

## Biological, psychological and environmental factors of suicidal ideation among the patients with presbycusis

Bushra Akram<sup>1</sup>, Mehak Batool<sup>2</sup>, Asma Bibi<sup>2</sup>

### ABSTRACT

**Objective:** To identify the biological, psychological and environmental factors of suicidal behavior among patients with Presbycusis.

**Study Design:** A cross-sectional correlational study.

**Place and Duration:** Department of Psychology, University of Gujrat and in the public hospitals of Lahore, Gujranwala and Gujrat from 1<sup>st</sup> September 2017 to 25<sup>th</sup> February 2018.

**Methodology:** Total 278 elderly from 55 to 80 years were selected conveniently from four hospitals. Biological and environmental factors were measured on a self-developed questionnaire. Suicidal Ideation Attributes scale, RS-Adult questionnaire, Loneliness Scale, Mental Health Inventory were administered to measure suicidal ideation, rejection sensitivity, loneliness and mental health respectively.

**Results:** Suicidal ideation has significant positive relationship with perceived loneliness, rejection sensitivity and presbycusis severity ( $p < .001$ ). However Psychological well-being appeared to have negative relationship with suicidal ideation ( $p < .05$ ). For regression analysis, linear regression showed significant role of biological, psychological factors ( $p < .001$ ) and environmental factors ( $p < .05$ ) among the patients with presbycusis.

**Conclusion:** Not only hearing loss leads towards suicidal behavior but in interaction with other biological and psycho-social factors, the risk of having suicidal behavior among the patients with presbycusis becomes twofold therefore a Bio-Psycho-Social prevention and intervention plan should be devised.

**Keywords:** Presbycusis, Elderly, Biological factors, Psychological factors, Environmental factors, Suicidal ideation, Rejection sensitivity, Psychological well-being, Loneliness, Psychological distress

### How to Cite This:

Akram B, Batool M, Bibi A. Biological, psychological and environmental factors of suicidal ideation among the patients with presbycusis. *Isra Med J.* 2019; 11(1): 55-59.

This is an Open Access article distributed under the terms of the Creative Commons Attribution-Noncommercial 4.0 International License (<http://creativecommons.org/licenses/by-nc/4.0/>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

### INTRODUCTION

Suicidal ideation involves recurring thoughts to kill one self as well as to make plans of how to put oneself to death. Although it is a complex and challenging task to make a prediction about people who may be at high risk of suicidal behavior. However

1. Assistant Professor of Clinical Psychology
2. M. Phil Scholar of Clinical Psychology

University of Gujrat, Gujrat

#### Correspondence to:

Bushra Akram

Assistant Professor of Psychology

University of Gujrat, Gujrat

Email: bushra.akram@uog.edu.pk

Received for Publication: 20-04-18

1<sup>st</sup> Revision of Manuscript: 12-05-18

2<sup>nd</sup> Revision of Manuscript: 19-10-18

3<sup>rd</sup> Revision of Manuscript: 25-11-18

4<sup>th</sup> Revision of Manuscript: 23-01-19

5<sup>th</sup> Revision of Manuscript: 02-02-19

Accepted for Publication: 11-02-19

previous studies reported that many psychological and biological factors such as depression, stress, poor social emotional adjustment, gender and age are significant factors of suicidal ideation besides hearing loss among older adults<sup>1</sup>. Presbycusis is an acquired, slowly occurring sensory hearing loss among elderly that has been found to have a strong association with poor physical and mental health which may further lead towards suicidal behavior<sup>2-5</sup>. The risk of suicidal ideation among elderly with hearing impairment has been increased by 1.60 to 1.76 times more if it occurs in relation with other medical conditions such as physical disability and poor psychological wellbeing.<sup>6,7</sup> Presbycusis in relation with psychological factors causes individuals to be stigmatized by society or go through the self-stigmatized feelings. Due to the stigma they often seek less rehabilitation services and experience rejection from others<sup>8</sup>. This rejection sensitivity leads to loneliness, social withdrawal, mental health symptoms, depression and suicidal ideation<sup>9,10</sup>. As presbycusis itself is a direct and common correlate of depression and loneliness thus increase chances of having feelings of psychological distress, rejection and isolation<sup>11</sup>. Elderly may lose the social relationships and friends with the passage of time and it is difficult for them to make new friends and involve in new relationships in the old age. Thus the loneliness among older adults with hearing impairment leads to poor psycho-social

functioning which may be the cause of suicidal thoughts<sup>5,12, 13</sup>. Studies found that age, gender, relationship with spouse, socioeconomic status, living style, area of residence and overall health status are significant risk factors for suicidal ideation among elderly<sup>14</sup>. In short the tendency of suicidal ideation among elderly individuals is high because they live alone, have no social insurance, suffer with chronic diseases, have hearing loss and have little or no hobbies. Very limited published literature is available in Pakistan on this topic. A recent study found high prevalence of sensorineural hearing loss among the elderly of Pakistan<sup>15</sup>. On the other hand prevalence of suicidal thoughts among old adults ranges from 3.5% to 9.4%<sup>10</sup>. Such high level of risk for suicide among elderly population provide solid reason to conduct a study to find the factors of suicidal ideation in relation to presbycusis therefore the objective of the current study was to identify the biological, psychological and environmental factors of suicidal behavior among patients with presbycusis.

### METHODOLOGY

This cross sectional correlational study was conducted in Department of Psychology, University of Gujrat and in the public hospitals of Lahore, Gujranwala and Gujrat city from 1<sup>st</sup> September 2017 to 25<sup>th</sup> February 2018. The researchers fulfill ethical considerations to conduct this study. Permission was obtained from the heads of ENT and Audiology departments to collect the data. Informed consent was taken from the participants and they were given the right to withdraw from participation at any time. The purpose of the study was briefed to the participants as well as to their care takers. The participants were also informed that there would be no possible psychological and physical harm to them. Suicidal ideation was assessed by using Suicidal Ideation Attributes Scale<sup>16</sup>. Alpha reliability of the scale is 0.91. This 10-points scale is used to assess the presence as well as the severity level of suicidal thoughts. It has five items which measure the level of distress, frequency, closeness to attempt and controllability of suicidal thoughts. Presbycusis was measured by the severity of hearing loss reported by the participants in terms of mild, moderate severe and profound. The RS-Adult questionnaire<sup>17</sup> (A-RSQ) is an adaptation of the RSQ for assessing rejection sensitivity in adults. The internal consistency of the scale is 0.89 and the Test-retest reliability of the scale is 0.91. UCLA<sup>18</sup> (University of California, Los Angeles) Loneliness scale is a 20-item scale designed to measure one's subjective feelings of loneliness as well as feelings of social isolation. The Results of psychometric studies indicated that the measure was highly reliable, both in terms of internal consistency value that was .89 to .94) and test-retest reliability over a 1-year period ( $r = .73$ ). Urdu version<sup>19</sup> of MHI<sup>20</sup> (Mental health inventory) was administered to assess psychological wellbeing and psychological distress among the participants. MHI is a 38-item inventory with Likert-type scale. MHI has two global scales, i.e. Psychological well-being and psychological distress. Psychological wellbeing measures the emotional stability and life satisfaction, whereas psychological distress measures the depression, anxiety and poor emotional control.

**Data Analysis:** All data was analyzed by using Statistical package for social sciences (SPSS version 21).

In order to know the contribution of biological, psychological and environmental factors Linear Regression Analysis, Pearson Correlation and independent T-Test were administered with 95% confidence interval and 0.05% level of significance.

### RESULTS

The total number of 278 participants including men 278 (57%) and women 120 (43%) of the age range from 55 to 80 years, living in both urban 153 (55.04%) and rural 125 (44.96%) areas were selected conveniently from Government Hospitals of Lahore, Gujranwala and Gujrat City. Among participants 150 (53.95%) were below metric, 95(34.15%) were above metric, and 43 (12.00%) were graduate and above. Most of them were from joint family system 187(67.27%) without their life partners 163 (58.63%) and suffering with physical illness 231(83.09). Furthermore, majority of the individuals have access to proper medical 155 (55.75%) but limited counseling facilities. Only 80 (28.77%) were smoker than others 198(71.23%) Scores differences shows that female scored ( $M = 09.60$ ,  $SD 3.10$ ),  $t(276) = 3.91$   $p < .001$  lower on suicidal ideation than their male counterparts ( $M = 11.20$ ,  $SD 3.38$ ). Besides, participants who live without their life partners showed higher levels of suicidal ideation ( $M = 19.50$ ,  $SD = 3.98$ ) as compared to those who are living with their partners ( $M = 10.75$ ,  $SD 2.62$ ),  $t(276) = 2.10$   $p < .05$ . On the other hand, participants who were suffering from any other physical disease belong to rural areas, living in nuclear family system, used to smoke and had not proper medical facilities reported higher levels of suicidal ideation (Table-I).

To find the impact of biological, psychological and environmental factors on suicidal ideation linear regression analysis was administered (Table-II). Results in Table-II shows that biological factors such as severity of presbycusis (hearing loss), presence of other physical illness, age and gender significantly and positively predicted suicidal ideation among presbycusis patients with 35% of variance ( $R^2=0.35$ );  $F(15.36, p < .0001)$ . Psychological factors namely perceived loneliness, perceived rejection sensitivity, psychological distress and psychological wellbeing predict suicidal ideation with 67% of variance ( $R^2=0.67$ )  $F(47.58, p < 0.001)$  predicted the suicidal ideation. While environmental factors including living with life partners, qualification, family system, monthly income, smoking and residential predicted suicidal ideation among the patients with 72% of variance ( $R^2=0.72$ )  $F(35.42, p < .001)$ . Thus the results indicated that environmental factors are playing more effective role in developing suicidal ideation among the patients with presbycusis as compared to the biological and psychological factors.

Pearson Correlation (Table-III) indicated that suicidal ideation has significant positive relationship with perceived loneliness ( $r = 0.37$ ,  $p < .001$ ), suicidal ideation has significant positive correlation with perceived rejection sensitivity ( $r = 0.41$ ,  $p < .001$ ) and presbycusis severity ( $r = 0.44$ ,  $p < .001$ ).

However suicidal ideation appeared to have negative relationship with Psychological well-being ( $r = -0.22, p < .01$ ). In other words the higher the level of hearing loss, loneliness and

rejection sensitivity the higher the level of suicidal ideation among the patients.

**Table-I: Score differences on suicidal ideation for gender, living area, life partner, physical illness, medical facility, and smoking habits (N=278)**

Variable	Study Groups	N	%age	M±SD	t-value	Cohen's d	
Suicidal Ideation	Gender	Male	158	57%	11.20±3.38	3.91*	0.49
		Female	120	43%	9.60±3.10		
	Living Area	Rural	153	44.96%	15.78±2.98	2.09**	1.00
		Urban	125	55.04%	12.84±2.85		
	Life Partner	With Partners	115	41.37%	10.75±2.62	2.10***	2.50
		Without Partners	163	58.63%	19.50±3.98		
	Family System	Joint	187	67.27%	11.99±3.16	3.18**	1.14
		Nuclear	91	32.73%	15.97±3.75		
	Physical Illness	With Physical Illness	231	83.09%	17.55±4.14	2.25**	1.46
		No Physical Illness	47	16.91%	11.60±3.11		
	Medical Facilities	Proper Medical Facility	155	55.75%	9.85±2.10	2.19***	1.26
		No Medical Facility	123	44.25%	13.12±2.98		
	Smoking Habit	Smoking	80	28.77%	15.99±2.99	3.11***	2.04
		No Smoking	198	71.23%	10.21±2.65		

N\*= number of participants \* $p < .05$ , \*\* $p < .001$ , \*\*\* $p < .0001$

**Table-II: Linear regression exploration presenting effect of biological, psychological and environmental factors, on suicidal ideation among patients with presbycusis (N = 278).**

Biological Variables	Suicidal Ideation		
	B	R <sup>2</sup>	F
Constant	4.55***	0.35	15.36***
Severity of HL	0.25**		
Presence of Physical Disease	3.39***		
Age	0.09		
Gender	-4.05***		
<b>Psychological Variables</b>			
Constant	3.75***	0.67	47.58
Perceived Loneliness	1.20***		
Rejection sensitivity	1.09***		
Psychological Distress	1.86***		
Psychological Wellbeing	-2.08***		
<b>Environmental Variables</b>			
Constant	3.85*	0.72	35.42***
Living With Life Partners	-0.43*		
Qualification	0.09		
Family system	-0.67*		
Monthly Income of Family	0.56		
Residential Area	-0.67*		
Proper Medical Facilities	-0.38*		
Access to counseling	-0.41*		
Smoking	0.49		

\* $p < .05$  \*\* $p < .001$ , \*\*\* $p < .0001$  Note: B =Beta Values R<sup>2</sup> = Explained variation/total variation, F = Probability

## DISCUSSION

The findings of our study indicate a significant and positive relationship of suicidal ideation with perceived rejection, loneliness, psychological distress and severity of presbycusis. Deafness or hearing loss and its severity also found to be correlated with depression that is a common cause of suicidal behavior. The results are consistent with the findings of previous researches<sup>21-24</sup>. The hearing loss is a main cause of communication problems which leads towards many psychosocial problems. The person with hearing loss cannot understand the verbal messages from others and is also unable to convey his own ideas to others. This communication gap may lead to the poor social emotional adjustment of the individuals with hearing loss. Especially in old age when usually the people are fighting with other diseases the hearing loss adds miseries to their lives and this situation may lead them to end their lives at their own.

On the other hand presence of other physical disease and gender appeared as strong predictors of suicidal ideation. These findings are in line with previous studies that concluded positive association between biological factors and suicidal behavior<sup>6,7,24</sup>. It is possible because the literature suggests that the genetic and pathophysiological aspects are significantly related with presbycusis. The presence of other physical illness such as hyper tension and diabetes may increase the sufferings' of the old people with hearing loss which further push them to take their own lives.

This situation may financially burdened them as well as their families. Their families have to put extra effort in terms of their time, money and energy to take care of the patients with presbycusis which may impaired their interpersonal relationships and thus trigger loneliness and suicidal ideation among them.

**Table-III: The relationship (correlation coefficient=r) between suicidal ideation, perceived loneliness, perceived rejection sensitivity, psychological distress, psychological well-being and presbycusis severity in individuals with presbycusis (N=278)**

Variables	Suicidal ideation	Perceived loneliness	Perceived rejection sensitivity	Psychological Distress	Psychological wellbeing	Presbycusis severity
Suicidal ideation	1	0.37***	0.41***	0.41***	-0.22**	0.44***
Perceived loneliness		1	0.24**	0.21**	-0.19*	0.45***
Perceived rejection sensitivity			1	0.29***	-0.25**	0.42***
Psychological Distress				1	-0.30**	0.39***
Psychological wellbeing					1	-0.20*
Presbycusis severity						1

\* $p < .05$ , \*\* $p < .001$ , \*\*\* $p < .0001$

Male appeared to have more suicidal ideation as compared to women. The plausible explanation may be the higher incidence of hearing loss among male as compared to females<sup>25, 26</sup>. Moreover in our culture male are expected to play the role of breadwinner therefore he has to connect and deal with the common people in the society. They may experience more feelings of rejection and social exclusion in this process. Therefore they may feel more psychological distress as compared to the females which leads towards suicidal ideation<sup>25, 26</sup>.

Likewise psychological wellbeing and distress, perceived loneliness and rejection sensitivity were significant predictors of suicidal ideation. A reason of these findings can be that old age people find it difficult to adapt with the physiological changes in this phase of life and illness of presbycusis makes this condition worse. Therefore they feel loneliness, a significant negative correlate of physical health and psychosocial wellbeing which may further lead towards suicidal ideation<sup>4, 24, 25</sup>. Other studies also justify these finding and indicate a significant relationship of suicidal thoughts with psychological wellbeing, loneliness and rejection sensitivity<sup>12,13</sup>. Moreover a negative relationship between psychological wellbeing and increased suicidal ideation among old adults with hearing loss may be found because of lack of perceived control over their life conditions and anxiety about future years of life.

Thirdly the environmental factors were found to be predictors of suicidal ideation. Old people with hearing loss living with their spouses showed low level of suicidal ideation. Similarly, participants who are living with other family members reported lower level of suicidal ideation. It is very simple to understand that in joint family system the members share their responsibilities to taking care of their old ones. Consequently the old patients with presbycusis may not feel loneliness and rejection. Moreover the participants who have access to the medical facilities appeared to score low on suicidal ideation. It is not surprising that in time proper treatment increase the positive feelings and experiences of one's life. The previous studies also report that factors such as living with life partners, joint family system, urban residential area, access to counseling and proper medical facilities have significant positive relationship psychological wellbeing which may lower the risk of suicidal ideation<sup>9,11</sup>.

A possible explanation of these findings can be that, that suicidal tendencies do not only determined by the hearing loss or

presbycusis itself but also may depend upon how much an individual is satisfied by his/her overall environmental and life conditions. In case of unfavorable environmental conditions patients of presbycusis develop maladaptive communication strategies that negatively affect their level of life satisfaction thus the chances of suicidal ideation may increase<sup>27</sup>.

### CONCLUSION

Not only hearing loss leads towards suicidal behavior but in interaction with other biological and psycho-social factors, the risk of having suicidal behavior among the patients with presbycusis becomes twofold therefore a Bio-Psycho-Social prevention and intervention plan should be devised.

### CONTRIBUTION OF AUTHORS

Akram B: Conceived idea, Designed methodology, Data analysis, Critical analysis

Batool B: Manuscript writing, Literature review

Bibi A: Data collection, Data entry

**Disclaimer:** None.

**Conflict of Interest:** None.

**Source of Funding:** None.

### REFERENCES

1. Shin H, Hwan H. Mental Health of the People with Hearing Impairment in Korea: A Population-Based Cross-Sectional Study. *Korean J Fam Med*. 2017; 38(2): 57-63
2. Munzel T, Gori T, Babisch W, Basner M. Cardiovascular effects of environmental noise exposure. *Eur Heart J*. 2014; 35(13):829-36.
3. Genther DJ, Betz J, Pratt S, Martin KR, Harris TB, Satterfield S, et al., Association of Hearing Impairment with Risk of Hospitalization in Older Adults. *J Am Geriatr Soc*. 2015; 63(6): 1146–52
4. Ogunwale OR. Determinants of Suicidal Ideation among Persons with Hearing Impairment in Federal College of Education (Special), Oyo. *Euro J of Multi Sci*. 2016; 1(5): 31-39

5. Mick P1, Kawachi I, Lin FR. The association between hearing loss and social isolation in older adults. *Otolaryngol Head Neck Surg.* 2014; 150(3): 378-84
6. Kim Y, Kwak Y, Ji-su K. The association between suicide behavior and sensory impairment among elderly Koreans. *Aging Ment Health.* 2015; 19(7): 658-65
7. Chapman M., Dammeyer J. The Significance of Deaf Identity for Psychological Well-Being. *J Deaf Stud Deaf Educ.* 2016; 22(2); 187-94
8. Gagné J, Jennings MB, Southall K. Understanding the Stigma Associated with Hearing Loss in Older Adults. *Hearing Care for Adults.* 2009; 203-12
9. Watson J, Nesdale D. Rejection Sensitivity, Social Withdrawal, and Loneliness in Young Adults. *J. Appl. Soc. Psychol.* 2012; 42(8): 1984-2005
10. Williams CA, Doorley JD, Esposito-Smythers C. Interpersonal rejection sensitivity mediates the associations between peer victimization and two high-risk outcomes. *Clin Child Psychol Psychiatry.* 2017; 22(4): 649-63
11. Mener DJ, Betz J, Genther D, Chen D, Lin FR. Hearing Loss and Depression in Older Adults. *J Am Geriatr Soc.* 2013; 61(9): 1627–29
12. Singh A, Misra N. Loneliness, depression and sociability in old age. *Ind Psychiatry J.* 2009; 18(1): 51-55
13. Arslantaş H, Adana F, Ergin FA, Kayar D, Acar G. Loneliness in Elderly People, Associated Factors and Its Correlation with Quality of Life: A Field Study from Western Turkey. *Iran J Public Health.* 2015; 44(1): 43–50
14. Dong X, Chen R, Wong E, Simon MA. Suicidal Ideation in an Older U.S. Chinese Population. *Aging Ment. Health.* 2014; 26(7): 1189- 208
15. Adeel M, Awan MA. Audiologic Pattern in Elderly Patients: A Tertiary Care Experience. *International Journal of Open Access Otolaryngology.* 2017; 1(1):1-5.
16. Van-Spijker BA, Batterham PJ, Caelear AL, Farrer L, Christensen H, Reynolds J, et al. The Suicidal Ideation Attributes Scale (SIDAS): Community-based validation study of a new scale for the measurement of suicidal ideation. *Suicide Life Threat Behav.* 2014; 44 (4): 408-19
17. Downey G, Feldman SI. Implications of rejection sensitivity for intimate relationships. *J Pers Soc Psychol.* 1996; 70 (6): 1327-43
18. Russell D, Peplau LA, Cutrona CE. The Revised UCLA Loneliness Scale: Concurrent and discriminate validity evidence. *J Pers Soc Psychol.* 1980; 39 (3): 472-80
19. Akram B, Iliyas M. Coping Strategies, Mental Health and HIV Status: Predictors of Suicidal Behaviour among PWIDs. *J Pak Med Assoc.* 2017; 67: 568-76.
20. Viet C, Ware J. The structure and psychological distress and well-being in gender population. *J Consult Clin Psychol* 1983; 51: 730-32
21. Stravynski A1, Boyer R. Loneliness in relation to suicide ideation and parasuicide: a population-wide study. *Suicide Life Threat Behav.* 2001; 31(1):32-40
22. Rostami M, Bahmani B, Bakhtyari V, Movallali G. Depression and Deaf Adolescents: A review. *Iranian Rehab J.* 2014. 12(19): 43-53
23. Zhang J, Li Z. The association between depression and suicide when hopelessness is controlled for. *Compr Psychiatry.* 2013. 54(7): 790-96
24. Akram B, Batool M. Suicidal Behavior among the Youth with and without Sensory Impairment: Prevalence and Comparison: OMEGA-J of Death Dying [Internet]. 2018 [cited 2018 Oct 25]; 6(3): 8-15. Available from <https://doi.org/10.1177/0030222818779711>
25. Abutan BB, Hoes AW, Van Dalsen CL, Verschuure J, Prins A. Prevalence of Hearing Impairment and Hearing Complaints in Older Adults: A Study in General Practice. *Fam Pract.* 1993; 10(4): 391–95
26. Alpass FM, Neville S. Loneliness, health and depression in older males. *Aging Ment Health,* 2003 7(3): 212–26
27. Akram B, Nawaz J, Rafi Z, Akram A. Social-Exclusion, Mental-Health and Suicidal Ideation among Adults with Hearing Loss: Protective and Risk Factors: *J Pak Med Assoc.* 2018; 68 (3) 388-93.