

Associated Risk Factors of Tinnitus Among Randomly Selected People in BaqubaCity- Iraq

ALI LAFTASALMAN¹, DURAIID H. ABIDALKADEM², QAYS JAAFAR KHALAF³

¹ENT Specialist, Board Certified Department of Otolaryngology Baaquba Teaching Hospital, Iraq

²Lecturer in University of Diyala, College of Medicine, Iraq

³Lecturer. Department. Otolaryngology, Diyala University, College Of Medicine - Iraq.

Correspondence to Dr. Duraid H. Abidalkadem

ABSTRACT

Tinnitus is considered a common medical problem that may be unbearable. Although many studies is proceeding to understand this symptom, the pathway and possible effective therapy are remain ambiguous. In the present study, many risk factors such as age, smoking habit, hypertension, vertigo, otitis media and family history have been evaluated in 200 patients complaining of tinnitus attended Outpatients Consolatory Clinic in Baquba Teaching Hospital in Diyala province in Iraq. The results revealed imperative relation between the duration and type of tinnitus. Whereas, there was insignificant or negative association between tinnitus and other risk factor such as hypertension, family history, vertigo and otitis media. Therefore, it can be established that tinnitus is associated with certain risk factors which are common in the community. Further studies are required to cover other associated risk factors that contributed to the mechanism and possible treatment of this public symptom.

Keywords: Tinnitus, vertigo, Buzzing, Ringing, Clicking

INTRODUCTION

The word tinnitus is derived from the Latin tinnire which means "to ring"(Baguley *et al.*,2013). Tinnitus is the hearing of sound when no external sound is present (Levine and Oron, 2015).While often described as a ringing, it may also sound like a clicking, hiss or roaring (September, 2014).Rarely, unclear voices or music are heard(Baguley *et al.*, 2013).These sounds may be soft or loud, low pitched or high pitched and appear to be coming from one ear or both (Levine *et al.*, 2015). In some people, the sound causes depression or anxiety and can interfere with concentration (Rodrigues *et al.*, 2014). Tinnitus is the perception of sound in the absence of a corresponding external acoustic stimulus (Langguth *et al.*, 2007)

Tinnitus is not a disease but a symptom that can result from a number of underlying causes and may be one of the most common causes is noise-induced hearing loss (Rodrigues 2014). Other causes include ear infections, disease of the heart or blood vessels, Ménière's disease, brain tumors, emotional stress, exposure to certain medications, a previous head injury, and earwax. It is more common in those with depression The diagnosis of tinnitus is usually based on the person's description Baguley *et al.*,2013

SUBJECTS AND METHODS

This study was conducted on 200 subjects with tinnitus who were attended the Baquba Teaching Hospital-Outpatient Consolatory Clinic as well as certain private clinics in Diyala province over a period of 8 months (July 2019 to March 2020). They were consisting of 125 females, plus 75 males and their ages ranged between 15-85 years. They were selected randomly; all of them were complained of tinnitus.

A special questionnaire form was preconstructed for this study that includes certain socio-demographic and risk factors. A form was filled for each subject through short interview during which a verbal consent was obtained. The

collected data were classified on Microsoft-Excel file and statistical analysis was sought.

Statistical analysis: Analysis of data was carried out using the available statistical package of SPSS-25. Data were presented in simple measures of frequency, percentage, mean, standard deviation, and range (minimum-maximum values).

The significance of difference of different percentages (qualitative data) were tested using Pearson Chi-square test (χ^2 -test) with application of Yate's correction or Fisher Exact test whenever applicable. Statistical significance was considered whenever the P value was equal or less than 0.05.

RESULTS

Study subjects: A total of 200 subjects with tinnitus were included in this study, to explore certain characteristics of tinnitus and to determine the effect of certain risk factors.

Age distribution: The results showed that the age mean \pm SD of study subjects was 46.3 ± 15.1 years with a range of 15-85 years. The results also found that the highest number of subjects were fall in the age group 50-59 years 48 (24%), table and figure (1).

Figure 1: Age distribution of study subjects.

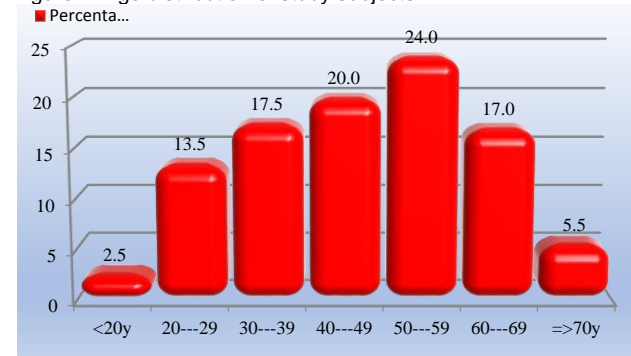


Table 1: Age distribution of study subjects.

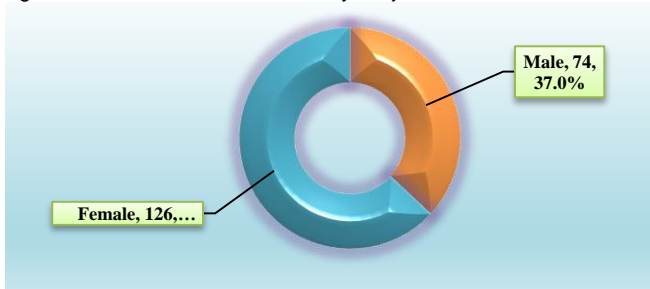
Age (Ys)	n	%age
< 20	5	2.5
20-29	27	13.5
30-39	35	17.5
40-49	40	20.0
50-59	48	24.0
60-69	34	17.0
70	11	5.5
Total	200	100

Gender distribution: The study subjects were consisted of 47 (37%) males and 126 (63.0%) females, table 2, figure 2.

Table 2: Gender distribution of study subjects.

Gender	n	%age
Male	74	37.0
Female	126	63.0
Total	200	100

Figure 2: Gender distribution of study subjects.

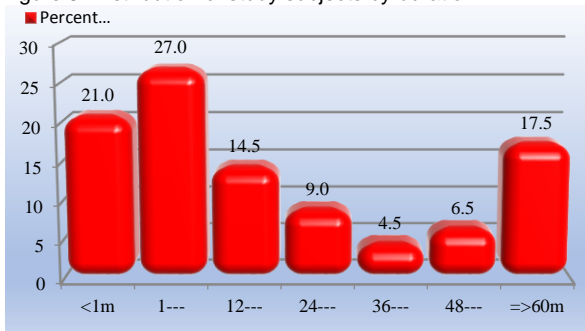


Duration of tinnitus: Table 3 and figure 3 showed the distribution of study subjects according to the duration of tinnitus were the majority of them had tinnitus for one month and the least of them had tinnitus for 36 months. The mean±SD (weeks) was 170.5± 270.3 (1-1440 weeks).

Table 3: Distribution of study subjects according to tinnitus.

Duration (ms)	n	%age
< 1	42	21.0
1	54	27.0
12	29	14.5
24	18	9.0
36	9	4.5
48	13	6.5
60	35	17.5

Figure 3: Distribution of study subjects by duration.



Other features: Table 4 and figures 4,5,6,7 revealed the distribution of study subjects according to the site where the majority of subjects has tinnitus in both ears

101(50.5%). According to the type, the highest number of subjects had a humming sounds 95(47.5%). while according to time, the highest number 77(38.5%) suffering from tinnitus though out the day and finally according to the continuity, where the majority of subjects with intermittent tinnitus 139(69.5%).

Table 4: Distribution of study subjects according to other features.

variable	No.	%age
Site		
Left	49	24.5
Right	50	25.0
Both	101	50.5
Type		
Humming	95	47.5
Buzzing	61	30.5
Clicking	19	9.5
Ringing	17	8.5
Others	8	4.0
Time		
Throughout the day	77	38.5
At night	52	26.0
During/ after specific activities	23	11.5
Always	48	24.0
Continuity		
Continuous	61	30.5
Intermittent	139	69.5

Figure 4: Distribution of study subjects by site.

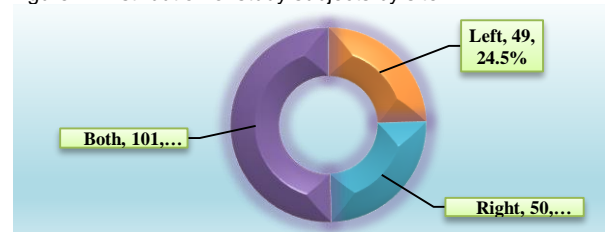


Figure 5: Distribution of study subjects by type.

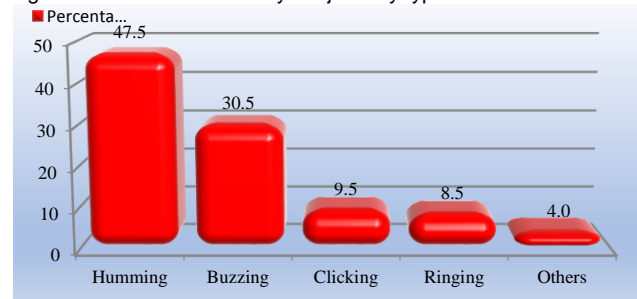


Figure 6: Distribution of study subjects by time.

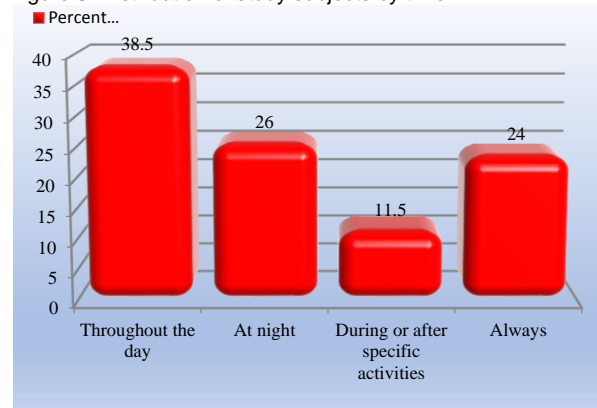
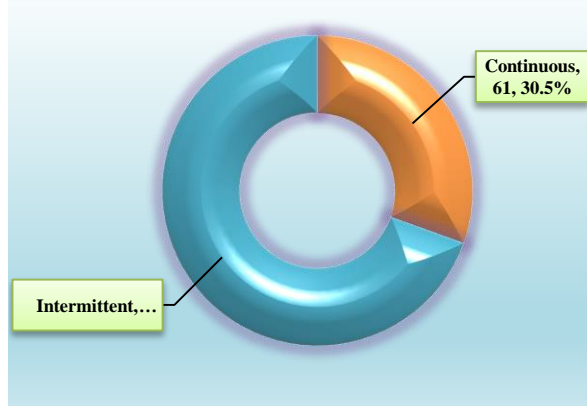


Figure 7: Distribution of study subjects by continuity

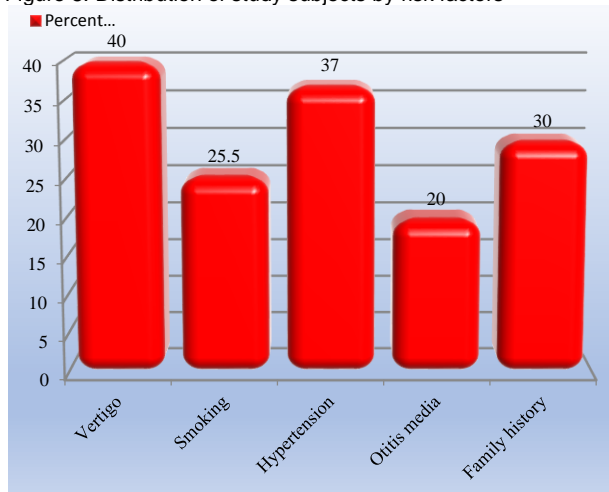


Risk factors: The distribution of study subjects according to certain risk factors was shown in table (5) and figure (8). Regarding the vertigo, only 80 (40%) of study subjects had vertigo. On the other hand the majority of them were non-smokers 149 (74.5%). Similarly the majority of them were non-hypertensive 126 (63.0%). According to the presence of otitis media, the highest number of subjects had no OM 160(80%) and the bulk of them had no family history 140(70%).

Table 5: Distribution of study subjects according to risk factors.

Variable	n	%age	
			Variable
Vertigo	Yes	80	40.0
	No	120	60.0
Smoking	Yes	51	25.5
	No	149	74.5
Hypertension	Yes	74	37.0
	No	126	63.0
Otitis media	Yes	40	20.0
	No	160	80.0
Family history	Yes	60	30.0
	No	140	70.0

Figure 8: Distribution of study subjects by risk factors



Association of tinnitus

Duration: The results revealed in table (6) that there was no significant difference between male and female subjects regarding the duration of tinnitus ($p = 0.420$).

Table 6: Gender association of tinnitus with duration.

Duration (Ws)	Gender				P value
	Male		Female		
	No.	%age	No.	%age	
<1m	16	21.6	26	20.6	0.420
1---	22	29.7	32	25.4	
12---	7	9.5	22	17.5	
24---	6	8.1	12	9.5	
36---	3	4.1	6	4.8	
48---	8	10.8	5	4.0	
=>60m	12	16.2	23	18.3	

P value 0.420, Significant association using Pearson Chi-square test at 0.05 level.

Other features: Table 7 showed that there was no significant association between male and female subjects regarding the site of tinnitus ($p= 0.77$). Similarly there was no significant difference among male and female gender regarding the type of tinnitus ($p= 0.78$), regarding the time of tinnitus, the results showed that tinnitus throughout the day is significantly higher compared to other types ($P= 0.037$). Lastly, although the intermittent tinnitus was higher compared to cautious type, the difference was statistically significant ($p = 0.44$).

Table 7: Association of tinnitus with other features.

Features		Gender				P value
		Male		Female		
		No.	%age	No.	%age	
Site	Left	20	27.0	29	23.0	0.777
	Right	17	23.0	33	26.2	
	Both	37	50.0	64	50.8	
Type	Buzzing	22	29.7	39	31.0	0.788
	Clicking	7	9.5	12	9.5	
	Humming	38	51.4	57	45.2	
	Ringing	4	5.4	13	10.3	
	Others	3	4.1	5	4.0	
Time	Throughout day	30	40.5	47	37.3	0.037*
	At night	11	14.9	41	32.5	
	During or after activities	11	14.9	12	9.5	
	Always	22	29.7	26	20.6	
Continuity	Continuous	25	33.8	36	28.6	0.440
	Intermittent	49	66.2	90	71.4	

Significant association using Pearson Chi-square test at 0.05 level.

Table 8: Association of tinnitus with risk factors.

Features		Gender				P value
		Male		Female		
		No.	%age	No.	%age	
Vertigo	Yes	22	29.7	58	46.0	0.023*
	No	52	70.3	68	54.0	
Smoking	Yes	39	52.7	12	9.5	0.0001*
	No	35	47.3	114	90.5	
Hypertension	Yes	22	29.7	52	41.3	0.103
	No	52	70.3	74	58.7	
Otitis media	Yes	10	13.5	30	23.8	0.079
	No	64	86.5	96	76.2	
Family history	Yes	18	24.3	42	33.3	0.179
	No	56	75.7	84	66.7	

Significant association using Pearson Chi-square test at 0.05 level.

Risk factors: Results in table 8 revealed that there was negative significant association of tinnitus with vertigo ($p= 0.023$). Similarly there was negative significant association of tinnitus with smoking ($p= 0.0001$). Regarding the otitis

media, although the tinnitus is higher with those subjects without otitis media: however, the association was statistically insignificant ($p= 0.079$). Otherwise, the effect of other risk factors namely the hypertension and the family history were insignificant ($p= 0.103$ and $p= 0.179$) respectively.

DISCUSSION

The results found that the highest number of subjects were fall in the age group 50-59 years 48(24%), these agree with Mahboubi et al., 2013. where the majority of subjects has tinnitus in both ears 101(50.5%). (Doungkamol et al., 2015) According to the type, the peak number of subjects had a humming sounds 95(47.5%). while according to time, the highest number 77(38.5%) suffering from tinnitus though out the day and finally according to the continuity, where the majority of subjects with intermittent tinnitus 139(69.5%).

The results revealed that there was insignificant difference between male and female subjects regarding the duration of tinnitus. These results are in agreement with the study of (Byung et al., 2009) because they found that there is no significant association between duration of tinnitus and gender. However the present study inconsistent with it (Seydel et al., 2013; Sunita Gudwani, et al., 2013) because they found that there was significant association between tinnitus and duration. This disagreement may be due to that I took limited number of patients in the study.

Association of tinnitus with risk factors: The present result found that there is significant difference between genders with tinnitus regarding smoking, in males there is an association between tinnitus and smoking in contrast to females. These results are consistent with the following study (Hyung-Jong et al., 2015) and disagree with the following studies (Shargorodsky et al., 2010). These result due to the social habits of our community.

The present results found that there is no significant association between tinnitus and hypertension (according to the gender). These results are in agreement with the study of since they found that there is no association between hypertension and tinnitus (Maria, et al., 2016), . However the results disagree with the study of (Figueiredo, et al., 2014) were they found there is significant association between the hypertension and tinnitus.

Furthermore, the present results found that there is no significant association between tinnitus and otitis media (according to the gender). These results are concomitant with the study of (Nondahl et al., 2010) were they found that there is no association between tinnitus and ear infection. Family history: the present results found that there is no significant association between tinnitus and family history (according to the gender). These results are in consistent with the study of (Langguth et al., 2007) were they found the same results, in contrast to this study was the study of (Stephens, et al., 2009) were they found the same results.

CONCLUSION

The results of this study discovered imperative correlation between the period and type of tinnitus. However, there was inconsequential or negative relationship between tinnitus and other risk factor such as, family history, vertigo hypertension, and middle ear infection. Therefore, it can be established that tinnitus is associated with certain risk factors which are common in the public. Further studies are required to cover other associated risk factors that contributed to the mechanism and possible treatment of this common problem.

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