

PREVALENCE OF HEARING LOSS IN KIRKUK CITY FOR THE PERIOD FROM 2001 TO 2006⁺

انتشار فقدان السمع في مدينة كركوك للفترة من ٢٠٠١ إلى ٢٠٠٦

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Abstract:

Hearing loss is a common chronic medical condition in adults and children .

Analysis was done to a yearly rates of hearing loss among people attended to Azady Hospital between September 2001 to May 2006 . It is found that hearing loss a worsening trend in hearing status occurred over this time period. Percentage of hearing loss appear to be increased after 2003 and the male show higher percentage 504(64.53%) than female 277(35.46%) . The more age group affected was 51 years old and above , people with illiterate and primary education more affected than secondary and higher level .

Bilateral hearing loss recoded 548(70.16%) more than unilateral 233(29.83%) while mild and moderate hearing loss recorded 351,255 (44.94%, 32.65%) respectively higher than sever hearing loss 175(22.40%).

Medical treatment indicated the higher percentage (30.21%) than another like , hearing aid (24.83%) finally surgery (11.39%) . Prevalence of hearing loss can be decreased by improvement of the diagnostic and treatment services of health provides especially at the primary care level.

المستخلص:

فقدان السمع من الحالات الطبية الشائعة والمزمنة في البالغين وكذلك الأطفال وقد اجري التحليل للمعدلات السنوية لفقدان السمع لمراجعي مستشفى نازادي من ايلول ٢٠٠١ ولغاية أيار ٢٠٠٦ و هنالك تدهور في حالة السمع وقعت خلال هذه الفترة وان معدل فقدان السمع لوحظ بتزايد بعد ٢٠٠٣ والذكور أكثر عرضة حيث سجلوا ٥٠٤ (٦٤,٥٣ %) من الإناث ٢٧٧ (٣٥,٤٦ %) . علما إن اعلى نسبة إصابة بفقدان السمع كانت في الفئة العمرية ٥١ سنة فما فوق، المرضى في هذه الدراسة من الأشخاص ذو المستوى التعليمي الأمي والابتدائية أكثر إصابة من ذوي التعليم الثانوي والجامعي .فقدان السمع في الإذنين سجل ٥٤٨ (٧٠,١٦ %) أكثر من فقدان السمع المفرد ٢٣٣ (٢٩,٨٣ %) بينما فقدان السمع الخفيف والمتوسط سجلوا ٣٥١ و ٢٥٥ (٤٤,٩٤ % و ٣٢,٦٥ %) على التوالي أعلى من فقدان السمع الشديد ١٧٥ (٢٢,٤٠ %). وقد تبين ان العلاج الطبي احتل اعلى نسبة (٣٠,٢١ %) مقارنة مع استعمال سماعات الإذن أو المعونة السمعية (٢٤,٨٣ %) وأخيرا العلاج الجراحي (١١,٣٩ %). انتشار فقدان السمع يمكن تقليله بتحسين القدرات التشخيصية والعلاجية والإمكانية الصحية وتوفر قدرات خاصة على مستوى الرعاية الأولية .

Introduction:

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Otitis media forms a large percentage of the most common group of disease in childhood and respiratory infectious disease [1, 2]. It occurs in adult but with much less frequency [3, 4]. Otitis media can be either symptomatic or asymptomatic, persistent otitis media associated with a mild to moderate hearing loss [5]. Hearing loss is common medical condition in adult and may be birth defect it is a complex sense involving both the ears ability to detect sounds in the environment and the brains ability to interpret the sounds speech [6, 7].

There are three basic types of hearing loss, conductive hearing loss occurs when sound is not conducted efficiently through the outer ear canal to eardrum and tiny bones , of the middle ear due to impacted ear wax or infection in the ear canal or foreign body it usually involves reduce in sound level and can be medically or surgically corrected[8].

The second type is sensorineural hearing loss occurs when there is damage to the inner ear or to nerve pathway from inner ear to brain affect ability to hear clearly due to birth injury or noise exposure and aging cannot be medically or surgically corrected [9], when a conductive hearing loss in combination with asensorineural hearing loss called a mixed hearing loss (third type) [10].

The configuration of hearing loss refers to the extent of hearing loss at each frequency and patient show good hearing in low frequencies and poor hearing in the high frequencies [11] , when hearing is normal in one ear but there is hearing loss in the other ear called unilateral hearing loss , if hearing loss affect both ears called bilateral and can range from mild to very sever depend on degree of hearing loss[11,12] .

Factors that have been associated with hearing loss and deafness besides loud noise, are certain medication, aging [8] and genetic factor [9]. Development of hearing loss had bad effects on suffers job, home and life with subsequent social and economic burden on the society [10, 13]. Hearing loss may identified by the person involve, by friend and family and hearing test , the formal audiometric testing is the gold standard for diagnoses of hearing loss and provide precise information displayed by the frequency and hearing level[14].

Audiogram for each years is pure-Tone-Average (PTA) of the thresholds at specific frequency, threshold are measured on the decibel dB hearing loss [10, 11]. World Health Organization(WHO) indicated that the epidemiology of acquired adult sensorneural hearing loss were 414 to 580 million people with slight to mild hearing loss within the speech frequency range across the globe[15,16].

Materials and methods:

This study was carried out on 9687 patients suffering from otitis media and hearing loss attending to an ENT department , Azady hospital in kirkuk city for period from September 2001 to May 2006 . Otitis media record 8906(91.93%) and 781(8.06%) where at risk of hearing loss.

The data of the prevalence of hearing impairment was estimated according to many information listed in direct special questionnaire including name, age, sex, education level followed by examination of an ENT specialized and audiometric formal test to assess the degree of hearing loss and pattern of hearing loss (one or both ear effected) and to determine the degree of hearing loss depend on American standard by American Speech – Language-hearing Association which uses the following degree of hearing loss and decibel (db): mild 25-40db , moderate 41-70db and sever 71-90db [11] , and treatment options such as medical, hearing aids, surgery and others. A Mantel-Hansel /Chi-square test were used to evaluate the time trend in hearing loss rates and demographic variable over six years periods .

Aim of Study:

To estimate the prevalence of hearing loss in relation to epidemiological parameters, to assess the availability of ear and audiological services , and to suggest steps for the development of protocols for prevention and treatment of hearing loss to reduce deafness at the national level.

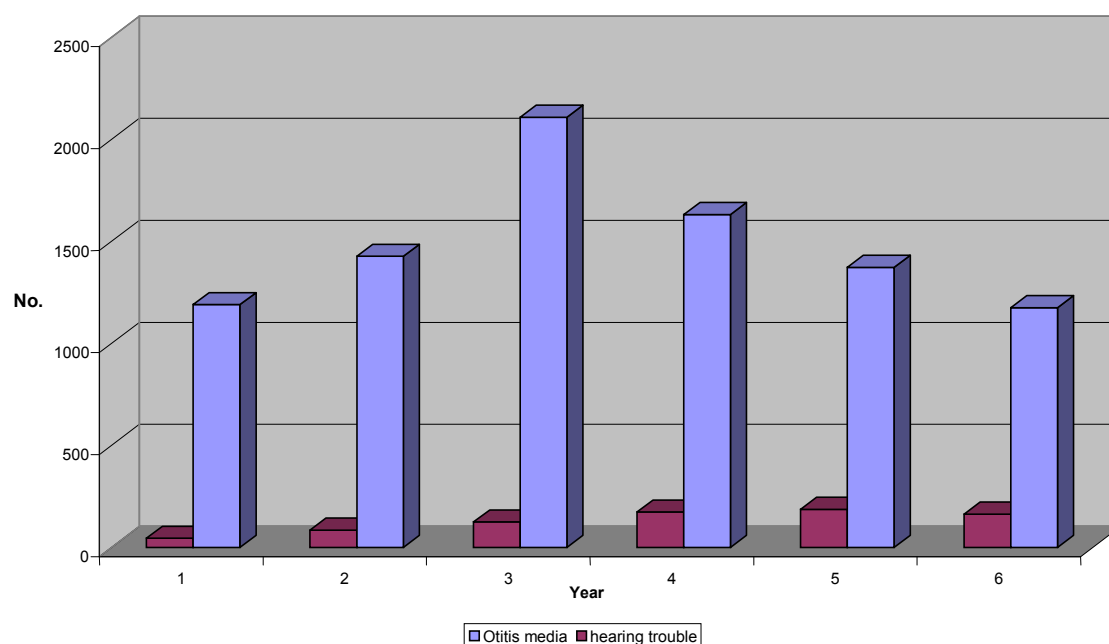
Results :

Table (1) shows the rate of otitis media and hearing loss was higher in 2003 was 2233(23.05%) followed by 2004 was 1806 (18.64%) , 2005 was 1560(16.10%) , 2002 was 1512(15.60%) , 2006 was 1340(13.83%) and less in 2001 was 1236(12.75%) and statistically show high significant deference. Also figure (1) appear highly percentage of otitis media in 2001 (96.27%) followed by 2003, 2002 were (94.40%,94.37%) respectively then be decreased corresponding in 2004, 2005 and last 2006 (90.36%, 88.01% and 87.76%) respectively while hearing loss was increased after 2004 that record high percentage in 2006(12.38%) followed by 2005 (11.98%), 2004(9.63%) then in 2002, 2003 were (5.62%) and (5.59%) and less percentage in 2001 (3.72%) and show highly significant difference between them.

Table (1) percentage of Otitis media and hearing loss			
Years	**Otitis Media	Hearing loss	*Total
2001	1190(96.27%)	46(3.72%)	1236(12.75%)
2002	1427(94.37%)	85(5.62%)	1512(15.60%)
2003	2108(94.40%)	125(5.59%)	2233(23.05%)
2004	1632(90.36%)	174(9.63%)	1806(18.64%)
2005	1373(88.01%)	187(11.98%)	1560(16.10%)
2006	1176(87.76%)	164(12.38%)	1340(13.83%)
Total	8906(91.93%)	781(8.06%)	9687
*Chi-sq=403.408 **Chi-sq=6813.19			
	df=5	P<0.01	
	df=5	P<0.01	

However there was a significant statistical difference in the occurrence of hearing loss both in male and female were show highly percentage of hearing loss record in male for all years of study that record total percentage 504(64.53%) than female 277(36.46%) in table (2).

Table(2) Prevalence of hearing loss by gender			
Years	Female	Male	Total
2001	15(32.60%)	31(67.39%)	46
2002	41(48.23%)	44(51.76%)	85
2003	43(34.4%)	82(65.6%)	125
2004	72(41.37%)	102(58.62%)	174
2005	66(35.29%)	121(64.76%)	187
2006	40(24.39%)	124(75.60%)	164
Total	277(36.46%)	504(64.53%)	781
Chi-sq=65.398			
	df=1	P<0.01	



Fig(1) Otitis media and hearing loss during the period 2001-2006

In generally their was significant difference between age groups and the more age group had more effect in 51 years old and above 176 (22.53%) , 31-40 years old was 212 (27.14%) , 41-50 was 149(19.67%) , 21-30 was 130(16.64%) last >10 and 11-20 were 77, 37(9.85%,4.67%) corresponding.

Table (3) Prevalence of hearing loss by age

Years	<10	11-20	21-30	31-40	41-50	51>	Total
2001	8	2	10	8	4	14	46
2002	4	2	21	26	19	13	85
2003	12	7	34	40	7	25	125
2004	15	6	30	54	41	28	174
2005	20	9	20	60	52	26	187
2006	18	11	15	24	26	70	164
Total	77 (9.85%)	37 (4.67%)	130 (16.64%)	212 (27.14%)	149 (19.67%)	176 (22.53%)	781

Chi—sq=158.710

df=5

P<0.01

According to education level in female primary school highly percentage 114(43.01%) ,illiterate was 73(31.06%),less in secondary and higher education was 51,39(31.67,32.5%).While in male record higher percentage in illiterate was 162(68.93%), in primary was 151(56.98%) and less in secondary and higher education were 110,81(68.32%,67.5%) table (4)and significant difference.

Table (4) Prevalence of hearing loss by education level			
Education level	Female	Male	Total
Illiterate	73(31.06%)	162(68.93%)	235
Primary	114(43.01%)	151(56.98%)	265
Secondary	51(31.67%)	110(68.32%)	161
Higher	39(32.5%)	81(67.5%)	120
Total	277	504	781
Chi-sq=68.019	df=3	P<0.01	

Table(5) show highly percentage of bilateral hearing loss for all years were 548(70.16%) than unilateral was 233(29.83%)were record highly statistically significant difference.

Table (5) Prevalence of hearing loss by pattern of loss			
Years	Bilateral	Unilateral	Total
2001	30(65.21%)	16(34.78%)	46
2002	51(60%)	34(40%)	85
2003	99(79.2%)	26(20.8%)	125
2004	113(64.94%)	61(35.05%)	174
2005	144(77%)	43(22.99%)	187
2006	111(67.68%)	53(32.31%)	164
Total	548(70.16%)	233(29.83%)	781
Chi-sq=160.455	df=1	P<0.01	

The more degree of hearing loss for all years were mild 351(44.94%), the moderate was 255(32.65%) and sever loss was175(22.40%) as in table (6) were record highly statistically significant difference.

Table (6) Prevalence of hearing loss by degree of hearing loss				
Years	Mild	Moderate	Sever	Total
2001	21	19	6	46
2002	44	26	15	85
2003	61	38	26	125
2004	76	55	43	174
2005	79	57	51	187
2006	70	60	34	164
Total	351 (44.94%)	255 (32.65%)	175 (22.40%)	781
Chi-sq=59.657		df=2	P<0.01	

Individuals found to have hearing loss required different lines of management in both sex male and female (table 7) , most of the group need , ear wash was 264(33.80%) , medical treatment was 236(30.21%),then using hearing aids was 194(24.83%)is frequently recommended at PTAs than 40 db in both ear and the male was more using hearing aids (112) than female (82), surgical repair (tympanoplasty) was performed for 87(11.39%) cases with sever hearing loss at PTAS greater than 70 dB as in figure(2) and statistically show significant difference.

Table (7) Medical management of hearing loss				
Medical management	Male	Femle	Number	Percent%
Ear wash	181	83	264	33.80%
Medical treatment	157	79	236	30.21%
Hearing aids	112	82	194	24.83%
Surgery	54	33	87	11.39%
Total	504	277	781	100%
Chi-sq=92.736	df=3	P<0.01		

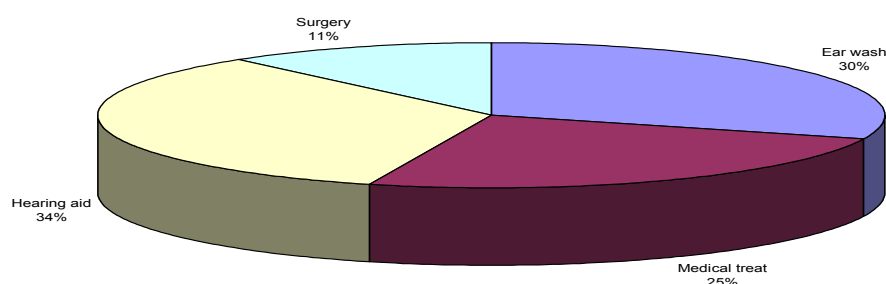


Fig.(2):Distribution of medical mangement of hearing loss

Discussion:

It is found that otitis media prevalent problem record show high percentage specially in 2003 was (94.40%) , decreased after 2004 and this appear effectiveness progress of medical treatment with progress years and this is in agreement with [18]. Previous studies have shown a history of childhood ear infection was associated with hearing impairment [17] .

The analyses of 6 year of hearing loss indicate that high percentage specially after 2004 and this may be due to rise noise exposure in Iraq due to expulsions and many research found where the rate of noise-induced hearing loss on the rise among at adolescent and young adults [7,8,16].

Regarding to sex hearing loss in men were significantly higher than female and this agree with others [7, 16]. who referred that men are more likely to have hearing loss than women due to men are more exposure to noise – inducing factors than women but not in agreement with [10] who showed that sex had no effect on the occurrence of hearing loss . who

It seems that age had significant role in the occurrence of hearing loss , as the rat of hearing loss was increased with progress of age specially after 31-40 years old, , this in agreement with the National Academy on aging society[14] showed 43% on age 65years among 5 million people, while among age 45-64(29%) , and below one to 17(9%) respectively.

National house hold survey carried on Ain Shams University , Egypt , [10] showed that highest prevalence of hearing loss was among ≥ 65 years old (49.3%) , while among below one to 4 years (22.4%) this also identification the hearing problems earlier carries the best prognosis of treatment .

Regarding the educational levels , the highest rate of hearing loss was among primary education (265) followed by illiterate , while the lowest was among higher education , this reflect on hygienic measurement and care among educated people . this finding is in

agreement with [4] who showed that the prevalence of hearing loss is greater for those who are not high school graduate than for those who are and the relationship between the education and hearing loss is similar for all age group .

In present study hearing loss tends to be a bilateral that's record 70% of case , a fact that increase the burden of the problem in spite of the unilateral hearing loss was present in (29.83%) of the whole sample , this is in agreement with [10] , in spite of [22] who recorded unilateral hearing loss in Basrah more than bilateral hearing loss

According to type of hearing, showed the higher percentage of mild loss (44.49%) than moderate loss and sever loss and this may not be noticed and even may not cause a problem for people with excellent perceptual abilities and good coping skill and this in agreement with other [10] .

A large proportion of our data with hearing loss (33.80%) needed medical treatment this indicate that hearing loss can be mainly medical problem , therefore the prevalence of hearing loss can be decreased by improvement of the diagnostic and treatment services of health provides especially at primary care level and this agree with [10,19] . About (24.83 %) of our sample need hearing aids . The frequency of using hearing aids is a very serious especially in younger age in united state only 20% of those who may benefit from hearing aids [11] . The acceptance and effectiveness of hearing aids in the management with persistent hearing loss and observed had definite improvement in their hearing.

Conclusion:

Hearing loss investigation was a part of an epidemiological study, men of all ages are more likely than women to have hearing loss and highly associated with aging specially in 51 years old and above . The prevalence of hearing loss is also greater for those who are not high school graduates .Hearing loss tends to be a bilateral and mild to moderate loss and observation are required more modality for the proper management.

Recommendations:

Draw attention to the importance of screening programmers in order to know causes correlation between degree of hearing loss and all correlated parameters and to early diagnosis and identification those with hearing impairment. The primary health care service for diagnostic and medical treatment for ear infection showed be improved . Health education and people an awareness of the hearing loss problem and focus on providing low prices for hearing aids for the purpose of encouraging its use.

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