

ASSOCIATION OF ANXIETY AND DEPRESSION WITH TINNITUS IN YOUNG ADULTS

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ABSTRACT

Objective: To determine the association of anxiety and depression in young adults with hearing loss and tinnitus.

Methodology: A cross-sectional study was conducted in the outpatient department (OPD) of Otorhinolaryngology Head and Neck Surgery, Khyber Teaching Hospital (KTH), Peshawar, in young adults from April 2019 to September 2019. A total of 370 patients were enrolled with consecutive sampling. The study population was divided into two groups for comparison purposes. A hearing loss only group (HL group) and a hearing loss with tinnitus group (HLT group). Tinnitus handicap inventory (THI) was used to diagnose tinnitus. For anxiety and depression Hospital Anxiety and Depression Scale (HADS) was utilized to diagnose anxiety and depression. Data was analyzed by using SPSS version 22. Categorical variables were described as frequencies and percentages. Association of tinnitus with hearing loss and anxiety and depression was determined by using chi square test with p value <0.05 as statistically significant.

Results: Among patients with tinnitus and hearing loss, 46.2% were in the age range of 20-29 years and 53.8 % were in 30-40 years range. Males were predominant with 63%. Out of 173 patients, 38.7 % had anxiety while 46.2% had depression. The association of anxiety and depression with tinnitus and hearing loss was statistically significant with a p value of ≤ 0.05 .

Conclusion: Tinnitus with hearing loss in young adults is on the rise these days. The results showed a strong association between anxiety, depression and hearing loss with tinnitus in young adults as compared with hearing loss only.

Key Words: Anxiety, Depression, Tinnitus, Hearing Loss

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INTRODUCTION

Tinnitus is one of the most complex and mysterious medical disorder. It is a chronic condition which deteriorates general and mental health, and causes occupational dysfunction if left untreated¹. It is defined as hearing phantom sounds in the ear without any external auditory source. It can be any type of sound ranging from ringing, whistling, rustling of leaves, buzzing or clicking sounds. The noise heard is extremely disturbing. It badly affects the person's functional activities, ranging from lack of concentration, emotional disturbances and impaired sleep pattern etc. Tinnitus leads to an array of mental illnesses ranging from mild anxiety to severe depression².

Recently a trend has been observed globally that adult onset of hearing loss is the second leading cause of 'years lived with disability' (YLD) after depression at

global level. Loud, blaring noises are considered as a major cause of hearing disorder in workplaces worldwide. Outside workplace, young adults are exposed to loud noises coming from electronic devices like MP3 players, mobile phones etc. There is an alarming increase in the number of young adults experiencing permanent noise induced hearing loss and tinnitus. A strong relationship between these symptoms and their behaviour has been noted³.

World Health Organization (WHO) reported that among young adults nearly 50% are subjected to unsafe levels of sounds from personal electronic devices and 40% are exposed to the blaring noises at damaging levels at musical concerts etc⁴. In Belgium, Sofie Degeest et al conducted a study to observe the prevalence and characteristics of chronic tinnitus after exposure to loud recreational music and noise. They extracted from their study that tinnitus induced by leisure noise expo-

sure is quite common in young adults⁵. Various studies conducted in different cities of Pakistan over the past 10 years have showed that prevalence of anxiety and depression in Pakistanis ranges from 22% to as high as 60%⁶. A study in Rawalpindi by Aqeel M et al. showed a positive association between tinnitus, anxiety, depression and stress⁷.

Very little scientific research about tinnitus with hearing loss has been conducted in developing countries, especially in Pakistan and no such study has been conducted in district Peshawar. Therefore, results obtained from this study will provide baseline data which can be used for further research and will help the health authorities to take necessary steps to formulate proper mental health care programs for such young adults.

METHODOLOGY

After taking approval from Institutional Review and Ethical Board of Khyber Medical College, a cross sectional study comprising of 370 young adults was conducted. The sample was enrolled with consecutive sampling. The age ranged from 20-40 years and included both genders. The study was conducted in the outpatient department (OPD) of otolaryngology, head & neck surgery unit, Khyber Teaching Hospital, Peshawar from April 2019 to September 2019. The study population was divided into two groups for comparison purposes. A hearing loss only group (HL group) and a hearing loss with tinnitus group (HLT group). Patients with head and neck cancers, all types of head trauma, neuropsychiatric disorders, any organic causes of tinnitus, those using drugs that cause tinnitus as side effect, any foreign body or wax in the external ear, congenital deafness, diabetes and hypertension were excluded.

After taking informed consent, ear examination with otoscope, tuning fork tests and pure tone audiometry (PTA) were done. To check the presence of tinnitus, a validated urdu version of Tinnitus Handicap Inventory (THI) was used⁸. For assessment of anxiety and depression, a validated urdu version of Hospital Anxiety and Depression Scale (HADS) was administered⁹.

Data was analyzed by using SPSS version 22. Categorical variables like gender, tinnitus, anxiety and depression were described as frequencies and percentages. Association of tinnitus with hearing loss and anxiety and depression was determined by using chi square test with p value <0.05 as statistically significant.

RESULTS

Out of 370 patients, HL group comprised of 197 patients and the HLT group consisted of 173 patients. In Hearing Loss group, 100 patients were in the age range of 20-29 years, while 97 patients were in 30-40 years range. Similarly in Tinnitus group, 80 patients were in 20-29 years age group while 93 were in 30-40 years range as shown in table 1. Both groups had male predominance (table 2). Frequency of anxiety and depression in both groups is given in table 3. The association of anxiety and depression with tinnitus was found to be significant as the p value was <.05 (table 4).

DISCUSSION

Among patients with tinnitus and hearing loss, 46.2% were in the range of 20-29 years and 53.8% were in 30-40 years range. Gender wise, males were predominant (63%). Out of 173 patients, 38.7 % had anxiety while 46.2% had depression. The association of anxiety and depression with tinnitus and hearing loss was signifi-

Table 1: Age wise distribution

Groups	Age Group	Frequency	Percent
HLT Group	20-29	80	46.2
	30-40	93	53.8
	Total	173	100.0
HL Group	20-29	100	50.76
	30-40	97	49.24
	Total	197	100.0

Table 2: Mean and standard deviation of both groups as per gender.

Group	Gender	N	Mean	Std. Deviation	Std. Error Mean
HL	Male	114	29.21	7.190	.497
	Female	83	23.21	7.12	.439
HLT	Male	109	29.21	7.190	.497
	Female	64	24.12	5.12	1.21

Table 3: Frequency of anxiety and depression in both groups

Variable	HL		HLT	
	Yes	No	Yes	No
Anxiety	15 (7.6%)	182 (92.4%)	67 (38.7%)	106 (61.3%)
Depression	16 (8.1%)	181 (91.9%)	80 (46.2%)	93 (53.2%)

Table 3: Frequency of anxiety and depression in both groups

Variable		HL		X ²	Sign	HLT		X ²	Sign
		Male	Female			Male	Female		
Anxiety	Yes	05	10	6.67	11.57	41	26	65.205	<0.001
	No	109	73			68	38		
Depression	Yes	9	07	5.3	12.4	50	59	87.3	<0.001
	No	105	181			30	34		

cant with a p value of <0.001.

Travis et al. showed that out of 81 patients 28% had depression and 95% suffered from anxiety¹⁰. They also proposed that depression had an indirect influence on anxiety and depression and appeared to be the causative factor in many comorbid conditions associated with chronic tinnitus¹⁰. Our study also showed depression in 46.2 % but our anxiety score was lower than them as it was 38.7%. In our study we did not use any tools to show any impact of one disease on another.

Sullivan et al. did a case control study which, to some extent, matches our study¹¹. They measured depression in two groups, tinnitus group containing 40 patients and hearing loss only group having 14 patients. Hopkins Symptom Checklist (SCL-90), the Chronic Illness Problem Inventory, and the Revised Ways of Coping Checklist were used by them. Seventy eight % of the tinnitus patients had depression, while the tinnitus group in our study had 33.3% depression. The control group in their study had 21% depression but in contrast to this our study showed only 8.1 % patients with depression. Their study did not include anxiety scale¹¹.

Another study that supports our findings was done by Gomaa et al. in Egypt¹². They did a prospective study on 196 subjects, dividing them into three groups. Among them, 100 were included in tinnitus group, 50 were included in control group and 46 were included in hearing loss group. Tinnitus was estimated by Visual Analogue Scale while DASS was used to measure depression, anxiety and stress. Out of the, 84% of the tinnitus group suffered from depression. In our study 62.5% males and 37.5% females were suffering from depression in tinnitus group. Only 4.3% of the patients in their hearing loss group had depression, our study showed depression in only 8.1% of the hearing loss group. Similarly 90% of males and 83.3% females suffered from anxiety in their tinnitus group. In our study 61.19% males and 38.80% females suffered from anxiety

in our tinnitus group. Overall, only 8.7% patients were diagnosed with anxiety in their hearing loss group which again is somewhat similar to our finding, only 7.6% suffered from anxiety in our hearing loss group¹².

A study conducted locally by Aqeel et al found a strong association between tinnitus and anxiety (p<.001) and depression (p<.001), which are similar to our findings of anxiety (p<.001) and depression (p<.001) in tinnitus group. Moreover this study included a wider age range including elderly while our study is based only on young adults. Our study shows that tinnitus in young adults leads to anxiety and depression as it does in elderly patients⁷.

Being a cross sectional study, our study was limited to the frequency of patients already diagnosed with tinnitus, a prospective cohort study will give a more in-depth view and knowledge of tinnitus and its association with anxiety and depression.

CONCLUSION

The study concluded that tinnitus with hearing loss in young adults is on the rise these days. This study showed a strong association between anxiety and depression with tinnitus in young adults.

REFERENCES

1. Baguley D, McFerran D, Hall D. Tinnitus. The Lancet. 2013 Nov 9;382(9904):1600-7.
2. Stephens SD. The treatment of tinnitus—a historical perspective. J Laryngol Otol. 1984 Oct;98(10):963-72.
3. Park SY, Han JJ, Hwang JH, Whang ES, Yeo SW, Park SN. Comparison of tinnitus and psychological aspects between the younger and older adult patients with tinnitus. Auris Nasus Larynx. 2017 Apr 1;44(2):147-51.
4. World Health Organization (WHO). 1.1 Billion People at Risk of Hearing Loss: WHO Highlights Serious. Threat

- Posed by Exposure to Recreational Noise. Available online: <http://www.who.int/mediacentre/news/releases/2015/ear-care/en/>. (Accessed on 31 July 2019)
5. Degeest S, Corthals P, Vinck B, Keppler H. Prevalence and characteristics of tinnitus after leisure noise exposure in young adults. *Noise Health*. 2014;16(68):26-33.
 6. Ahmed B, Enam SF, Iqbal Z, Murtaza G, Bashir S. Depression and anxiety: a snapshot of the situation in Pakistan. *Int J of Neurosci Biobehav Sci*. 2016;4(2):32.
 7. Aqeel M, Ahmed A, Akhtar T. The mediating role of tinnitus perception between hearing impairment and development of psychological problems in male and female tinnitus patients. *Int J Hum Rights Health*. 2017 Dec 11;10(5):332-43.
 8. Aqeel M, Ahmed A. Translation, Adaptation and Cross Language Validation of Tinnitus Handicap Inventory in Urdu. *Journal of audiology & otology*. 2018 Jan;22(1):13.
 9. Mumford DB, Tareen IA, Bajwa MA, Bhatti MR, Karim R. The translation and evaluation of an Urdu version of the Hospital Anxiety and Depression Scale. *Acta Psychiatrica Scandinavica*. 1991 Feb;83(2):81-5.
 10. Trevis KJ, McLachlan NM, Wilson SJ. Psychological mediators of chronic tinnitus: the critical role of depression. *J Affect Disord*. 2016 Nov 1;204:234-40.
 11. Sullivan MD, Katon W, Dobie R, Sakai C, Russo J, Harrop-Griffiths J. Disabling tinnitus: association with affective disorder. *Gen Hosp Psychiatry*. 1988 Jul 1;10(4):285-91.
 12. Gomaa MA, Elmagd MH, Elbadry MM, Kader RM. Depression, Anxiety and Stress Scale in patients with tinnitus and hearing loss. *Eur Arch Otorhinolaryngol*. 2014 Aug 1;271(8):2177-84.

CONTRIBUTORS

FS conceived the idea, planned the study and drafted the manuscript, HS & MK helped in acquisition of data and statistical analysis. NH provided the relevant guidance and mentoring.