



Original Article

Severe and Frequent Loneliness Mars Adults with Hearing Loss

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ABSTRACT

There is a high prevalence of hearing loss in community and need of research to address this gap into the health-related issues of hearing loss like loneliness, anxiety and depression, hence current study was conducted. **Objective:** To determine the subjective loneliness in adults with hearing loss and association with clinico-demographic variables. **Methods:** This cross-sectional study was conducted at Isra University Islamabad, recruited N=377 patients with hearing loss utilizing convenience sampling from Sir Ganga Ram and Mayo Hospitals, Lahore, Pakistan from January 2020 to June 2020. The sample included both genders, aged 20 to 65 years with moderate to profound hearing loss of at least 1-year duration. The basic demographic sheet and University of California, Los Angeles (UCLA) Loneliness Scale Version 3 were used for data collection. Data were analyzed using SPSS Version 26 & Chi-square was utilized for association with $p < 0.05$ taken to be significant. **Results:** Study revealed severe loneliness in 279(74%) and frequent loneliness in 98(26%). Severity categories of loneliness revealed association with age ($p=0.049$), gender ($p=0.043$), smoking ($p=0.049$), type of hearing loss ($p < 0.001$), degree of hearing loss ($p=0.008$), hearing aid use ($p < 0.001$), hours and days of hearing aid use ($p < 0.001$). **Conclusions:** It is concluded that hearing loss results in severe and frequent loneliness. Factors including age, gender, smoking, type of hearing loss, degree of hearing loss, hearing aid use, hours and days of hearing aid use are associated with loneliness in adult population of Punjab, Pakistan.

INTRODUCTION

Hearing loss (HL) is a common chronic condition of global health concern defined as a hearing threshold greater than 20 dB in both ears, while disabling HL is defined as a loss of more than 35 dB in the better hearing ear. It is a highly prevalent condition with a prevalence of 466 million (m) with 432m adults and 34m children. This accounts for around 6.1% of the world population, with possible escalation to 700m cases with disabling HL by the year 2050 [1]. In the United States alone, the prevalence of HL doubles with 10 years' increment in age [2], with a very high prevalence reported in an Egyptian school-based study [3]. A local study by Zahra et al., reported significant

association of hearing handicap with advancing age [4] with predominance of conductive HL (50%), followed by mixed variety (30%) and sensorineural hearing loss (SNHL) (20%) [5]. While another local study reported positive correlation of severity of HL with age with moderately severe HL being the commonest followed by severe HL [6]. Adulthood is a large segment of an individual's life, booming with physical and intellectual maturity with early adulthood extending around 25-45 years, middle between 45-65 and then comes older adulthood [7]. Individuals in different age groups suffer psychological issues quite differently and elderly suffer various psycho-social issues influenced by

different factors like daily activities and occupational circumstances etc. [8]. Normal hearing is essential for the normal healthy development of an individual with increase in HL resulting in decreased language acquisition and functioning [9]. HL in adult population can affect quality of life (QoL) in terms of communication difficulties leading to hardships in relationships as well as at work resulting in adverse social, psychological, and economic impact on the individual and family (2). Adult population with HL is at risk of development of mental health issues [10]. With a major segment of society facing this health dilemma, research into HL related outcomes in older adults is need of the hour [11]. Loneliness is a subjective situation where individual lacks the preferred affection as well as closeness with others who are intimate or family and friends and differs from objective state of living alone [12]. There is dearth of studies on loneliness, despite its presence in adolescents in Institutions resulting in aggression [13]. It is important to study loneliness since it is a can predict the results in mental disordered people [14] and can result in a number of psychiatric issues including abuse of alcoholic drinks, child abuse, depression, sleep issues as well as changes in personality [15]. Hence, keeping in view high prevalence of HL in the community with need of research to address this gap into the health-related issues of HL [2], like loneliness, anxiety, depression, stress and deficient knowledge of evidence based treatment.

The current study was designed to determine the Subjective Loneliness in Adults with Hearing Loss and association with clinico-demographic variables. It is an important area of research since it can provide baseline knowledge for taking clinical decisions and provision of policy making to set the background for future research.

METHODS

The current cross-sectional study enrolled N=377 patients with hearing loss by convenience sampling over a period of six months from 1st January 2020 to 30th June 2020 from out-patient department of Sir Ganga Ram Hospital and Mayo Hospital, Lahore, Pakistan. The sample included patients of both genders, aged 20 to 65 years with moderate to profound hearing loss of at least 1-year duration. Cases with psychotic disorders and multiple handicaps were excluded from the study. A Sample of N=377 was calculated using Raosoft online sample size calculator with 5% error margin, 95% confidence level, and response distribution of 50%. Basic demographic sheet and University of California, Los Angeles (UCLA) Loneliness Scale Version 3 were used for data collection. UCLA loneliness scale Version 3 is a 20 item, valid and reliable tool having a α value varying from 0.89 to 0.94. Its psychometric properties confirm it to be a reliable assessment tool to assess loneliness in a wide variety of population types and

methods for data acquisition [16]. The study was initiated after obtaining ethical approval of Institutional research board of Isra Institute of rehabilitation sciences, Isra University vide Reg. No. 1809-M Phil HS-004, and informed consent of participants for inclusion in the study keeping their anonymity preserved. Data were collected from the recruited patients using the questionnaires and it was analyzed using SPSS Version 26.0. Descriptive statistics were utilized and Chi-square was used to see any association with $p < 0.05$ taken to be significant.

RESULTS

The current study revealed that majority 279(74%) of the sample population was severely lonely with mean UCLA scale score of 44.2 (SD 8.7), while the remaining 98(26%) felt frequently lonely with mean score of 26.52 \pm 3.15 with no participant who was rarely lonely (Figure 1).

Table 1: Descriptive Statistics of Severity of Loneliness (n=377)

Severity off Loneliness	f (%)	Mean \pm SD
Rarely	0 (0)	0 \pm 0
Frequently	98 (26)	26.52 \pm 3.15
Severe	279 (74)	44.2 \pm 8.7

Clinico-demographic features (Table 2) revealed that majority 151(40.1%) of the population was 51-65 years old followed by 130(34.5%) in 20-35 years age group with most 222(58.9%) being males. Majority 251(66.6%) belonged to middle class and were graduates 75(13.3%). Most 219(58.1%) had SNHL with least 93(24.7%) using hearing aids out of which 64(16.97%) were using hearing aids for more than 12 hours and 54(14.3) were using HAs for 3-4 days a week. Also majority 292(77.5%) never smoked and their partners were alive 229(60.7%). In majority 117(31%) isolated medical problems were present. 125(33.2%) had psychological issues while only 32(8.5%) were using coping strategies for it.

Table 2: Sociodemographic & Clinical characteristics of sample population (N=377)

Variable	Group	Frequency (%)
Age	20-35	130 (34.5)
	36-50	96 (25.5)
	51-65	151 (40.1)
Gender	Male	222 (58.9)
	Female	155 (41.1)
Economic Status	Low	124 (32.9)
	Middle	251 (66.6)
	High	2 (0.5)
Education	No Formal Education	72 (19.1)
	Under Matric	76 (20.2)
	Matric	89 (23.6)
	Intermediate	50 (13.3)

	Graduation	75 (19.9)
	Post-Graduation	15 (4)
Type of Hearing Loss	CHL	54 (14.3)
	SNHL	219 (58.1)
	MHL	104 (27.6)
Degree of Hearing Loss	Moderate	96 (25.5)
	Severe	223 (59.2)
	Profound	58 (15.4)
Hearing Aid User	Yes	93 (24.7)
	No	284 (75.3)
Hearing Aid Usage in Hours/ Day	Less than 8 hours	9 (2.4)
	8-12 hours	20 (5.3)
	More than 12 hours	64 (17)
	Not HA user	284 (75.3)
Hearing Aid Usage in Days/ Week	1-2 days	13 (3.4)
	3-4 days	54 (14.3)
	More than 4 days	26 (6.9)
	Not HA user	284 (75.3)
Smoking Status	Current	55 (14.6)
	Former	30 (8)
	Never	292 (77.5)
Partner Status	Live	229 (60.7)
	Dead	30 (8)
	Separated	30 (8)
	Unmarried	88 (23.3)
History of Medical Problems	Isolated Medical Problem	117 (31)
	Vision Problem	73 (19.4)
	Multiple Comorbidities	81 (21.5)
	No problem	106 (28.1)
Any Psychological Issue	Yes	125 (33.2)
	No	252 (66.8)
Any Coping Strategy	Yes	32 (8.5)
	No	345 (91.5)

Among Socio-demographic variables (Table 3), age revealed significant association with $p=0.049$ with severity categories of loneliness with higher UCLA scores for age below 36 years and above 50 years. Gender also revealed significant association ($p=0.043$) with severity of loneliness with higher scores for male gender. Socioeconomic status did not reveal significant association with severity of loneliness however UCLA score was highest for lower class. Educational status also did not reveal association with severity of loneliness; however, scores were highest for post graduates. Smoking status showed significant association ($p=0.049$) with severity of loneliness with higher frequency of current smokers affected who also had highest UCLA score. However, partner status did not reveal significant association.

Table 3: Socio-Demographic Characteristics * Severity of Loneliness & UCLA Score. Cross Tabulation (n=377)

Socio-Demographic		Severity			UCLA Score
Variable	Group	Frequently (21-30) (n=98)	Severe (31-40) (n=279)	Chi-Square Association (X ² , p-value)	Mean ± SD
Age	20-35 (n=130)	26	104	5.93 0.049	42.10±10.07
	36-50 (n=96)	33	63		36.21±10.02
	51-65 (n=151)	39	112		39.61±11.59
Gender	Male (n=222)	49	73	4.319 0.043	40.77±10.96
	Female (n=155)	49	106		37.94±10.64
Economic Status	Low (n=124)	34	90	0.866 0.649	40.7±11.08
	Middle (n=251)	64	187		39.12±10.81
	High (n=2)	0	2		31.50±0.71
	Not HA user	284	75.3		
Education	None (n=72)	14	58	9.089 0.106	40.17±10.52
	Under Matric (n=76)	27	49		37.47±11.15
	Matric (n=89)	28	61		37.98±11.48
	Intermediate (n=50)	11	39		41.34±10.70
	Graduation (n=75)	16	59		39.12±10.05
	Post-Graduation (n=15)	2	13		44.40±9.51
Smoking Status	Current (n=55)	11	44	4.78 0.049	42.67±10.48
	Former (n=30)	13	17		36.33±11.95
	Never (n=292)	74	218		39.36±10.77
Partner Status	Live (n=229)	63	166	1.521 0.677	38.69±10.77
	Dead (n=30)	7	23		39.63±11.58
	Separated (n=30)	9	21		42.40±11.26
	Unmarried (n=88)	19	69		41.03±10.74

Clinical characteristics (Table 4) revealed that type of hearing loss had significant association ($p<0.001$) with severity of loneliness with highest UCLA score for SNHL and lowest for conductive HL. Similarly degree of hearing loss was significantly ($p=0.008$) associated with severity of loneliness with highest UCLA scores for severe hearing loss and lowest for moderate HL. Hearing aid use was also significantly ($P<0.001$) associated with severity of loneliness with more cases not using HA suffering loneliness and highest scores for those not using HA. Hours of HA use per day and Days per week were associated ($P<0.001$) with severity of loneliness with higher scores for those not using HA and those using hearing aids for longer time both in terms of hours and days. History of medical problems and psychological issues and coping strategies use did not reveal significant association with severity of loneliness.

Table 4: Clinical Characteristics * Severity of Loneliness & UCLA Score. Cross Tabulation (n=377)

Clinical Variables		Severity			UCLA Score
Variable	Group	Rarely Lonely (n=156)	Being Lonely (n=221)	Chi-Square Association (X ² , p-value)	Mean ± SD
Type of Hearing Loss	CHL (n=54)	28	26	22.82 0.000	33.24±0.19
	SNHL (n=219)	51	168		41.07±11.53

	MHL (n=104)	19	85		39.83±0.11
Degree of Hearing Loss	Moderate (n=96)	32	64	9.752 0.008	36.85±9.99
	Severe (n=223)	45	178		41.44±11.16
	Profound (n=58)	21	37		37.14±10.04
Hearing Aid User	Yes (n=93)	51	42	53.39, 0.000	32.05±9.69
	No (n=284)	47	237		42.08±10.41
Hearing Aid Usage in Hours Per Day	< 8 hours (n=9)	9	0	65.81, 0.000	21.87±0.64
	8-12 hours (n=20)	14	6		29.85±2.72
	> 12 hours (n=64)	28	36		34.41±0.47
	Non user (n=284)	47	237		41.95±10.48
Hearing Aid Usage in Days Per Week	1-2 days (n=13)	2	11	50.36, 0.000	47.00±0.00
	3-4 days (n=54)	35	19		29.20±5.44
	> 4 days (n=26)	14	12		39.42±12.15
	Non user (n=284)	47	237		41.58±10.47
History of Medical Problems	Isolated Medical Problem (n=117)	35	82	44.31, 0.23	38.38±10.70
	Vision Problem (n=73)	20	53		38.17±10.87
	Multiple Com-orbidities (n=81)	14	67		42.23±11.46
	No problem (n=106)	29	77		39.93±10.45
Any Psychological Issue	Yes (n=125)	31	94	0.139 0.803	40.48±10.11
	No (n=252)	67	185		39.17±11.27
Any Coping Strategy	Yes (n=32)	10	22	0.502 0.528	40.69±11.50
	No (n=345)	88	257		39.51±10.96

DISCUSSION

Loneliness has a high prevalence range of 25-29% in adult US population with similar estimates in other countries including Asian states [12]. The current study revealed that majority of adult population with hearing loss (HL) 279 (74%) was severely lonely with mean scores on University of California, Los Angeles (UCLA) Loneliness Scale Version 3 at 44.2 (SD 8.7), while the remaining 98 (26%) felt frequently lonely with mean score of 26.52 (3.15). Similarly, a study by Bott & Saunders clarified that HL was a risk factor associated with both loneliness as well as social isolation and remedial measure to improve hearing might help address these issues [17,18]. Different age groups revealed varying level of association of HL and psychological well-being with loneliness reported to be a problem mainly in age group between 18 to 30 years [19]. Similarly in a study by Sung et al., revealed that younger age was associated with increased loneliness [20]. However, in the current study age revealed significant association ($p=0.049$) with severity of loneliness with higher scores for age below 36 years and above 50 years. In contrast a study by Mick et al., reported significant association of social isolation in females of 60-69 years of age with no significant association in remaining age and gender groups [21]. In current study gender also revealed significant association ($p=0.043$) with severity of loneliness with higher UCLA score for males. While Shukla et al., in their study reported a stronger association of HL with loneliness in females [18]. Similarly, Ramage-Morin reported higher prevalence of isolation in females (16%)

compared to males (12%) [22]. In the present study, socioeconomic status did not reveal any association with loneliness however UCLA score was highest for lower class. Similarly, a study by Nakahori et al., reported no association of socioeconomic status in terms of blue- or white-collar jobs with HL [23]. Literature reveals association of lower level of education with HL in the elderly, while present study shows no association ($p=0.106$) of educational status with severity of loneliness, however UCLA scores were higher for post graduates. Smoking status also revealed significant association ($p=0.049$) with severity of loneliness with higher frequency of current smokers affected who also had highest UCLA score indicating loneliness leads to smoking or vice versa. However, partner status did not reveal significant association though literature reveals association of loneliness and social isolation with HL [18]. In present study, the type of hearing loss was significantly ($p<0.001$) associated with severity of loneliness with highest score for sensory-neural hearing loss (SNHL) and lowest for conductive HL. Similarly, Ramage-Morin reported association of loneliness with moderate degree of SNHL [22]. The degree of HL was significantly ($p=0.008$) associated with severity of loneliness with highest scores for severe and lowest for moderate HL. The study by Sung et al., posits higher degree of HL associated more loneliness [20]. The chances of acquiring severe to very severe loneliness is significantly augmented by 7% for each decibel of signal to noise ratio drop in hearing [19]. The augmentative assistive devices for auditory support like hearing aids (HA) usage improves the hearing and speech comprehension of the hearing-impaired population therefore its usage decreases loneliness [24]. In compliance to current study, it was found that HA use was also significantly ($p<0.001$) associated with severity of loneliness with highest scores for those not using HA. The hours of HA use per day and days per week are also associated ($p<0.001$) with loneliness and higher UCLA scores were noted for those not using HA in terms of hours and days. The duration/ time related dose effect was reported by Weinstein et al., in moderate to severe HL cases using hearing aids [24]. Applebaum et al., also reported that subjective loneliness in adult HI and cochlear implant users was useful in reducing the loneliness level [25]. Dawes et al., also reported that HA use was weakly associated with increased social isolation [26]. The history of medical problems, psychological issues and coping strategies did not reveal significant association with severity of loneliness. In contrast, a study by Warringa et al., revealed that frequency of use of ample coping behaviors including verbal strategies was significantly associated with reduced loneliness [27].

CONCLUSIONS

It is concluded that hearing loss results in severe and frequent loneliness. Factors including age, gender, smoking, type of hearing loss, degree of hearing loss, hearing aid use, hours and days of hearing aid use are associated with loneliness in adult population of Punjab, Pakistan.

Authors Contribution

Conceptualization: NM

Methodology: AI, GS

Formal analysis: AI, TD

Writing-review and editing: NM, GS, AA

All authors have read and agreed to the published version of the manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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