Assessment of the quality of Life Among Hearing Impaired Elderly Patients' in Assiut University Hospital, Egypt.

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Abstract

Hearing impairment is common among older adults. **Aim of the study**: to assess the quality of life among hearing impaired elderly patients attending audiology unit at Assiut University Hospital. Descriptive research design was used in this study. Total coverage of all elderly patients with hearing impairment and agreed to participate in the study during six months from 1st of November/2014 to the end of April/2015) were included in the study, their number were 227 patients. **Tools:** Two tools were used in data collection, **tool I**: Structured interview questionnaire: includes two parts, **part I**: included sociodemographic characterstics as, age, sex, residence, **part II**: included onset, type and degree of hearing impairment. **Tool II**: Quality of life assessment scale (WHO, 1997). **Results:** The main results showed that majority of studied sample (80.6%) aged (60-74) years, with mean age of 68.4 ± 7.4, more than two-third of the studied sample were male. There was a statistically significant difference between hearing impairment among elderly and quality of life. **Conclusion:** age related hearing impairment (presbycusis) had adverse effects on physical, self-dependence, psychological, social relationships, and environmental features. **Recommendation:** it recommended that increasing elderly awareness about the importance of regular ear examinations for early detection, treatment, and prevent complications.

Key Words: Quality of Life, Prebycusis, Elderly &Hearing Impairment.

Introduction

Globally, the number of older persons (aged 60 years and over) is expected to more than double, from 841 million people in 2013 to more than 2 billion in 2050. Older persons are projected to exceed the number of children for the first time in 2047 (**World Population Ageing 2013).**

Hearing is an important component of sensory perception. With aging natural physiological changes occur in the structure of ears. Hearing impairment is very common among elderly people and can seriously affect their quality of life, also it affects communication which is an important aspect of everyday life especially for elderly people (**Saunders & Chisolm, 2010**).

Hearing impairment is a broad term that refers to hearing loss of varying degrees, ranging from hard-of-hearing to total deafness. As the general population continues to age, the prevalence of hearing impairment can be expected to increase (**Kalinowski, 2008).** It is the third most prevalent chronic condition among the non-institutionalized elderly population, exceeded only by arthritis and hypertensive disease (**Huang & Tang, 2012).**

Hearing impairment in older adults is highly prevalent, and recent studies have demonstrated independent associations of hearing loss with incident dementia, driving ability, and walking difficulty.

Most people with hearing impairment are not deaf, but having the partial hearing loss that is common among elderly people. The prevalence of hearing impairment varies by age, sex, race, income, and institutional status. Prevalence estimates also vary depending on whether they are based on interview or audiometric testing (**Davis et al., 2011**).

The prevalence of disabling hearing loss in adults over 65 years is high, according to the World Health Organization (WHO), there are 360 million persons in the world suffering from disabling hearing loss that 5.3% of the world's population (**WHO, 2012).** The prevalence of presbycusis among elderly people aged $60 - 69$ yrs. in the United States is (40.9% – 48.9%), while among those aged $70 - 79$ yrs. is 61.2% – 75.1% and among those aged 80 years and over is 86.1% – 92.0% (**Frank et al., 2013).**

The prevalence of presbycusis among elderly people aged 65and older in the Middle East and North Africa is 26%, while the prevalence of presbycusis among elderly people aged 65and older in Egypt is 49.3%. So it represents a significant problem among elderly people and need study (**WHO, 2012 & Abdel-Hamid et al., 2007).**

Role of gerontological nurse is health education that needed to increase awareness about the extent and types of hearing impairment among the elderly.

Elderly people, their families, and health care professionals also need information about devices, and services that can compensate hearing impairment **(Ross, 2007).**

Significance of the study

Hearing impairment is a major health problem, common among elderly and increase with age. Hearing impairment is often undiagnosed and untreated despite being highly prevalent among elderly. This concerning given adverse effects such as increased mortality risk which attributed to factors such as automobile accidents that lead to hip fracture and decreased quality of life have all been attributed to hearing impairment **(Daniels et al., 2010)**.

The prevalence of presbycusis among elderly people aged 65and older in the Middle East and North Africa is 26%, while the prevalence of presbycusis among elderly people aged 65and older in Egypt is 49.3%. So it represents a significant problem among elderly people **(WHO, 2012 & Abdel-Hamid et al., 2007).**

The Aim of this study

To assess the quality of life among hearing impaired elderly patients attending audiology unit at Assiut University Hospital.

Materials & Method

Research design
Descriptive research design was used in this study.
Setting: The study was conducted at the audiology unit at Assiut University Hospital. The hospital provides free health care services for surrounding urban and rural areas.

Sample
Total coverage of all elderly patients suffering from hearing impairment, who attending audiology unit (male & female) and agreed to participate in the study during six months starting from the 1st of November/2014 to the end of April/2015) were included in the study, their number were 227 elderly patients aged 60 years and above.

Tools of the study
Two tools were used in data

collection

Tool one: **Structured interview questionnaire**
It was developed by the researchers for collection of data. It was based on relevant literature in order to assess quality of life among hearing impaired elderly patients. **It includes two parts**
Part I: it included personal data as, age, sex**,** residence, marital status, occupation, social assistance, family size and education.

Part II: it included past and present history of ear disease, history of hearing impairment as onset, family history, description of hearing problem if it fluctuate, progressive or constant, characteristics, type and degree of hearing impairment, measures taken on onset of the disease, risk factors and management of hearing impairment. Also it include history of chronic illness as diabetes mellitus, hypertension, cardiovascular disease, arteriosclerosis, or other diseases.

Tool two
Quality of life assessment scale:
The scale included information related to the original scale constructed by Lehman (1986) and from WHO (1997). It consists of (45) statement divided into five domains, the quality of life domains are physical health, self-dependence, psychological status, social relationships, and environmental features.

Scoring system
For the quality of life scale, scores ranging 0, 1, and 2 were given to the responses of never, sometimes, and always respectively. The scoring was reversed for negative items. The scores of the items were summed up and the total was divided by the number of the items, given a mean score for quality of life. These scores converted into percent score. Scoring system used in QOL scale had three levels (low, moderate, and high). The total score was 100 point, the elderly patients who obtained less than 50 points considered low QOL, while who obtained 50<75 points considered moderate QOL, and who scored more than 75 points considered high QOL.

Methods
Preparatory phase and administrative design
- An official letter approval was obtained from the Dean of the Faculty of Nursing, to the director of Assiut University Hospital and the director of audiology unit which affiliated in Assiut University Hospital to carry out the study. The letter included a permission to carry out the study and explained the purpose and nature of the study.

II- Pilot study
- Pilot study was carried out before starting of data collection on (10% elderly patients), who excluded from the study. The aim of pilot study is to test the clarity of the tool and to estimate the time needed for fulfilling it. Based on the results of Pilot study, the necessary modifications were done.

III- Ethical Considerations

- Research proposal was proved from ethical committee in the faculty of nursing.
- There was no risk for study subject during application of the research.
- The study was follow ethical principles in clinical research.
- Studied sample had the right to refuse to participate and /or withdraw from the study without any rational any time.
- Confidentiality of the collected information was respected and an oral informed consent was obtained from each elderly who agrees to participate in the study.
- The researcher was explained to the patients about the purpose of research

VI- Field work

The researchers met the elderly, explained the purpose of the study, and asked for participation. They started a face to face individual interview with each elderly, completed the questionnaire for all patients and wrote exactly their answers that the elderly patients given. The doctors diagnosed the patients for their types and degrees of hearing impairment.

The researchers started to collect data in that period, two day weekly, and the average number which interviewed was 4-5elderly per day. The approximate time spent during filling of each questionnaire was around 30-35minutes.

V- Statistical analysis

The obtained data were reviewed, prepared for computer entry, coded, analyzed and tabulated. Descriptive statistics (frequencies, percentage, mean and+ standard deviation) were done using computer program SPSS version16, Excel 2007. Chi-square test used for analysis of variance. P- Value<0.05.

IV- Obstacles and Limitations

- Difficult to communicate with some market degrees of hearing impairment
- Some of the elderly patients were preoccupied with other duties.
- Most of elderly studied sample were illiterates.

Results
Table (1): Distribution of studied sample according to their socio-demographic data (N=227).

Socio-demographic data	N. (n=227)	%
Age (years)		
60<75	183	80.6
≥75	44	19.4
Mean ±SD	68.4± 7.4	
Range	60-87	
Sex		
Male	158	69.6
Female	69	30.4
Female to male ratio	1:1.2	
Residence		
Urban	151	66.5
Rural	76	33.5
Marital status		
Married	210	92. 5
Un married	5	2.2
Level of education		
Illiterate	120	52.9
Read & Write	45	19.8
Basic education and higher	62	27.3
Current occupation		
Farmer	72	31.7
Technical work	53	23.3
Free business	4	1.8
House wife	63	27.8
Retired	35	15.4
Family size		
1-3	27	11.9
4-7	78	53.7
≥8	122	34.4
Family type		
Nuclear	62	27.3
Extended	165	72.7

Table (2): Distribution of the studied sample regarding to their characteristics of hearing impairment (N=227).

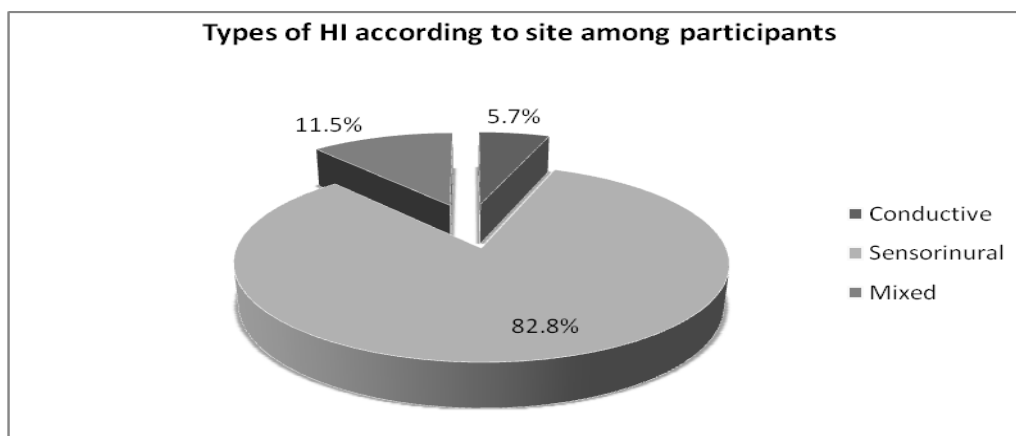| Item	N. (n=227)	%
Duration of hearing impairment		
1<5years	39	17.3
≥5 years	188	**82.7**
Course of hearing impairment		
Fluctuate	55	24.2
Progressive	150	**66.1**
Constant	22	9.7
Description of hearing impairment		
Unilateral	39	17.3
Bilateral	188	**82.7**
Symmetrical **(n=188)**	63	33.5
Asymmetrical	125	**66.5**

Figure (1): Distribution of the studied sample regarding to their types of hearing impairment.
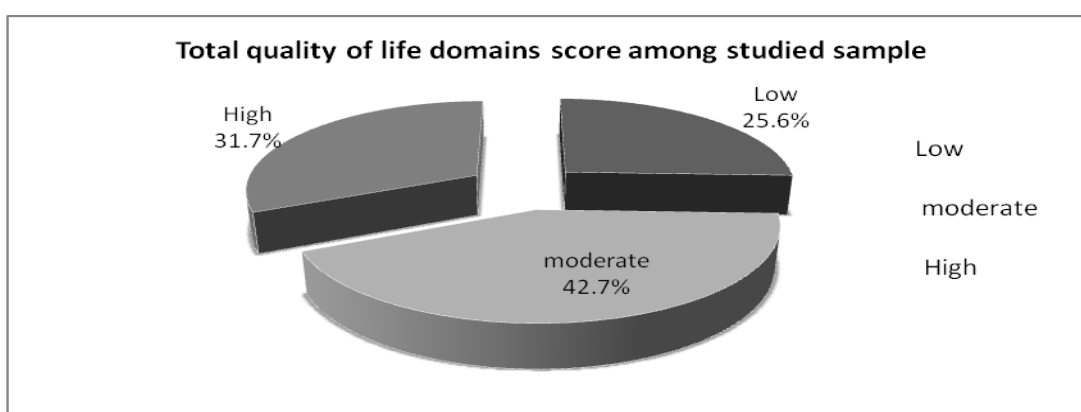

Figure (2): Distribution of the studied sample regarding to their total quality of life domains score among studied sample – (N=227)

Table (3): Relations between socio-demographic data and total QOL domains score.

Socio-demographic data		Total QOL(n= 227)						X^2	P-Value
		Low(<50) (n=58)		Moderate(50-75) (n=97)		High(>75) (n=72)			
		No.	%	No.	%	No.	%		
Age (years)	60-74	36	19.7	82	44.8	65	35.5	18.02	<0.001**
	≥75	22	50	15	34.1	7	15.9		
Sex	Male	41	25.9	92	58.2	25	15.8	70.65	<0.001**
	Female	17	24.6	5	7.2	47	68.2		
Residence	Urban	46	30.5	68	45	37	24.5	12.22	0.002**
	Rural	12	15.8	29	38.2	35	46		
Marital status	Married	51	24.3	89	42.4	70	33.3	4.14	0.126
	Un married	7	41.2	8	47.1	2	11.8		
Education	Illiterate	31	25.8	70	58.4	19	15.8	107.98	<0.001**
	Read and write	27	60	13	28.9	5	11.1		
	Basic and higher	0	0.0	14	22.6	48	77.4		
Family size	1-3	7	25.9	15	55.6	5	18.5	3.53	0.473
	4-7	22	28.2	32	41	24	30.8		
	≥8	29	23.8	50	41	43	35.2		

Socio-demographic data		Total QOL(n= 227)						X^2	P-Value
		Low(<50) (n=58)		Moderate(50-75) (n=97)		High(>75) (n=72)			
		No.	%	No.	%	No.	%		
Family type	Nuclear	19	30.6	16	25.8	27	43.6	10.35	0.006**
	Extended	39	23.6	81	49.1	45	27.3		

**There is significant difference - Significant at P < 0.05

Table (4): Relation between types of hearing impairment and socio-demographic data.

Socio-demographic Data		Conductive (n=13)		Seneorinural (n=188)		Mixed (n=26)	
		No.	%	No.	%	No.	%
Age (years)	60<75	10	76.9	147	78.2	26	100
	≥75	3	23.1	41	21.8	0	0.0
X2 test		7.53		119.6		52.0	
P-Value		0.006**		**<0.001****		<0.001**	
Sex	Male	3	23.1	139	73.9	16	61.5
	Female	10	**76.9**	49	26.1	10	38.5
X2 test		7.53		131.61		2.75	
P-Value		**0.006****		**<0.001****		0.097	
Residence	Urban	8	61.5	141	**75**	2	7.7
	Rural	5	38.5	47	25	24	92.3
X2 test		78.15					
P-Value		**<0.001****					
Marital status	Married	3	23.1	181	96.3	26	100
	Un married	10	76.9	7	3.7	0	0.0
X2 test		7.53		322.41		52	
P-Value		0.006**		<0.001**		<0.001**	
Education	Illiterate	4	30.8	112	59.6	4	15.4
	Read and write	8	**61.5**	30	15.9	7	26.9
	Basic education or higher	1	7.7	46	24.5	15	57.7
X2 test		8.52		90.49		11.19	
P-Value		**0.014***		**<0.001****		**0.004****	

**There is significant difference - Significant at P < 0.05

Table (5): Relation between chronic illness and total QOL domains score (N=227).

Chronic illness	Total QOL(n= 227)						X^2	P-Value
	Low(<50) (n=58)		Moderate(50-75) (n=97)		High(>75) (n=72)			
	No.	%	No.	%	No.	%		
Hypertension	10	38.5	13	50	3	11.5	10.95	0.027**
Diabetes mellitus	23	35.4	32	49.2	10	15.4		
Cardiovascular diseases & arteriosclerosis	25	37.9	41	62.1	0	0.0		

**There is significant difference - Significant at P < 0.05

Table (1): Showed that the majority of the studied sample (80.6%) aged (60-74) years, the mean age was 68.4± 7.4, more than two-third (69.6%) of the studied sample were male, while about two third of them (66.5%) live in the urban area. Also, the majority of the studied sample (92.5%) was married and more than half of the studied sample (52.9%) was illiterate. About one third (31.7%) of the studied sample were farmers, while 34.4% of them had family size ≥8 and 72.7% of them had extended family.

Table (2): Showed that the majority of studied sample (82.7%) had hearing impairment for ≥5 years and 66.1% had progressive hearing impairment. Also, the majority of them (82.7%) had bilateral hearing impairment, while 66.5% of them had asymmetrical hearing impairment.

Figure (1): Illustrated that the majority of studied sample (82.8%) had sensorinural hearing loss, while (11.5%) of them had mixed hearing loss and only 5.7% had conductive hearing impairments.

Figure (2): the figure showed that more than one quarter of them (25.6%) had low score QOL; while 31.7% of the study group had high score OOL and 42.7% of them had moderate score.

Table (3): Demonstrated that there was a statistical significant difference between age of the study group and their quality of life (P<0.001) as patients aged from 60-74yrs achieved high score QOL 35.5% while the majority of females achieved high score QOL (68.2%). Also, there is a statistical significant difference between residence and their quality of life (P= 0.002), those who lived in rural areas achieve high QOL score 46%. As regards marital status, there is no statistical significant difference between quality of life of the studied sample and their marital status and family size (P=0.126), (P=0.473) respectively. Regarding to their level of education, there is a statistical significant difference between quality of life and their level of education and family type (P<0.001), (P=0.006) respectively.

Table (4): Illustrated that there was statistical significant effect of age on types of hearing impairment (conductive, sensorinural and mixed) (P=0.006) (P<0.001) (P<0.001) respectively. Also there is statistical significant difference between sex and types of hearing impairment (conductive and sensorinural) (P=0.006) (P<0.001) respectively, 86.2% of urban studied sample had sensorinural HI and there was statistical significant difference between sensorinural hearing impairment and level of education (P<0.001.

Table (5): Showed that there was statistical significant effect between chronic illness and total QOL among patients, and all of these studied sample had moderate score QOL 50%, 49.2% and 62.1% hypertension, diabetes mellitus, and CVD respectively.

Discussion

Presbycusis, can result in frustration, social isolation, increased dependency on others, need for support services, loss of self-esteem, and loneliness. The prevalence of hearing loss increased greatly with age, and men were more likely to be affected than women (**Bamini et al., 2012 & Raynor et al., 2009**).

The prevalence of presbycusis is not the same in different parts of the world. The prevalence of sensorineural hearing loss in Taiwan, is reported to be 1.7% in elderly people aged between 65 to 69 years; 3.2% in older adults between 70 to 74 years; 7.5% between 75 and 79 years and 14.9% in those who are 80 years old and more (**Chang & Chou 2007**), while in the Egyptian elderly (>65 years) is reported to be 49.3% (**Abdel-Hamid et al., 2007**).

The prevalence of presbycusis is expected to rise for the next several decades with the increasing population of aging. Nevertheless, age-related hearing loss (ARHL) remains an often undetected, underestimated, and neglected condition in the geriatric population due to slow development process of the disease (**Wallhagen et al., 2008**).

The present study showed that hearing impairment increase with age nearly one fifth of studied sample ' age 75 years and over this may be due to aging process, the mean age of the studied sample was 68.4± 7.4 years. This is similar to (**Mehmet et al., 2013**) who reported that hearing impairment increased with age and studied sample had a mean age of 68.3 years. On the other hand these disagree with (**Braz et al., 2010**) who found there is no significant difference between hearing impairment and age. Also this result disagree with the findings of (**Sandfort et al., 2003 & Abdel-hamid et al., 2007**) who reported that there is no differences between hearing loss and gender.

This study showed that male were more common to had hearing impairment than females; more than two-third of the studied sample (69.6%) were male because men are typically involved in occupations associated with louder noises as factory work and due to smoking. Similar study findings were reported by (**Moossavi et al. 2009**) who reported that about (69.56%) of study group was males. In this study female to male ratio was 1:1.2 this is similar to (**Stephen 2014**) who study the prevalence of sensorineural hearing loss (SNHL) in the elderly in Nigeria and reported that female to male ratio was 1:1.2.

According to the residence, it was noticed that about two third of the studied sample were lived in the urban areas. A similar result was reported by (**El Kady**, **2012)** who reported that most of studied sample lived in the urban areas. In my opinion the prevalence of hearing impairment higher in urban areas attributed to the higher level of noise and other risk factors for hearing impairment as smoking. Concerning level of education, it was illustrated that hearing impairment was prevalent among illiterate studied sample more than half (52.9%) of the studied sample were illiterate. This because of the educated people know well community audiological services and seeking help as early as possible adverse to illiterate ones. This similar to (**El Kady**, **2012)** who found that HI was prevalent among illiterate or could only read and write.

This study illustrated that 82.7% of patients had bilateral hearing impairment and 17.3% of them had unilateral hearing impairment this is agree with (**Renato, 2007)** who studied the prevalence of hearing impairment in an elderly population in Rio de Janeiro and reported that unilateral hearing loss was found in 17.1% of elderly subjects and most of elderly subject had bilateral hearing impairment.

The present study illustrated that QOL score decline with age 19.7% of studied sample who had low score are between age (60-74) years, while 50% of those who had low score are between age75 and older this may be related to that the elderly people had age-related changes and this can lead to decrease the QOL. These agree with (**Nutheti et al., 2006**) who reported that QOL scores decline with age.

This study illustrated that men had slightly poorer scores in quality of life than women as 25.9% of those who had low score were male, while 24.6% of those who had low score were female this may be related to that men are high risk for hearing impairment than women and this lead to decrease QOL. These agree with (**Moossavi et al., 2009**) who found that men had slightly poorer quality of life than women. While this disagree with **Nutheti et al., (2006)** who found that QOL score were lower in women than in men. Also the present study showed statistical significant difference between hearing impairment and quality of life P<0.001, this similar to (**Abdel-Hamid et al., 2007**) who reported that there was statistical significant difference between bilateral hearing impairment and quality of life P<0.0001.

In this study there was significant difference between hearing impairment (HI) & residence (P=0.001), 86.2% of urban studied sample had sensorinural HI and there was statistical significant difference between QOL and residence (P=0.002), those who lived in rural areas achieve higher score 46% compared to live in urban areas who achieved

moderate score this agree with **Braz et al., (2010)** who found statistical significant difference between hearing impairment and residence P=0.001. Also the present study showed that there was statistical significant difference between sensorinural HI and socio-demographic data P<0.001.

The present study showed that there was statistical significant effect of chronic illness on total QOL among patients, 62.1% of patients with cardiovascular diseases & arteriosclerosis had moderate score of QOL, and 50% of patients with hypertension achieved moderate score of QOL this agree with (**Kathleene et al., 2004**) who reported that there was significant relation between sensorinural hearing impairment and diabetes mellitus (p=0.003).

In addition the present study showed that the first cause of hearing impairment among studied sample was presbyacusis this may be due to aging is the greatest risk for presbycusis, this agree with (**Van et al., 2007**) who study the complexity of age-related hearing impairment contributing environmental and genetic factors and reported that presbyacusis the most common cause of hearing impairment in the elderly. Also this study in the same line with (**Lotfi 2009**) who reported that presbycusis was the first cause of hearing impairment in the elderly

Hearing impairment affected QOL domains, such as physical domains, self-dependence psychological status, social domains, and environment domains (**Huang &Tang, 2012**). Similar results were reported by **Christine (2014)** who reported that severity of hearing loss was associated with significantly lower scores on six domain scores: physical, psychological, self-dependence, social functioning, environmental and spiritual domain.

The present study illustrated that hearing impairment is associated with a significant decrease in quality of life, about one quarter of them had low score of QOL, while 42.7% of them had moderate score, similar results were reported by (**Christine, 2014**) who study association between hearing impairment and the quality of life of elderly individuals and reported that hearing impairment is associated with a significant decrease in quality of life among the older population.

Moreover the present results agree with (**Moossavi et al., 2009**) who reported that hearing impairment has statistically significant detrimental effects on QOL in an older population. Also the present study in the same line with other several studies which found that hearing impairment strongly associated with a significant decrease in quality of life among older population (**Thomas et al., 2011, Mulrow et al., 1990, Bess et al., 1989**). Most of these studies have found hearing loss to be adversely associated with decrease quality of life among elderly.

Conclusion &Recommendations

Based on the results of the present study, it can be concluded that: Hearing impairment increases with age and common in male than female, also increase with people who had low educational level. Hearing impairment has a significant effect on QOL (physical, self-dependence, psychological, social, and environmental features).

Based on the results of the present study, the following recommendations are suggested:

- Increasing elderly awareness about the importance of regular hearing assessment for early detection, management, and prevent complications.
- Mass Media is another very important and completely neglected source, that can play a vital role in bringing the suspects of hearing impairment to screening centers and hence an early diagnosis.
- Screening for all people above the age of 60 years and who suffer from diabetes & cardiovascular diseases for early detection of hearing defect.
- Design educational program for elderly population to increasing elderly awareness about the importance of regular examinations to detect early medical disorders that may negatively effects on hearing functions.
- Elderly people and their families should be acquainted with different services available in the community that help them to meet their needs to improve their quality of life e.g physical, psychological, and social domain.

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