

HEARING LOSS AND ANXIETY IN DEAF ADULTS OF AIZAWL CITY, MIZORAM

Laltanpuia Chhange¹, Lalhriatpuii², Zokaitluangi³

¹ Ph. D. Research Scholar, Department of Psychology, Mizoram University, Mizoram, India

² Ph. D. Research Scholar, Department of Psychology, Mizoram University, Mizoram, India

³ Professor, Department of Psychology, Mizoram University, Mizoram, India

ABSTRACT

Many researches have mentioned the relationship between hearing loss and anxiety. Over 5% of the world's population has disabling hearing loss, out of which there are 3,354 Hearing Impaired persons in Mizoram. The study aims to investigate the level of Anxiety among the deaf adults in Aizawl, Mizoram by using General Health Questionnaire-28. A total of 320 participants with equal samples of Hearing impaired and Normal Hearing served as sample. Results highlighted the independent and interaction effect of the Hearing Impaired, Gender and Age on Anxiety. Results of the study also portrayed the need for attention for the deaf adults for mental health care.

Keyword: - Anxiety, Deaf, Hearing, Impairment.

1. INTRODUCTION

Hearing is an integral and one of the most important parts of the human senses. Being deprived of the ability to hear affected functioning of an individual physically and mentally. Several studies showed the prevalence of anxiety in deaf and hard of hearing individuals [1] [2]. Hearing impairment is one of the leading causes of disability globally [3] which affected 466 millions of people worldwide, comprising of 432 million adults [4]. WHO estimated that thirty years from now, over 900 million people will be affected by hearing impairment. Around one third of people over 65 years of age are affected by disabling hearing loss, majority living in low- and middle-income countries [5]. Hearing loss is found to be more prevalent among adults than younger individuals and more prevalent among men than women [6]. Many research studies revealed high prevalence of mental health disorder like anxiety and depression among the deaf populations [7] [8].

1.1 Hearing Loss

According to World Health Organisation [4], Hearing impairment is “the inability to hear as well as someone with normal hearing”. Hearing impaired people can be hard of hearing (HOH) or deaf [4]. Disabling hearing loss is defined by WHO as hearing loss that is greater than 40 decibels (dB) in the better hearing ear in adults and a hearing loss greater than 30 dB in the better hearing ear in children [4]. The causes, types, age of onset and level of hearing loss have different consequences on the psycho-social functioning of the individual. Research indicated that early identification of hearing loss and intervention yields significant benefits on language, academics, and social-emotional development [9] [10].

1.2 Anxiety

The National Institute of Mental Health defined Generalized Anxiety Disorder (GAD) as restlessness, tiring easily, being irritable, constant feelings of worry, and sleeping difficulties. GAD significantly impacts a person for at least 6 months in many areas of their day to day life [11]. According to ICD-10 criteria, symptoms of anxiety include persistent nervousness and physical symptoms such as muscular tension, palpitations, dizziness, and epigastric discomfort [12]. Cognitive and functional impairments, social isolation, loneliness, and traumatic circumstances are some of the risk factors for anxiety [13]. All of these risk factors are associated with hearing impairment [7] [14].

1.3 Hearing Loss and Anxiety

Several studies concluded that hearing loss is associated with poor mental health such as depression and anxiety [15] [16]. Individuals with hearing impairment have a higher chance of developing mental health problems than normal hearing individuals, including problems such as anxiety which are more prevalent among hearing impaired individuals than in hearing ones [17] [18]. Other recent studies also agreed that the prevalence of anxiety was consistently higher individuals with hearing impairment when compared with normal hearing individuals [19] [20] [21] [22]. Several researchers concluded that severity of hearing impairment had positive correlation with anxiety [20] [21] [23], that the more severe the hearing impairment of an individual, the higher probability of having a clinically significant anxiety [20] [21] [23]. Vancampfort and his colleagues founded in his study using the global (World Health Survey) sample that the prevalence of anxiety was more than double in the hearing impaired people when compared to the non-hearing impaired sample [22]. Abbas and his colleague in his longitudinal study of 100 samples aging between 18 and 60 concluded that hearing impaired individuals are more prone to have anxiety [1].

1.4 Mizoram Scenario

Mizoram is a state in the north-eastern part of India with a population of 10,97,206 as per 2011 census. Aizawl is the capital city of Mizoram. Out of the total population of Mizoram, the population of Person with Disabilities is 15,160 (1.38%), of which 3,354 are comprised by the Hearing Impaired. The native people of Mizoram are known as Mizo.

2. STATEMENT OF THE PROBLEM

The prevalence of Anxiety among people with hearing loss have been found in various research studies [7] [20] [21] [22] [23] and that the prevalence of hearing loss is much higher among adults and more prevalent among men than women [6]. Therefore, the present study highlighted the prevalence of Anxiety among the Hearing Impaired adults in the Aizawl city of Mizoram. It examined the independent and interaction effect of Hearing impairment, Gender and Age on Anxiety. The objective of the present study is to give a better understanding of one of the serious mental conditions of the Deaf and Hard of Hearing individuals when compared with the Normal Hearing, which portrayed the need for attention and importance of psychological intervention strategies among the Hearing Impaired.

2.1 Objectives

1. To examine the level of Anxiety for the eight comparison groups.
2. To examine the independent effect of Hearing Impairment, Gender and Age Groups on Anxiety.
3. To examine the interaction effect of Hearing Impairment, Gender and Age Groups on Anxiety.

2.2 Hypothesis:

- H₁: The level of Anxiety will be significantly higher among the hearing impaired comparison groups.
 H₂: There will be significant independent effect of Hearing Impairment, Gender and Age Groups on Anxiety.
 H₃: There will be significant interaction effect of Hearing Impairment, Gender and Age Groups on Anxiety.

2.3 Methods:

2.3.1 Sample

320 participants from Aizawl city, Mizoram, a state in the northeast of India, comprising of 160 Hearing Impaired {80 females (40 young adult and 40 Middle Adult) and 80 males (40 young adult and 40 middle adult)} and 160 Normal hearing {80 females (40 young adult and 40 Middle Adult) and 80 males (40 young adult and 40 middle adult)} of the age group 20 to 40 years (Young Adult) and 41 to 65 years (Middle Adult) were selected as samples by employing multistage sampling procedure.

Hearing Impaired were identified from the PwD lists obtained from Social Welfare Department, Aizawl, National Institute of Orthopedically Handicapped (NIOH), Aizawl and Hearing and Speech Centre, Aizawl and were randomly selected for equal distribution of Gender and Age Group. Then, samples for the normal hearing subjects were selected to match the demographic profile of the Hearing Impaired subjects.

2.3.2 Design

2 x 2 x 2 factorial design (2 Hearing Levels x 2 Gender x 2 Age group) was employed. There are eight comparison groups, each group containing 40 subjects.

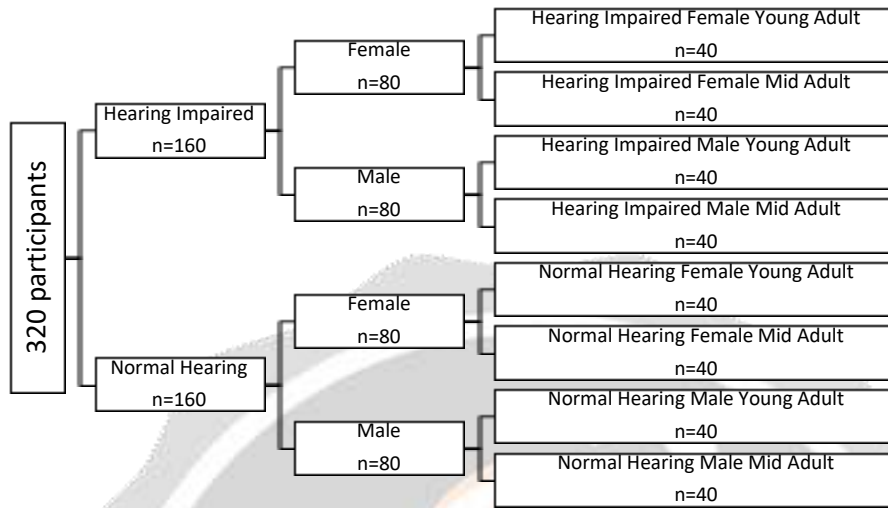


Fig -1: 2 x 2 x 2 Factorial design (2 hearing levels x 2 gender x 2 Age group) was employed in the study.

2.4 Psychological Tools

To meet the objectives of the present study, the General Health Questionnaire – 28 (GHQ-28) [24] was incorporated:

The GHQ-28 is a 28-item measure of emotional distress in medical settings. Through factor analysis, the GHQ-28 has been divided into four subscales. These are: *somatic symptoms* (items 1–7); *anxiety/insomnia* (items 8–14); *social dysfunction* (items 15–21), and *severe depression* (items 22–28). Each item is accompanied by four possible responses: ‘Not at all’, ‘No more than usual’, ‘Rather more than usual’, and ‘Much more than usual’. There are different methods to score the GHQ-28. It can be scored from 0 to 3 for each response with a total possible score on the ranging from 0 to 84. Using this method, a total score of 23/24 is the threshold for the presence of distress. Alternatively the GHQ-28 can be scored with a binary method where ‘Not at all’, and ‘No more than usual’ score 0, and ‘Rather more than usual’ and ‘Much more than usual’ score 1. Using this method any score above 4 indicates the presence of distress or ‘caseness’. For the present study, the subscale *Anxiety/insomnia* (items 8 – 14) was taken into account to measure the level of Anxiety.

3. RESULT

Table 1 shows psychometric adequacy for the subscales under study. Cronbach’s Alpha for the subscale Anxiety/Insomnia ($\alpha = .91$) indicated the reliability of the scale. Levene’s tests for Equality of variances were calculated and were not significant in both the subscales whereas Brown Forsythe showed that the results were significant which indicated that the scores was homogenous. Kurtosis and Skewness showed non-probability curve indicating normal distribution of the test scores.

Table -1: Subscale Reliability, Test of Homogeneity and normal probability of the subscales for the samples.

Subscales	Cronbach’s alpha	Levene’s Test of Equality of Variance	Brown Forsythe	Kurtosis	Skewness
Anxiety	.91	.47	.00	-.61	-.07

Looking at the mean score and standard deviation (Table-2) on the subscale Anxiety, the Female Young Adult Hearing Impaired ($M = 20.93, SD = 2.24$) scored higher than the Female Young Adult Normal Hearing ($M = 16.03,$

$SD = 2.03$). The Female Middle Adult Hearing Impaired ($M = 19.07$, $SD = 1.14$) scored higher than the Female Middle Adult Normal Hearing ($M = 13.70$, $SD = .70$) on Anxiety. The Male Young Adult Hearing Impaired ($M = 18.30$, $SD = 2.63$) and Male Middle Adult Hearing Impaired ($M = 18.97$, $SD = 1.38$) also scored higher than the Male Young Adult Normal Hearing ($M = 12.17$, $SD = 1.80$) and Male Middle Adult Normal Hearing ($M = 9.67$, $SD = 1.42$) respectively on Anxiety.

Table -2: Mean and Standard Deviations of the Anxiety subscale for the samples.

	Hearing Impaired		Normal Hearing	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Female Young Adult	20.93	2.24	16.03	2.03
Female Middle Adult	19.07	1.14	13.70	.70
Male Young Adult	18.30	2.63	12.17	1.80
Male Middle Adult	16.97	1.38	9.67	1.42

A multiple factorial ANOVA was conducted to compare the main effects of Hearing Ability, Gender and Age and interaction effect between Hearing Ability, Gender and Age on Anxiety (Table 3). Hearing Ability included two levels (Hearing Impaired, Normal Hearing), Gender consisted of two levels (Male, Female) and Age consists of two levels (Young Adult, Middle Adult). All effects were statistically significant at the .01 significant level. We can see from table 3 that Hearing Ability has a significant effect on Anxiety ($F(1, 18) = 310.30$, $p < .01$, $\eta^2 = .57$). Gender has a significant effect on Anxiety ($F(1, 18) = 45.61$, $p < .01$, $\eta^2 = .16$). There was a significant effect of Age on Anxiety ($F(1, 18) = 12.80$, $p < .01$, $\eta^2 = .05$). Hearing Ability and Gender has a significant interaction effect on Anxiety ($F(3, 18) = 220.27$, $p < .01$, $\eta^2 = .74$). Hearing Ability and Age has a significant interaction effect on Anxiety ($F(3, 18) = 136.06$, $p < .01$, $\eta^2 = .63$). Gender and Age has a significant interaction effect on Anxiety ($F(3, 18) = 22.97$, $p < .01$, $\eta^2 = .23$). There was a significant interaction effect of Hearing Ability, Gender and Age on Anxiety ($F(7, 18) = 136.98$, $p < .01$, $\eta^2 = .81$).

Table -3: Mean and Standard Deviations of the Anxiety subscale for the samples.

Dependent Variables	Independent Variables	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.	Eta
Anxiety	Hearing Ability	2106.34	1.00	2106.34	310.30	0.00	.57
	Gender	598.50	1.00	598.50	45.61	0.00	.16
	Age	189.96	1.00	189.96	12.80	0.00	.05
	Hearing Ability x Gender	2742.45	3.00	914.15	220.27	0.00	.74
	Hearing Ability x Age	2358.35	3.00	786.12	136.06	0.00	.63
	Gender x Age	841.01	3.00	280.34	22.97	0.00	.23
	Hearing Ability x Gender x Age	2996.80	7	428.11	136.98	0.00	.81

4. CONCLUSIONS

The prevalence of Hearing Impairment has been rising worldwide. Most of the hearing impaired population are comprised of the adults and although many cases of hearing loss are age related, 60% of childhood hearing loss are preventable [5]. Whatever may be the causes of hearing loss, several studies linked hearing loss with negative impact in mental health [15] [16].

The present study aimed at examining the level of anxiety among the hearing impaired using Anxiety/Insomnia Subscale of GHQ-28. The psychological tools were used on a population of 320 samples comprising of 160 Hearing impaired individual and 160 Normal Hearing Individuals. The samples selected using multistage purposive random sampling were collected from Aizawl city of Mizoram, a state in the North-east India, and categorized into 8 (eight) equal groups based on Hearing ability (Hearing Impaired and Normal Hearing), Gender (Male and Female) and Age [Young Adult (20-40 years) and Middle Adult (41-65 years)]. Each group consists of 40 samples – Hearing Impaired Female Young Adult, Hearing Impaired Female Mid Adult, Hearing Impaired Male Young Adult, Hearing Impaired Male Mid Adult, Normal Hearing, Female Young Adult, Normal Hearing Female Mid Adult, Normal Hearing Male Young Adult and Normal Hearing Male Mid Adult.

Statistical tools were employed on the samples collected in order to examine the level of dependent effects on the independent variables. Results indicated that there are significant differences in the level of Anxiety for the eight comparison groups proving the first hypothesis. When Hearing impaired individuals were compared with Normal Hearing individuals on Anxiety, the Hearing impaired scored significantly higher in each respective categories and as a whole. Hearing impaired female young adults scored the highest on both Anxiety subscales than the rest of the comparison groups. Whereas the Normal Hearing Male middle adults scored the lowest on Anxiety subscales than the rest of the comparison groups. This support the previous studies that the prevalence of anxiety were higher among hearing impaired people when compared with non-hearing impaired [18] [20] [21] [23] [25].

A multiple Factorial ANOVA was employed to examine the independent effects and interaction effects on anxiety. Hearing Ability, Gender and Age each had a significant independent effect on anxiety proving the third hypothesis. Hearing impairment has a significant independent effect of 57 % on Anxiety. Gender has a significant independent effect of 16% on Anxiety respectively. Age has a significant independent effect of 5% on anxiety respectively.

Significant interaction effects of Hearing impairment, Gender and Age on somatic anxiety were also found. Hearing impairment and Gender has a significant interaction effect of 74% on anxiety respectively. Hearing impairment and Age has a significant interaction effect of 63% on anxiety respectively. Gender and Age has a significant interaction effect of 23% on anxiety respectively. Hearing impairment, Gender and Age has a significant interaction effect of 81% on anxiety/insomnia respectively.

Hearing Impairment is a condition which not only effect communication but also has numerous effects on social, emotional, and mental health. The present study suggests that there is a need for psychological intervention to improve the mental health of people with hearing loss. Rates of mental health problems are increasing reported among the hearing impaired. Improved access to health and mental health care for the hearing impaired is desirable.

5. REFERENCES

- [1]. Abbas, J., Aqeel, M., Jaffar, A., Nurunnabi, M., & Bano, S. (2019) Tinnitus perception mediates the relationship between physiological and psychological problems among patients. *Journal of Experimental Psychopathology*, 10(3), 1-15.
- [2]. Knutson, J., Johnson, A., & Murray, K. (2006). Social and emotional characteristics of adults seeking a cochlear implant and their spouses. *British Journal of Health Psychology* 11, 279–292.
- [3]. Cunningham, L. L. & Tucci, D. L. (2017). 'Hearing Loss in Adults', *New England Journal of Medicine*, 377(25), pp. 2465–2473. doi: 10.1056/NEJMra1616601. <http://www.nejm.org/doi/10.1056/NEJMra1616601>.
- [4]. World Health Organisation. (2018). *Addressing the rising prevalence of hearing loss*. Geneva: World Health Organization. Licence: CC BY-NC-SA 3.0 IGO.
- [5]. World Health Organization. (2020). "Deafness and hearing loss Fact sheet N°300". 1st March 2020. Retrieved 5th January, 2021. <https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss>
- [6]. Goman, A. M., & Lin, F. R. (2016). Prevalence of Hearing Loss by Severity in the United States. *American Journal of Public Health*, 106(10), 1820–1822.
- [7]. Fellingner, J., Holzinger, D., & Pollard, R. (2012). Mental health of deaf people. *The Lancet*, 379(9820), 1037–1044. doi:10.1016/s0140-6736(11)61143-4
- [8]. van Gent, T., Goedhart, A. W., Hindley, P. A., & Treffers, P. D. A. (2007). Prevalence and correlates of psychopathology in a sample of deaf adolescents. *Journal of Child Psychology and Psychiatry*, 48(9), 950–958. <https://doi.org/10.1111/j.1469-7610.2007.01775.x>
- [9]. Calderon, R., & Naidu, S. (2000). Further support for the benefits of early identification and intervention for children with hearing loss. *Volta Review*, 100, 53–84.
- [10]. Yoshinaga-Itano, C., & Apuzzo, M. (1998b). Identification of hearing loss after 18 months is not early enough. *American Annals of the Deaf*, 143, 380–387.
- [11]. National Institute of Mental Health (2018). *Anxiety*. Retrieved November 21, 2020, from <http://www.nimh.nih.gov/health/topics/eating-disorders/index.shtml>
- [12]. World Health Organization. (2004). *ICD-10: International Statistical Classification of Diseases and Related Health Problems*. Geneva: World Health Organization
- [13]. Vink, D., Aartsen, M. J., & Schoevers, R. A. (2008). Risk factors for anxiety and depression in the elderly: A review. *Journal of Affective Disorders*, 106(1-2), 29–44. doi:10.1016/j.jad.2007.06.005
- [14]. Schild, S., & Dalenberg, C. J. (2012). Trauma exposure and traumatic symptoms in deaf adults. *Psychological Trauma: Theory, Research, Practice, and Policy*, 4(1), 117–127. doi:10.1037/a0021578

- [15]. Gopinath, B., Hickson, L., Schneider, J., McMahon, C. M., Burlutsky, G., Leeder, S. R., & Mitchell, P. (2012). Hearing-impaired adults are at increased risk of experiencing emotional distress and social engagement restrictions five years later. *Age and Ageing*, *41*, 618–623.
- [16]. Saito, H., Nishiwaki, Y., Michikawa, T., Kikuchi, Y., Mizutani, K., Takebayashi, T., and Ogawa, K. (2010). Hearing handicap predicts the development of depressive symptoms after 3 years in older community-dwelling Japanese. *Journal of the American Geriatrics Society*, *58*, 93-97.
- [17]. Fellingner, J., Holzinger, D., Sattel, H., Laucht, M., & Goldberg, D. (2009). Correlates of mental disorders among children with hearing impairments. *Developmental Medicine and Child Neurology*, *51*, 635–641. doi:10.1111/j.1469-8749.2008.03218.x
- [18]. Van Eldik, T. (2005). Mental health problems of Dutch youth with hearing loss as shown on the youth self-report. *American Annals of the Deaf*, *150*, 11–16. doi:10.1353/aad.2005.0024.
- [19]. Shoham, N., Lewis, G., Favarato, G., & Cooper, C. (2018). *Prevalence of anxiety disorders and symptoms in people with hearing impairment: a systematic review*.
- [20]. Jayakody, D. M. P., Almeida, O. P., Speelman, C. P., Bennett, R. J., Moyle, T. C., Yiannos, J. M., & Friedland, P. L. (2018). Association between speech and high-frequency hearing loss and depression, anxiety and stress in older adults. *Maturitas*, *110*, 86–91. doi:10.1016/j.maturitas.2018.02.002
- [21]. Contrera, K. J., Sung, Y. K., Betz, J., Li, L., & Lin, F. R. (2017). *Change in loneliness after intervention with cochlear implants or hearing aids*. *The Laryngoscope*, (), -. doi:10.1002/lary.26424
- [22]. Vancampfort, D., Koyanagi, A., Hallgren, M., Probst, M., & Stubbs, B. (2017). The relationship between chronic physical conditions, multimorbidity and anxiety in the general population: A global perspective across 42 countries. *General Hospital Psychiatry*, *45*, 1–6. doi:10.1016/j.genhosppsych.2016.11.002
- [23]. Gomaa, M. A., Elmagd, M. H., Elbadry, M. M., & Kader, R. M. (2014). Depression, Anxiety and Stress Scale in patients with tinnitus and hearing loss. *European Archives of Oto-Rhino-Laryngology*, *271*, 2177-2184. doi:[10.1007/s00405-013-2715-6](https://doi.org/10.1007/s00405-013-2715-6)
- [24]. Goldberg, D. (1978). *Manual of the General Health Questionnaire*. Windsor: NFER Nelson.
- [25]. Kent, B. A. (2003). Identity issues for hard-of-hearing adolescents aged 11, 13, and 15 in mainstream setting. *Journal of Deaf Studies and Deaf Education*, *8*, 315–324. doi:10.1093/deaf/eng017.