Quality of life among Elderly Hearing Impairment (Presbycusis) at Benha City

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Abstract

Background: Hearing impairment (Presbycusis) is the third most prevalent chronic disease in the elderly, and it affects their quality of life. **Aim**: this study aimed to assess the quality of life among elderly hearing impairment (Presbycusis) at Benha City. **Research design:** A descriptive design was used. **Setting:** The study was conducted at Auditory Unit in Benha University Hospital and Benha Teaching Hospital. **Sample:** A purposive sample consisted of 100 elderly diagnosed with hearing impairment. **Tools:** Two tools were used include; (1) a structured interviewing questionnaire; it was composed of four parts: Socio-demographic characteristics, medical history, and knowledge regarding hearing impairment, (2) Quality of life of elderly with hearing impairment. **Results:** Most of the elderly people suffered from chronic diseases and the most common disease was hypertension, more than half of them had impairment in both ears, most of them had satisfactory level of knowledge, about two thirds had high score of total quality of life, and finally most of them had high score of total hearing impairment handicapping. **Conclusion:** Fortunately, the results revealed high total quality of life score and satisfactory level of knowledge among elderly. On other hand, most of them suffered from highly hearing impairment handicapping. **Recommendations:** Programs and studies should be done for teaching coping strategies for elderly with Presbycusis; this may have a positive impact on the quality of life of older people.

Key words: Elderly people, Presbycusis, and Quality of life.

Introduction:

The world's population is ageing rapidly; between 2015 and 2050, the proportion of the world's elderly is estimated to almost double from about 12% to 22%. In absolute terms, this is an expected increase from 900 million to 2 billion people over the age of 60. Older people face special physical and mental health challenges which need to be recognized **(WHO, 2018).**

Hearing impairment is the most common sensory impairment and has become a public health concern worldwide. It represents a frustrating condition, which is associated with communication difficulties, impaired cognitive functioning, and reduced quality of life. The recent global burden of disease study showed that hearing impairment had been ranked as the fifth leading cause of years lived with disability, higher than other chronic diseases including diabetes, dementia, and chronic obstructive pulmonary disease **(He et al ., 2018).**

Hearing impairment can significantly affect the elderly's quality of life, interfering with his ability to communicate with and

understand health-care providers, hear and respond to signals such as doorbells and smoke alarms, and even enjoy conversations with family and friends **(Cross, 2018).**

Presbycusis impairs communication, an essential need that allows for acquisition of knowledge and experiences, and helps people to remain active in personal, social and family life. When communication is damaged, it triggers several effects on functional abilities and health, damaging everyday activities and causing personal frustration, self-isolation, anxiety and other negative emotions, paranoia, relationship problems, stress, decreased quality of life and depression **(Ogundiran, et al., 2017).**

In elderly, disabling hearing impairment can lead to embarrassment, loneliness, social isolation and stigmatization, prejudice, abuse, psychiatric disturbance, depression, difficulties in relationships with partners and children, restricted career choices, occupational stress and relatively low earnings **(Chauhan, et al., 2015).**

The community health nurse (CHN) is the primary hearing health care provider for aged individuals with hearing impairment. The CHN is uniquely qualified to provide a comprehensive array of professional services relating to the prevention, evaluation, and rehabilitation of auditory impairment and its associated communicative disorders. The CHN involved in identification, diagnosis, and treatment of elderly who have disorders related to auditory dysfunction

The CHN provides information concerning hearing and hearing impairment, the use of prosthetic devices, and strategies for improving speech recognition by exploiting auditory, visual, and tactile speech information and also counsel's patients regarding the effects of auditory impairment on communicative and psychosocial status. In addition determines the need for additional aural rehabilitation and, if indicated, the nature of the rehabilitation program. The CHN Should be an integral member of any multidisciplinary team involved in the evaluation of the social, psychological, physical, and mental status of elderly people **(American Academy of Audiology, 2018).**

Aim of the study:

To assess the quality of life among elderly hearing impairment (Presbycusis) at Benha City.

Subject and Method

Research design:

A descriptive research design was used to conduct the study.

Setting:

The study was conducted at the Auditory Unite in Benha University Hospital and Benha Teaching Hospital.

Sample:

A total sample of 100 elderly diagnosed with hearing impairment was recruited to participate in this study. This subject was chosen according to the following criteria: Age is from 60 to 80 years old, both sexes, suffer from hearing impairment, and accept to participate in the study

Tools for data collection:

Tool (I): A structured interviewing questionnaire: A structured interviewing questionnaire format was developed by the investigator to collect the necessary data for achieving the study objectives. It was composed of:

Socio-demographic characteristics: It was concerned with demographic characteristics of elderly people involved in the study; it included 8 questions about: Age, sex, marital status, educational level, occupation, residence, family type and monthly income.

Medical history: Concerning medical history of the elderly. It involved questions about having any chronic disease such as: Diabetes mellitus, renal disease, hypertension and cardiac disease, taking any medication and medication taken regularly such as diabetic, hypertension, cardiac, and renal drugs, duration of hearing impairment, affected ear with hearing impairment ,degree and classification of hearing impairment in the elderly in each ear this data obtained from patient medical record (Audiometry) ,family history, medications affect hearing such as:- Antibiotics, chemotherapy, diuretics, salicylates (aspirin) and antimalarial drugs. Factors that leading to hearing impairment.

Knowledge regarding hearing impairment: It was concerned with the knowledge of elderly people regarding hearing impairment which include 6 questions such as meaning of hearing impairment, causes of hearing impairment, symptoms of hearing impairment, and risk factors of hearing impairment.

Tool (II): Quality of life of elderly with hearing impairment: This tool included a scale that was used to assess the effect of elderly hearing impairment on quality of life of elderly. This scale adopted by the researcher from two scales; The MOS 36-item short form health survey (SF-36), and Hearing Handicap Inventory for the Elderly (HHIE), as following:

The MOS 36-item short form health survey (SF-36): The SF-36 was designed for use in clinical practice and research, health policy evaluations, and general population surveys **(Ware & Sherbourn, 1992)**. The SF-36 is a36-item scale constructed to assess health status and quality of life **(Spen, 2017)** to increase the gold standard for studies of effectiveness.

It includes one multi-item scale that assesses eight health concepts: a) Limitations in physical activities due to health problems; b) limitations in usual role activities due to physical health problems; c) bodily pain, d) general mental health (psychological distress ,well-being, energy and vitality, e)- General health perceptions, f) limitations in social activities because of physical or emotional problems, j) limitations in usual role activities because of emotional problems; **(National Library Of Medicine, 2018).**

The investigator used only six concepts from this scale (1-6) and excluded two concepts (7, 8) because they were assessed by the other scale (HHIE)

Pilot study

A pilot study was carried out on 10 % to ensure the clarity, applicability and feasibility of the study tools, and necessary modifications were done.

Content validity:

The validity of tools had done through five expertise professors of Community & Geriatric Health Nursing Specialties, from different Faculties of Nursing. The tools were modified based on their guidance and views.

Reliability:

All tools for data collection were tested for its reliability using test retest reliability and all tools were proved to be strongly reliable. This was done using the assessment of their

internal consistency. The reliability proved to be high based on the values of Cronbach alpha coefficients as shown below.

Scales	Cronbach's Alpha
Quality of life	0.871
Handicapping	0.914
Knowledge regarding hearing impairment	0.872
Practice of elderly regarding hearing aid	0.852

Ethical considerations

- Anonymity, confidentiality and privacy of the elderly were assured.
- Voluntary participation and right to refuse to participate in the study was emphasized to the subjects.

Field work:

An official permission was obtained using proper channels of communication. This was done through letters addressed from the Dean of the Faculty of Nursing, Benha University; explaining the aim and procedures of the study and asking for cooperation to the Directors of Benha University Hospital and Benha Teaching Hospital. Informed oral consent was obtained from the elderly after explaining the aim of the study and assuring them about the confidentiality of the information. Tools were developed by the investigator after reviewing the relevant literature. It was tested for clarity, relevance, applicability, understanding, and ease for implementation by a jury in the related field of community nursing. The necessary modifications were applied according to experts' opinions. The investigator introduced herself to the elderly and explained the aim of the study to obtain their consent to participate in the study, gain their cooperation and confidence. The elderly was interviewed individually to collect the baseline data using all study tools. This interview took about 25 to 30 minute.

Statistical analysis:

Data entry and statistical analysis were done using SPSS 20.0 statistical software package.

Results:

Table (1) showed that 49% of the elderly people were males and aged 60 years old, while 52% of them were married. Regarding occupation 63% of them were unemployed and 55% of them lived in nuclear family and 73% of them had enough income.

Figure (1) illustrated that 59.0 % of the study subjects were living in rural areas, while 41.0 % of them were from urban.

Table (2) illustrated that 83% of the elderly people suffered from chronic diseases and the most common diseases were hypertension, diabetes mellitus and cardiac problems 48.2%, 22.9% and 21.7% respectively. This table also shows that 86% of the elderly people had taken medications regularity. Also, 50% of them took hypertensive drugs, 22.1% took diabetes mellitus drug and 20.9% took cardiac drugs.

Table (3) indicated that 47% of the elderly people suffered from hearing impairment for a period of 1-<5 years. Concerning the mean of degree of hearing impairment among the studied elderly, it was 44.6 ± 8.6 in the right ear and 45.2 ± 10.6 in the left ear. Also this table showed that only 10% of the studied sample already used hearing

aids and 60% of them used it from 4-8 hours.

Figure (2) demonstrated the total knowledge score of the studied subjects. It indicates that 89.0% of the elderly people had satisfactory level of knowledge; meanwhile, only 11.0 % of them had unsatisfactory level.

Figure (3) showed that 79% of the elderly people had high score of total quality of life and 21% of them had low score of total quality of life.

Figure (4) showed that 18.0% of elderly people had low score regarding their total hearing impairment handicapping and 82.0% of them had high score of total hearing impairment handicapping**.**

Table (4): Revealed that, there were highly statistically significance relations between the total knowledge score of elderly people and age, sex, while; there were statistically significant relation between, occupation and monthly income. While there was no statistically significance relations between the total knowledge score of them and marital status, education level, residence and family type.

Table (1): Frequency distribution of the elderly people according to their socio-demographic characteristics (n=100)

Demographic Characteristics	No.	%
Age:		
60-	26	26.0
70-	49	49.0
80	25	25.0
Gender:		
Male	54	54.0
Female	46	46.0
Marital status:		
Unmarried (single/divorced/widow)	48	48.0
Married	52	52.0
Occupation:		
Unemployed	63	63.0
Working	37	37.0
Family type:		
Nuclear	55	55.0
Extended	45	45.0
Monthly income:		
Insufficient	27	27.0
Sufficient	73	73.0

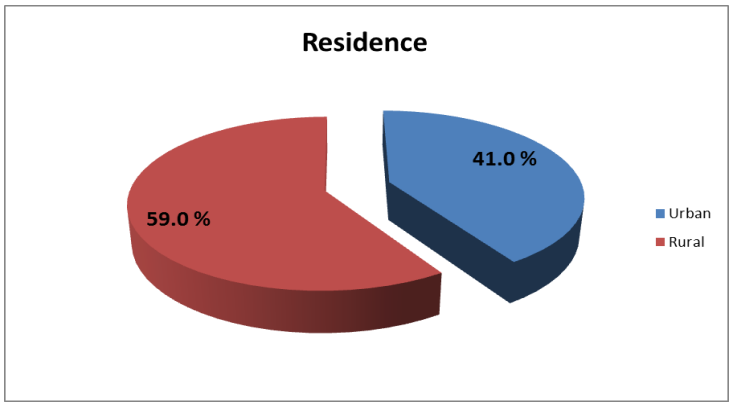

Figure 1: Distribution of the elderly people according to their residence (n=100)

Table (2): Frequency distribution of the elderly people according to their medical history (n=100)

Items	No.	%
Have chronic diseases:		
No	17	17.0
Yes	83	83.0
Diseases:*		
Diabetes mellitus	19	22.9
Renal diseases	13	15.7
Hypertension	40	48.2
Cardiac diseases	18	21.7
Total No. of diseases:		
Range	1-2	
Mean ±SD	1.1±0.3	
Median	1.0	
Taking medications regularity:		
No	14	14.0
Yes	86	86.0
Medications (n=86):*		
Diabetes	19	22.1
Hypertension	43	50.0
Cardiac	18	20.9
Renal	13	15.1
Total No. of medications:		
Range	1-2	
Mean ±SD	1.1±0.3	
Median	1.0	

* Not mutually exclusive

Table (3): Frequency distribution of the elderly people regarding to their hearing problem characteristics (n=100)

Items	No.	%
Duration of suffering hearing impairment (years):		
<1	20	20.0
1-<5	47	47.0
5+	33	33.0
Degree of hearing impairment		
Right ear:		
Mild	27	30.7
Moderate	59	67.0
Severe	2	2.3
Level (dB):		
Range	30-65	
Mean ±SD	44.6±8.6	
Median	45.0	
Left ear:		
Mild	26	33.3
Moderate	45	57.7
Severe	7	9.0
Level (dB):		
Range	30.0-70.0	
Mean ±SD	45.2±10.6	
Median	45.00	
Average impairment in both ears:		
Mild	42	42.0
Moderate	58	58.0
Use hearing aid:		
No	90	90.0
Yes	10	10.0
Duration of use (hours):		
4-<8	6	60.0
8+	4	40.0

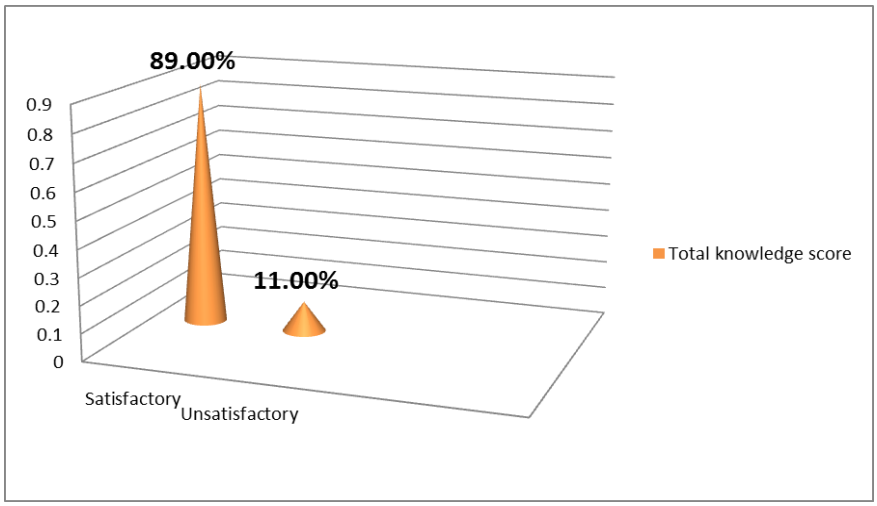

Figure 2: Distribution of the elderly people regarding to their total knowledge (n=100)

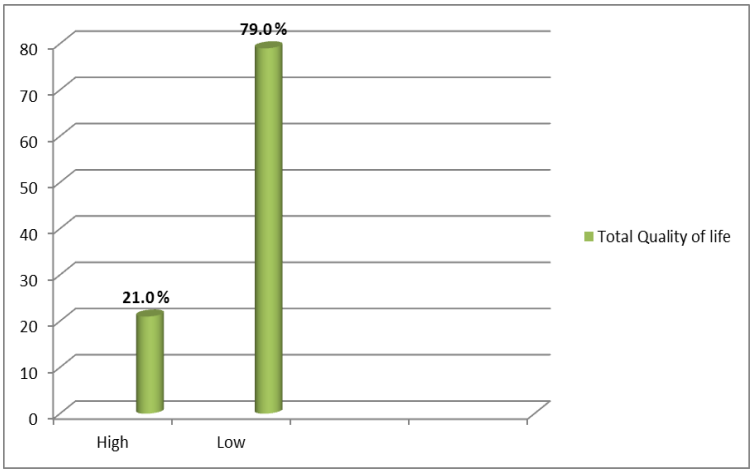

Figure 3: Distribution of the elderly people according to their total quality of life score (n=100)

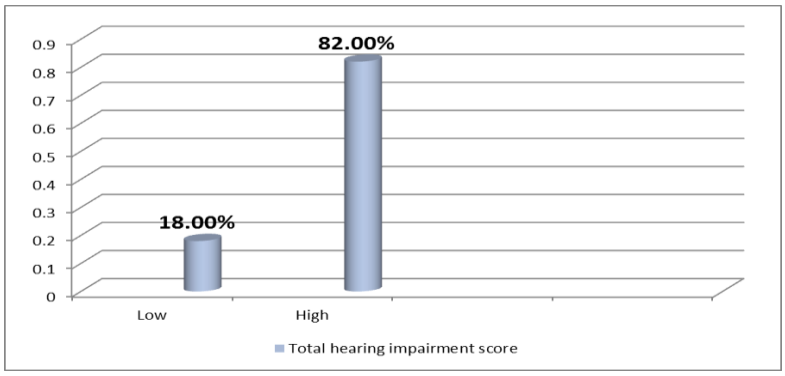

Figure 4: Distribution of the elderly people related to total hearing impairment handicapping score (n=100)

Table (4): Relations between elderly people total knowledge and their socio demographic characteristics (n=100)

Socio-demographic characteristics	Total Knowledge				X^2 test	p-value
	Satisfactory		Unsatisfactory			
	No.	%	No.	%		
Age:						
60-	1	2.0	48	98.0	44.0	<0.001**
70 – 80	14	56.0	37	44.0		
Sex:						
Male	15	27.8	39	72.2		
Female	0	0.0	46	100.0	15.03	<0.001**
Marital status:						
Unmarried	9	18.8	39	81.3		
Married	6	11.5	46	88.5	1.02	0.31
Education level:						
None	9	15.5	49	84.5		
Basic/Intermediate	6	17.1	29	82.9	1.37	0.50
University	0	0.0	7	100.0		
Occupation:						
Unemployed	14	22.2	49	77.8		
Working	1	2.7	36	97.3	6.97	0.008*
Residence:						
Urban	7	17.1	34	82.9		
Rural	8	13.6	51	86.4	0.23	0.63
Family type :						
Nuclear	7	12.7	48	87.3		
Extended	8	17.8	37	82.2	0.50	0.48
Monthly Income:						
Insufficient	8	29.6	19	70.4		
Sufficient	7	9.6	66	90.4	Fisher	0.02*

**Statistically significant at p<0.05* ** * highly statistically significant at p<0.001*

Discussion:

Age related hearing impairment (Presbycusis) is a common cause of hearing impairment in elderly people. It is characterized as bilateral symmetrical gradually progressive Sensorineural Hearing Impairment (SNHI) in older age groups affecting mainly higher speech frequencies. It is one of the most common illnesses in aged people after arthritis and hypertension. It leads to social isolation and frustration in aged people and among their family members and friends **(Nanda, 2016).**

Hearing impairment can interfere with the quality of life, restricting the ability to interact with others, causing misunderstanding and fatigue, heightening stress and filtering out the myriad of sound experiences that give pleasure and meaning to life **(Shaban, 2014),** so this study was conducted to assess the quality of life among elderly hearing impairment (Presbycusis) at Benha City.

. **Regarding socio-demographic characteristics of the elderly people with hearing impairment**, the present study revealed that nearly half of the studied elderly were belonged to the age group 70 to less than 80 years old. This might be explained that hearing impairment increasing with age as a result to physiological changes in the aging process.

This foregoing present study finding was in agreement with **Sable-Morita et al. (2018)** who studied the relationship between hearing impairment and frailty in older patients with Diabetes Mellitus in Japan, reported that average age was 75 years. The present study also was at the same line with **Nordvik et al. (2018), Ropper et al., (2017), and Contrera et al., (2016),** who revealed in their studies that their subjects were aged 70 years and older.

On contrary with this finding, a study done by **Ogundiran et al., (2017),** who reported that the majority among their participants aged 80 years and older and also, a study by **Solheim et al., (2016),** who studied"the lack of Ear Care Knowledge in Nursing Homes in Norwegian; and reported that 90% of people aged ≥80 had acquired hearing impairment.

The results of this present study showed that hearing impairment was common in male than female. This might be due to more than half of the studied sample lived in rural areas where females usually reluctant to seek medical care. This finding agreed with a study in England by **Scholes et al., (2017)**, who reported that hearing impairment was more among males than females. This finding disagreed with **Rajamani et al.** (**2018)**,who studied the Prevalence and Factors Influencing Sensorineural Hearing Loss among Type II Diabetes Mellitus Patients in India" ,and reported that the overall prevalence of sensory-neural hearing impairment among the males was 47% and among females it was 55% so, the prevalence was more among females than males.

As regards to the marital status of the studied sample, the current study revealed that more than half of the studied elderly were married (table1). This finding agreed with **Alenezi et al.** (**2017),** who studied Ear Diseases and Factors Associated with Ear Infections among the Elderly Attending Hospital in Arar city, Northern Saudi Arabia", reported that 62.3% of their respondents were married. Also, this results supported by **Cranial et al.** (**2017**), in Brazil, who reported that most hearing impairment group were married (56.7%) and (43.3%) unmarried and the most of hearing impairment with hearing aid group were married 60% and unmarried 40%.

As regards to the residence, the present study indicated that more than half of the studied sample lived in rural areas. This might be due to the main cause of increasing hearing impairment in the rural areas is the prevalence of otitis media (middle ear infection) due to environmental condition associated with poverty, overcrowded housing, poor nutrition, poor sanitation, passive smoking and lack of health care center.

This finding was congruent with **Chauhan et al.** (**2015),** they studied "Self-Reported Hearing Impairment among Rural Adult Population of Coastal Tamil Nadu in North India" , and reported that large number (51%) of the rural population was having hearing impairment and also, this finding was in the same line with Australian study conducted by **National Rural Health Alliance,** (**2018),** which discovered that, approximately 51 % of people living outside major cities have hearing impairment(rural areas) compared with 12 % of those living within them (urban areas).

In rural areas there was greater exposure to occupational noise, particularly in farming and mining. Over half of Australia's farmers were likely to suffer from premature hearing impairment through occupational noise exposure (e.g. from agricultural machinery). Almost all farmers over the age of 55 who

have been exposed to loud noise suffered from some degree of hearing impairment, but only 18% of farmers wear hearing protection while working with heavy machinery.

Regarding medical history of the studied sample (chronic disease), the current result showed that hypertension, was the most common chronic diseases among the elderly with hearing impairment. This could be explained as hypertension was highly prevalent disease of aging and was strongly influenced by lifestyle habit, including diet and exercise. This finding supported by **Crispim& Ferreira, (2015);** they studied " Prevalence of Self-Reported Hearing Loss and Associated Risk Factors among the Elderly in Manaus: A population-Based Study in Brazil", and reported that morbidity distribution in his study there was a higher prevalence rate of hypertension (57%), 42% of them having hearing impairment). This finding disagreed with **Soares et al. 2018),** they mentioned that Brazilian individuals with diabetes have higher prevalence of hearing impairment; Individuals with diabetes have 46% higher risk for hearing impairment.

Regarding to hearing problem characteristics of the elderly people, the present study revealed that, less than half of the elderly people suffered from hearing impairment for a period of 1-<5 years (table 3). This finding agreed with a study carried out by **National Institute for Health and Care Excellence, (2018),** in London which reported that on average, adults with hearing impairment wait 5 years before seeking medical advice and 30 to 45 % weren't referred on for a hearing assessment.

Concerning hearing impairment condition in the studied elderly, the present study verified that two third of the studied elderly had bilateral hearing impairment (table3). This finding agreed with **Barriviera et al. (2013),** they studied "Hearing Loss in the Elderly in Brazil" and reported that 61.56% of their subjects had bilateral hearing impairment and 38.43% had unilateral hearing impairment .This finding disagreed with **Bing et al. (2018)**,they studied "Comparison between Bilateral and Unilateral Sudden Sensorineural Hearing Loss in China" ,and reported that the majority of sensorineural hearing impairment are unilaterally affected, among which 85–90% are of idiopathic etiology and bilateral sensorineural hearing impairment accounts for 0.4–4.9% of all patients.

The most prevalent degree of impairment among the studied elderly was moderate hearing impairment (67% in the right ear, 57.7% in the left ear and the average in both ear 58%) (table3). These findings agreed with a study done by **Correia, (2017),** who studied "Analysis of DFNB1 locus in Presbycusis in Ciencias", and reported that the majority of the elderly in his study had moderate hearing impairment. These findings disagreed with (**Dalton et al. (2018)**, they studied "The Impact of Hearing Loss on QOL in Older Adults in USA" , and reported that more than half (51%) of their participants were classified as having a hearing impairment. 27.5% of them had a mild impairment and 23.8% had a moderate and severe impairment.

Also the current study showed that the minority of the elderly people using hearing aids and less than two thirds of them wore hearing aids for 4-<8 hours. This might be due to disturbing background noises, acoustic feedback, battery costs and poor motivation for hearing aids these findings agreed with **Hunter &Fortnum, (2018),**

who studied "Why Do People Fitted with Hearing Aids Not Wear Them? in United Kingdom،" and reported that only one out of five people who could benefit from a hearing aid actually wears overall, the prevalence of hearing aid use9.3% for adults aged 60-70 years and also agreed by **Salonin, (2013)**, who studied"Hearing Impairment and Tinnitus in the Elderly in "Turku, and reported that 56.2% of the studied participants used the hearing aid daily (8 hrs / day).

The present study revealed that; the majority of the elderly people had unsatisfied knowledge about hearing impairment and hearing aids. This might be due to high proportion of studied patients were illiterate, more than half from them rural area and the neglect of health team to provide elderly with information and health education needed for their disease.

This results agreed with **Joubert et al. (2017)**, who reported that 79%of their participants had limited information and inadequate knowledge about hearing impairment and hearing aids in rural South Africa and agreed with **Hunter &Fortnum, (2018)**, who reported that only one out of five people who could benefit from a hearing aid actually, A major reason why people didn't wear hearing aids because their poor knowledge about suitable type of hearing aids for the type of hearing impairment(65.5%).The majority of people with a hearing aids are elderly and consequently may have problems handling the device due to limitations in manual dexterity (60.8%) also the hearing aids users had poor knowledge about properly insert, remove and manipulate their hearing aids (75%) so they were less likely to wear them. Even most of experienced hearing aid users had a poor knowledge about hearing aids.

The present study cleared that more than three quarters of the studied elderly had low scores in physical and psychological QoL, more than half of the studied elderly had low scores in social and emotional QoL compared to one fifth of them had high scores in physical and psychological QOL and less than half had high score in social and emotional QoL.

This might be due to more than half of the elderly lived in rural area and their income just enough and didn't interested with their life. These finding were congruent with **Jaiyeola& Adeyemo, (2018),** who reported that the poor majority of the study participants in Nigeria (77.8%) reported poor QoL, while 22.2% reported good QoL and agreed with **Ciobra (2012),** who clarified that only 49% of their subjects perceive that they had good QOL level or very good physical health, compared to 68% of those without hearing loss. Nearly one-third of the population with hearing impairment reported being in poor health, compared to only 9% of the population without hearing impairment.

Concerning the relation between elderly people total knowledge of hearing impairment and socio demographic characteristics, the present study illustrated that there were highly statistically significance relations between the elderly people total knowledge score of hearing impairment and age, sex, while; there were statistically significance relations between total knowledge score and occupation and monthly income. These might be due to the effect of age, occupation on the ability to acquire knowledge. These findings agreed with **Chauhan et al., (2015);** who reported that the hearing impairment knowledge increased with age and were common among individuals of 60 years and above higher proportion of females as compared to

males. Participants unemployed reported to have more hearing impairment knowledge so age, sex and occupation were significantly associated with hearing impairment knowledge (p value <0.05).

Conclusion:

Based on the results of the present study; the study can be concluded that, most of the studied elderly people had hearing impairment in both ears, with only ten percent of them already used hearing aids. Also, most of the participants had satisfactory level of knowledge regarding hearing impairments and hearing aids. Fortunately, the results revealed high total quality of life score among elderly. On other hand, the results reported that most of them suffered from highly hearing impairment handicapping; with mainly effects on the emotional and social adjustment for them. There were highly statistically significance relations between the total knowledge score of elderly people and age, and sex.

Recommendation:

Based on the study findings, the following recommendations can be deduced:

- More efforts should be done to improve community knowledge of this condition (Presbycusis) and its physiopathology; in an attempt to remediate its progression.
- Great studies should be developed for identifying elderly individuals with hearing loss, supplying appropriate hearing aids or other listening devices.
- Programs and studies could be done for teaching coping strategies for elderly with Presbycusis; this may have a positive impact on the quality of life of older people.
- Improve methods of identifying individuals with presbycusis and deteriorating QoL, to improve services for providing hearing aids, assistive listening devices, and auditory rehabilitation.

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جودة الحياة لكبار السن المصابين بضعف السمع في مدينة بنها

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يعد ضعف السمع ثالث أكثر الأمراض المزمنة انتشارا بين كبار السن ، والذى يؤثر على نوعية حياتهم. لذلك هدفت هذه الدراسة إلى تقييم نوعية الحياة لكبار السن المصابين بضعف السمع في مدينة بنها. وقد أجريت الدراسة في الوحدة السمعية في مستشفى بنها الجامعي ومستشفى بنها التعليمي على 100 من كبار السن المصابين بضعف السمع. حيث كشفت النتائج عن الجودة الكلية العالية للحياة وايضا مستوى المعرفة المرضي لدى كبار السن. من ناحية أخرى ، عانى معظمهم من ضعف شديد في السمع. كما أوصت الدراسة بأهمية إجراء البرامج والدراسات لتدريس الاستراتيجيات الموجهة للمسنين المصابين بضعف السمع مما لها تأثير إيجابي على نوعية حياتهم.