7.40±1.59	7.33±1.04	8.53±0.99	0.019
Sexual desire	5.06±1.33	5.86±1.30	5.06±0.88	0.169
Intercourse satisfaction	10.0±1.41	10.0±1.41	9.80±1.14	0.901
Overall satisfaction	6.20±1.26	5.73±1.09	6.60±0.98	0.123

loss. Hearing loss was mild in 11 subjects (%24.4) , moderate in 20 subjects (%44.4) and severe in 14 subjects (%31.1).

Comparison of the results of The Hearing Handicap Inventory for Adults (HHIA) between groups A,B and C are shown in Table 7. The scores of The Hearing Handicap Inventory for Adults (HHIA) and its subscales were significantly different for group A,B and C (p=0.0001).

Comparison of 36-Item Short Form Health Survey (SF-36) for group A,B and C are listed in Table 8. The results were similar for the groups for all domains of 36-Item Short Form Health Survey (SF-36).

Discussion

Sensorineural hearing loss (SNHL) is a very common and multi faceted medical condition. Hearing impairment not only disturbs communication but also has negative affects on quality of life, psychosocial profile and sexual life of the individuals.

In our study, subjects with hearing loss had higher levels of both sociosituational and emotional handicap and stress and poorer levels of social functioning and physical role.

A study reported by Bakır et al. also indicated that hearing loss patients had poorer quality of life scores for the social functioning and physical role difficulty

Table 7. Comparison of the results of The Hearing Handicap Inventory for Adults (HHIA) for Groups A,B and C.

	Group A	Group B	Group C	p
HHIA(total score)	26.0± 3.82	40.7±7.26	50.5± 7.77	0.0001
HHIA(sociosituational)	9.36±1.74	17.2±2.57	21.2± 3.40	0.0001
HHIA (emotional)	16.6±2.20	23.4±5.28	29.2± 5.06	0.0001

Table 8. Comparison of 36-Item Short Form Health Survey (SF-36) for Groups A,B and C.

	Group A	Group B	Group C	p
Physical functioning	85.3±7.20	81.8±19.1	88.2±5.85	0.407
Physical role difficulty	53.2±16.8	56.5±19.5	59.9±16.7	0.607
Bodily pain	85.2±8.63	82.0±5.87	86.7±9.78	0.108
General health perception	83.9±5.90	85.0±6.18	85.5±6.03	0.711
Vitality	83.9±7.87	83.8±7.94	75.8±21.4	0.402
Social functioning	54.9±7.56	63.1±12.4	65.5±12.5	0.084
Emotional role difficulty	57.0±9.61	57.8±12.7	56.7±10.9	0.999
Mental health	86.2±9.59	86.6±11.4	82.1±10.6	0.440

Table 9. Comparison of the results of International Index of Erectile Function questionnaire among Groups A,B and C. The results were similar for the groups for all domains of International Index of Erectile Function questionnaire.

	Group A	Group B	Group C	p
Erectile function	22.1±2.22	21.1±3.14	21.2±2.60	0.462
Orgasmic function	7.81 ±1.47	7.55±1.53	8.00±0.87	0.661
Sexual desire	5.27±1.61	5.35±1.13	5.35±1.08	0.900
Intercourse satisfaction	10.5± 1.50	9.65± 1.18	9.85± 1.23	0.240
Overall satisfaction	6.45± 1.57	6.20±1.10	5.92±0.82	0.528

domains [12]. A resembling study conducted by Monzani et al. assessing psychological profile and social behaviour of working adults with acquired hearing loss indicated higher levels of disability and of psychological distress and lower levels of social functioning and emotional role than a normal control population [19]. Higher level of stress in their study population was restricted to anxiety, depression, phobic anxiety, interpersonal sensitivity, and hostility. Depression seen in these patients may be related to their impairment and feelings of low self-esteem. Low self-esteem, which is usually a component of depression, was found to be an important predictor of mental stress in deaf adults [20]. In a recent study, depression was found to be more prevalent among patients with mildly or severely hearing impairment. Physical and psychological impairments both may lead to the development of depression in these patients [21]. Additionally, social withdrawal, disruption of communication, and poor relationship with family and environment were also reported in patients with hearing loss [22,23]. Similarly , Fellinger et al. reported that the quality of life of patients with hard of hearing was significantly related to the level of satisfaction with their hearing. In that study physical, psychological, social, and environmental aspects of quality of life of those patients were also found to be poorer than the normal population[24]. A study conducted by Danermark et al. confirms a recent trial on psychosocial work environment that hearing-impaired workers report worse psychological well-being than normal hearing subjects[25]. Consistent with the results of this study, a number of previous trials suggested that hearing loss may impair psychosocial functioning and quality of life [20,22,26].

When we compared whether age affects the quality of psycosociological life of hearing impaired subjects, we discovered no difference in our study. A study published by Tambs concluded that that hearing loss had a moderate effect on mental health and well being in young and middle-aged people, and a negligible effect in elderly people. Elderly people accept their hearing loss more readily because it is considered to occur normally with ageing [27].

In our study we also investigated if level of hearing loss affects the quality of life. In our study the sociosituational and emotional role of hearing impaired subjects were poorer but they had no difference in psychosociological domains of quality of life. İn contrast, de Graaf et al. reported no association between the degree of hearing loss and mental distress [20].

The effects of tinnitus and vertigo on sexual health have been previously investigated. One study investigated the effects of tinnitus, and found that tinnitus patients accepted living with their disease, and that loss of sexual performance was not observed over the long term [28]. Zapata and López- Escámez evaluated sexual health in patients with Ménière's disease, and suggested that this condition is associated with erectile dysfunction in men [29].

In our study the orgasmic function, sexual desire and overall satisfaction domains showed worse scores whereas the scores for erectile function and intercourse satisfaction were similar. When we investigated the effect of age and level of hearing loss for sexual health in hearing impaired subjects, we found that orgasmic function were poorer for elder subjects whereas hearing loss level did not affect the quality of sexual life.

There is only one study about hearing loss and quality of sexual life. Bakır et al. conducted a study that indicated that hearing loss adversely affects men's sexual function. Their hearing loss patients had poorer sexual health and they showed twice the prevalence of erectile dysfunction compared with control subjects [12]. Their hearing loss patients' sexual health did not differ according to patients' degree of hearing loss.

Conclusion

That must be kept in mind that hearing loss is not only an audiological problem but is also a strong predictor of declining quality of life . Hearing handicap strongly affects the person's standard of life.

References

1. National Aging Information Center. Profile of older Americans. Administration on aging 1998. Available from: URL: http://www.ageinfo.org

2. Cruickshanks KJ, Wiley TL, Tweed TS, Klein BE, Klein R, Mares-Perlman JA et al. Prevalence of hearing loss in older adults in Beaver Dam, Wisconsin: the Epidemiology of Hearing Loss Study. Am J Epidemiol 1998;148:879–86.

3. Agrawal Y, Platz EA, Niparko JK. Prevalence of hearing loss and differences by demographic characteristics among US adults: data from the National Health and Nutrition Examination Survey, 1999–2004. Arch Intern Med 2008;168:1522–30.

4. Chisolm TH, Johnson CE, Danhauer JL, et al. A systematic review of healthrelated quality of life and hearing aids: final report of the American Academy of Audiology Task Force On the Health-Related Quality of Life Benefits of Amplification in Adults. Journal of the American Academy of Audiology 2007;18:151–83.

5. Schneider J, Gopinath B, Karpa MJ, et al. Hearing loss impacts on the use of community and informal supports. Age and Ageing 2010;39:458–64.

6. National Council of Aging. The consequences of untreated hearing loss. ORL Head Neck Nurs 1999;41:17-37.

7. Esposito K, Giugliano D. Obesity, the metabolic syndrome, and sexual dysfunction in men. Clin Pharmacol Ther 2011;90: 169–73.

8. Stumer J, Hickson L, Worrall L. Hearing impairment, disability and handicap in elderly people living in residential care and in community. Disabil Rehabil 1996;18:76-82.

9. Lichtenstein MJ, Hazuda HP. Cross-cultural adaptation of the hearing handicap inventory for the elderly-screening version (HHIE) for use with Spanish-speaking Mexican Americans. J Am Geriatr Soc 1998;46:492-8.

10. 23 Hallberg LR, Carlsson SG. Hearing impairment, coping and perceived hearing handicap in middle aged subjects with acquired hearing loss. Br J Audiol 1991;25:323-30.

11. Helvik AS, Jacobson G, Hallberg LR. Psychological wellbeing of adults with acquired hearing impairment. Disabil Rehabil 2006;28:35-45.

12. Bakır S, Penbegül N, Gün R. Relationship between hearing loss and sexual dysfunction. J Laryngol Otol . 2012 Dec 20:1-6.

13. American Speech–Language–Hearing Association. (2005).Guidelines for manual pure-tone threshold audiometry. Available from www.asha.org. http://asha.org/docs/html/GL2005-00014.html. Accessed December 22, 2011.

14. Newman CW, Weinstein BE, Jacobson GP, Hug GA. The Hearing Handicap Inventory for adults: Psychometric adequacy and audiometric correlates. Ear Hear 1990;11:430-3.

15. Ventry I, Weinstein B. The hearing handicap inventory for the elderly: a new tool. Ear Hear 1982;3:28-134.

16. Ware Jr JE, Sherbourne CD. The MOS 36-item short-form health survey (SF-36) ,conceptual framework and item selection. Medical Care 1992;30:473–83.

17. ABS. National health survey. SF-36 population norms. Australia [4399.0]. Canberra: ABS; 1997.

18. Rosen RC, Riley A, Wagner G, Osterloh IH, Kirkpatrick J, Mishra A. The international index of erectile function (IIEF): a multidimensional scale for assessment of erectile dysfunction.Urology 1997;49:822–30.

19. Monzani D, Galeazzi GM, Genovese E, Marrara A, Martini A. Psychological profile and social behaviour of working adults with mild or moderate hearing loss. Acta Otorhinolaryngol Ital 2008; 28:61–66.

20. de Graaf R, Bijl RV. Determinants of mental distress in adults with a severe auditory impairment: differences between prelingual and postlingual deafness. Psychosom Med 2002: 64: 61–70.

21. Hariri AG, Ozer G, Ceylan ME. Acquired hearing loss and psychiatric symptoms. Arch Neuropsychiatry 2009;46:149–156.

22. Newman CW, Weinstein BE, Jacobson GP, Hug GA. The Hearing Handicap Inventory for adults: psychometric adequacy and audiometric correlates. Ear Hear 1990;11:430–433.

23. Eriksson-Mangold M, Carlsson SG. Psychological and somatic distress in relation to perceived hearing disability, hearing handicap, and hearing measurements. J Psychosom Res 1991;35:729–740.

24. Fellinger J, Holzinger D, Gerich J, Goldberg D. Mental distress and quality of life in the hard of hearing. Acta Psychiatr Scand 2001;115:243–245.

25. Danermark B, Gellerstedt LC. Psychosocial work environment, hearing impairment and health. Int J Audiol 2004;43:383-9.

26. Meijer AG, Wit HP, TenVergert EM, Albers FW, Muller Kobold JE. Reliability and validity of the (modified) Amsterdam Inventory for auditory disability and handicap. Int J Audiol 2003;42:220–226.

27. Tambs K. Moderate effects of hearing loss on mental health and subjective well-being: results from the Nord-Trø´ndelag hearing loss study. Psychosom Med 2004;66:776–782.

28. Muluk NB, Basar MM, Oguzturk O, Dikici O. Does subjective tinnitus cause sexual disturbance? J Otolaryngol 2007;36:77–82.

29. Zapata C, López-Escámez JA. A pilot study of sexual health in patients with Ménière's disease.Acta Otorrinolaringol Esp 2011;62:119–25.