

Effect of Hearing Loss on Quality of Life among Elderly in Zagazig City

Aliaa El-Sayed Shaban Sakr ⁽¹⁾, Salwa Abbas Ali Hassan ⁽²⁾ & Sabah Abdou Aly Hagrass ⁽³⁾

⁽¹⁾ Clinical instructor, zagazig technical health institute , ⁽²⁾ Professor of community health Nursing, Faculty of Nursing, Zagazig University , ⁽³⁾ Lecturer of community health Nursing, Faculty of Nursing, Zagazig University

Abstract:

Background: Hearing loss is the third most prevalent chronic condition among elderly. Which have a negative impact on their quality of life. **Aim of this study:** was to assess the effect of hearing loss on quality of life among elderly. **Subjects and methods: Research design:** A Cross-Sectional descriptive design used in the present study. **Setting:** The study conducted at the auditory unit in The New Surgery Hospital in Zagazig University. **Subjects:** on a purposive sample consisted of 200 elderly. **Tools for data collection:** Four tools were used to collect data: **Tool I:** A structured interview questionnaire format was developed by the researcher to collect data about demographic characteristics of the studied subjects, medical and hearing history. **Tool II:** Elderly hearing condition. **Tool III:** Quality of life of elderly with hearing loss. **Tool IV:** Hearing aids data. **Results:** The study revealed that more than two thirds (68.5%) of the studied elderly belonged to the age group 61- to less than 71 years, while most of them (72.5%) were illiterate. More than half of the studied elderly (55.5%) had low total quality of life score compared to 39.0% of them had moderate scores. There was statistically significant relation between the studied elderly total quality of life scores and their socio demographic data ($p < 0.05$). **Conclusion:** The study concluded that quality of life of elderly with hearing loss was affected especially role activities followed by social then physical functioning. **Recommendation:** Applying continuous educational programs for elderly with hearing loss and their families about hearing loss, management, complications and ways to alleviate it.

Key words: Hearing loss; Quality of life; and Elderly.

Introduction:

Population of persons above 65 years old will increase from 2010-2020 in all regions with ranges going from 18.4% to 49.7%. Consequently, the number of persons with hearing loss will grow proportionately, due to population growth and ageing in all the selected regions. Approximately one-third of persons above 65 years are affected by disabling hearing loss (presbycusis). ⁽¹⁾ The prevalence of disabling hearing loss in persons above 65 years is highest in Sub-Saharan Africa, Asia Pacific, and South Asia. In general lower the income and the literacy of the region's population, higher is the prevalence of disabling hearing loss. ⁽²⁾

As, there was no database about the magnitude and distribution of the hearing impairment problem in Egypt. The World Health Organization (WHO) and the Ministry of Health and Population took the initiative to conduct a household national survey of hearing loss in Egypt. The outcome of the survey revealed that the prevalence of hearing loss was 16%, and those ≥ 65 had the highest prevalence 49.3%. ⁽³⁾

There are many causes of presbycusis. Most commonly it arises from changes in the inner ear of a person as he or she ages, but it can result from changes in the middle ear or from complex changes along the nerve pathways leading to the brain. ⁽⁴⁾ also, Presbycusis may be caused by

changes in the blood supply to the ear because of heart disease, high blood pressure, vascular (pertaining to blood vessels) conditions caused by diabetes, or other circulatory problems.⁽⁵⁾ Hearing loss was found to have a negative impact on the lives of people across a range of quality of life measures, including mental health, social functioning and general health.⁽⁶⁾

There are many strategies to help people with hearing loss, A combination of adaptive techniques, environmental modification, and assistive devices (including hearing aids) is necessary to ensure effective communication.⁽⁷⁾

When speaking with a patient who has a hearing impairment it's important to face him directly and make sure having his attention, speak at a normal volume while clearly enunciating (but without using exaggerated lip movements), not cover the mouth with the hand, rephrase sentences instead of repeating them, make sure that hearing aids are in place and that batteries are charged, and make sure that glasses are worn when needed.⁽⁸⁾

The primary role of community health nurse with elderly people suffering from hearing loss is assessing the level of hearing impairment by asking question about changes in hearing, determine if symptoms occurred suddenly or gradually, clarify if symptoms are unilateral or bilateral, inquire whether any prior treatment for hearing conditions, ascertain if sensory conditions interfere with their daily function and determine interest in receiving treatment for these conditions.⁽⁹⁾

Also, the community health nurse can contribute to the physical and emotional well-being of residents with hearing

impairments by becoming sensitive to their needs.⁽¹⁰⁾

Significance of the Study

Hearing loss is a common but under-reported problem among older adults. The prevalence rises with age. Between 25% and 40% of individuals aged 65 years and older and 40% to 66% of individuals aged 75 years and older have some degree of hearing loss.⁽¹¹⁾ It has been associated with isolation, depression, low self-esteem, and alterations in functional status. Although hearing loss may not always be preventable, many of the negative psychosocial consequences can be prevented or minimized.⁽¹²⁾

Hearing loss can interfere with the quality of life, restricting the ability to interact with others, causing misunderstandings and fatigue, heightening stress and filtering out the myriad of sound experiences that give pleasure and meaning to life. So, this study will be conducted to assess the effect of hearing loss on quality of life (QOL) among affected elderly group.

Aim of the study:

The aim of this study was to assess the effect of hearing loss on quality of life among elderly.

Research Question:

Does Hearing loss affect the quality of life (QOL) of the affected elderly group?

Subjects and Methods

Research Design:

A Cross-Sectional descriptive design was used in this study

Study Setting:

The study was conducted at the auditory unit in the New Surgery Hospital at Zagazig University.

Study Subjects:

The subjects eligible for this study included 200 elderly in the study setting who were fulfilling the following inclusion criteria:

- More than 60 years old.
- Both sexes.
- Suffer from hearing loss.

Sample size calculation

The sample size was calculated using EPI- Info software program version 6.04. It was found to be 180, according to the elderly population attending the auditory unit at Zagazig University hospital were 450, expected prevalence of hearing loss is 40%, and at confidence level 95% .10% will be added to the sample size for missed cases.

Tools of Data Collection: Four tools were used to conduct this study.

Tool I: A structured interview questionnaire format consisted of three parts:

- **Part 1:** For collecting data about characteristics of the studied subjects, such as age, sex, educational level, residence, source of income; etc.
- **Part 2:** It involved questions about chronic diseases and medications taken daily.
- **Part 3:** It includes questions about medications affect hearing, duration of hearing loss, exposure to regular excessive noise, and presence of tinnitus in the ear etc.

Tool II: Elderly Hearing Condition.

It includes five questions to determine effected ear, degree and classification of hearing loss in the elderly in each ear. This data obtained from patient medical record (audiometry).

Tool III: Quality of Life of Elderly with Hearing Loss.

This scale adapted from two scales:

A- The MOS 36-Item Short Form Health Survey (SF-36):

It includes one multi-item scale that assesses eight health concepts: 1) limitations in physical activities due to health problems;

2) limitations in usual role activities due to physical health problems; 3) bodily pain; 4) general mental health (psychological distress and well-being); 5) vitality (energy and fatigue); and 6) general health perceptions 7) limitations in social activities because of physical or emotional problems; 8) limitations in usual role activities because of emotional problems; **National Library of Medicine.** ⁽¹³⁾ The researcher used only six concepts from this scale (1-6) and exclude two concepts (7,8) because they were assessed by the other scale (HHIE).

Scoring Systems:

1- Limitations in Physical Activities Due to Health Problems:

Each item of this part had three responses in which two points are given to the best answer, one point to the moderate answer, and zero point to the worth answer. The total score of this part was (16) points.

2- Limitations In Usual Role Activities Due to Physical Health Problems:

Each item of this part had two responses in which one point is given to the best answer, and zero point to the worth answer. The total score of this part was (4) points.

3- Bodily Pain:

Each item of this part had four responses in which three points are given to the never answer, two points to the mild answer, one point to the moderate answer, and zero point to the severe answer. The total score of this part was (6) points.

4- General Mental Health:

Each item of this part had three responses in which two points are given to the best answer, one point to the moderate answer, and zero point to the worth answer. The total score of this part was (10) points.

5- Vitality status:

Each item of this part had three responses in which two points are given to the best answer, one point to the moderate answer, and zero point to the worst answer. The total score of this part was (6) points.

6- General health perceptions:

Each item of this part had three responses in which two points are given to "yes", one point to "No", and zero point to don't know. The total score of this part was (8) points.

B - Hearing Handicap Inventory for the Elderly (HHIE) (Domains 7 & 8):

This self-assessment tool is adapted to assess the effects of hearing impairment on the emotional and social adjustment of elderly people. The inventory is comprised of two subscales: a 13-item subscale explores the emotional consequences of hearing impairment; a 12-item subscale explores both social and situational effects *Ciorba, et al.*⁽¹⁴⁾ The researcher used only 21 items (11 emotional and 10 social) from this scale and exclude 4 items (questions 7,8).

Scoring System:

Each item of this scale had three responses in which four points are given to the answer "yes", two points to the answer "sometimes", and zero points to the answer "no". The total score of this scale is 84 points and the scores are distributed as follows:

- No perception of a handicap = 0 to 13 points.
- Mild to moderate perception of a handicap = 14 to 35 points.
- Severe significant perception of a handicap = > 36 points.

Tool IV: Hearing Aids Data.

This tool consists of three parts to assess using hearing aids, benefits of hearing aids, and

causes of refusal using hearing aids.

Content Validity & Reliability:

It was established to test the content validity by a panel of five experts in community health nursing and community health medicine from faculty of nursing and medicine in Zagazig University. Those experts reviewed the tools for clarity, relevance, comprehensiveness. Reliability of the tools was done by using the questions to collect data from group similar to the studied sample (test- and retest) and applied in different of time to be sure the consistency of answer. Also, used cronbach's alpha, it was 0.80. understanding, and applicability. According to their opinions, minor modifications were done.

Field of work:

The duration of data collection was performed over a period of three months was done during the period from June 2014 to August 2014.

Pilot Study:

A pilot study was carried out on 10 % of the studied sample. The development & modification of tools before starting data collection. The purpose of pilot study was to assess tools contents, clarity, consistency and applicability. It also, helps to estimate the time needed to complete data collection forms. All of them received clear explanation on the study purpose. According to the results of the pilot study no modifications done to the tools. Those who shared in the pilot study were excluded from the study sample.

Administrative & Ethical Consideration:

Permission for data collection in auditory unit at Zagazig University hospital was obtained from the hospital administration. This was through

submission of a formal letter from the dean of the Faculty of Nursing Zagazig University. Meetings and discussions were held between the researcher and the participants to obtain the data necessary to conduct the study. The questionnaire sheet & scale was explained to the participants, verbal consent was obtained from each subjects. Privacy was maintained during process of collecting data, and confidentiality of subject's response was guaranteed during the study.

Statistical Design:

After data were collected it was revised, coded and fed to statistical software package IBM SPSS version 20. The given graphs were constructed using Microsoft Excel software package 2010. All statistical analysis was done using two tailed tests and alpha error of 0.05. P value less than or equal to 0.05 was considered to be statistically significant. The tests of significance used were descriptive statistics; included the mean with standard deviation and percent to describe the scale and categorical data, respectively. Pearson's chi square test and Mont Carlo exact test and Fishers exact test.

Results:

Table (1): Describes the demographic characteristics of the studied sample. It indicates that 68.5% of the studied elderly belonged to the age group 61 to less than 71 years. 70.5% were male and 72.5% were illiterate or just read and write. While 72.5% of the studied subjects were married and 67.5% were from rural area. The main source of income for more than half of them was the retirement pension, and this income was sufficient. Also, 96.0% of the studied subjects were living with their family and 64.5% of them had a crowding index of one.

Table (2): Indicated that most of the studied sample (79.0%) had hearing loss in both ears, and 52.0% suffered from hearing loss for a period of 1-5 years and more than one fifth of them (20.5%) had hearing loss for a period of >10 years.

Concerning the mean of degree of hearing loss among the studied elderly, it was 51.2 ±20.9 Db in the right ear and 53.4 ± 20.0 Db in the left ear. Also, the degree of hearing loss in the right & left ear considered severe or intermediate (42.0%, 29.5% and 45.5%, 23.0% respectively).

Table (3): Illustrates the risk factors for hearing loss were 26.0% of the studied elderly suffer from tinnitus at ear, and 24.5% of them were exposed to regular loud noise in the past.

Also, 64.0% of the studied elderly suffered from excessive dry wax at the ear and 60.0% of them were exposed to previous ear wash. In addition, 65.5% clean their ears by cotton tipped applicators.

Figure (1): portrays the total quality of life domains scores. According to the figure, 63.0% and 60.5% of the studied elderly suffered low quality of life in their role due to physical health & social functioning. On the other hand, the studied subjects reported moderate limitation in quality of life related to vitality, mental health and emotional wellbeing (64.5%, 63.0% and 58.5% respectively).

Figure (2): portrays the total quality of life domains scores among the studied elderly, It shows that 55.5% of the studied elderly had Low score compared to 39.0% of them had moderate score. while, only 5.5% of them had high score of quality of life.

Table (4): clarifies coefficient correlation between the studied elderly's total quality of life, chronic diseases and degree of hearing

loss. It revealed the presence of statistical significant positive correlation coefficient between the studied elderly's total quality of life and their degree of hearing loss as well as with increased the elderly's hearing loss degree their quality of life affected negatively low (62.9%). The results were statistically significant. ($P < 0.05$).

Discussion:

Hearing loss is the most common sensory deficit among older adults and its effects can be socially and psychologically devastating leading to loneliness, isolation, anxiety and depression, and associated with other sensory impairment Barile, et al. ⁽¹⁵⁾ It is a growing problem that has been reported to reduce quality of life (QoL) with consequences for the social functional, and psychological well-being of the person Bianchini, et al. ⁽¹⁶⁾

The present study showed that more than two thirds of the studied elderly were belonged to the age group 61 to less than 71 years old. On the same line, Olaosun, et al. ⁽²⁾ in Nigeria reported that nearly two thirds of the studied subjects (65%) were early elderly patients (aged 65 –74 years old). This may be due to the life expectancy in the African countries is low because of bad health care services.

There have been conflicting findings with respect to whether hearing loss in the elderly is common in males or in females. In the current study, there was a male preponderance with there being most of the studied sample, and these findings were in accordance with, Lotfi, et al. ⁽¹⁷⁾ in Iran, Magalhães & Iório. ⁽¹⁸⁾ in Brazil and Ogundiran, et al. ⁽¹⁹⁾ in Nigeria, who also been reported male preponderance. On the contrary Haanes, et al. ⁽²⁰⁾ in Norweg and Action on hearing

loss. ⁽²¹⁾ In the United Kingdom discovered a higher incidence of presbycusis in women than in men. The current study, like many of these studies, was a hospital based study and the findings may not represent the true community prevalence.

Also, there is an important variable related to hearing loss is the educational level of the elderly. A study done in Spain by Hidalgo, et al. ⁽²²⁾ who discovered that, 67.7% of participants did not complete primary school (including illiterate and functional illiterate participants). In addition WHO. ⁽¹⁾ reported that the prevalence of disabling hearing loss in persons above 65 years is highest in Sub-Saharan Africa, Asia Pacific, and South Asia. In general lower the income and the literacy of the region's population, higher is the prevalence of disabling hearing loss. These findings are supported the current study, where nearly three quarters of the studied elderly were illiterate or just read and write.

The present study indicates that more than two thirds of the studied sample were from rural area, This finding was goes in the same line with an Australian study conducted by National Rural health Alliance. ⁽²³⁾ and discovered that, approximately 15 per cent of people living outside major cities have hearing disorders compared with 12 per cent of those living within them. In rural areas there is greater exposure to occupational noise, particularly in farming and mining. Over half of Australia's farmers are likely to suffer from premature hearing loss through occupational noise exposure (e.g. from agricultural machinery). Almost all farmers over the age of 55 who have been exposed to loud noise suffer some degree of hearing loss, but only 18 per cent

of farmers wear hearing protection while working with heavy machinery.

Concerning hearing loss condition in the studied sample, the present study verified that most of the studied sample had bilateral hearing loss. This finding is similar to what was reported by Mattos & Veras.⁽²⁴⁾ who performed a study in Brazil and found that unilateral hearing loss was found in 17.6% of elderly subjects; and bilateral was found in 82.4%. Also, Barriviera, et al.⁽²⁵⁾ done a study in Brazil and reported that 91.56% of subjects had bilateral hearing loss and 8.43% had unilateral hearing loss. In addition, Guerra, et al.⁽²⁶⁾ in Brazil noted in his study that 1.76% of the patients had unilateral hearing loss and 98.24% had bilateral hearing loss. These slightly different findings may be related to the different criteria of each study sample.

Also, the present study clarified that the studied elderly delayed seeking medical care, where more than half of them suffered from hearing loss for a period of 1-5 years and more than one fifth of them for a period >10 years. These findings are in accordance with a study carried out by NIDCD.⁽²⁷⁾ in the United States and reported that hearing loss tends to come on slowly so that individuals are often initially unaware of their hearing loss especially because they continue to hear low-frequency sounds and thus feel others mumble or don't enunciate clearly. They can also compensate in ways that initially minimize the impact by asking others to repeat, and avoiding difficult listening situations.

The prevalence of disabling hearing loss in the current study is higher than the global estimation where WHO.⁽²⁸⁾ Reported that one third of people above 65 years of age develop disabling hearing

loss. The most prevalent degree of loss among the studied elderly was severe hearing loss (42.0% in the right ear and 45.5% in the left ear). In accordance with these findings, a study done in Nigeria by Olaosun, et al.⁽²⁾ demonstrated that the majority of the elderly in his study had disabling hearing loss. More specifically, the most prevalent degree of loss was moderately-severe hearing loss. With this degree of hearing loss, there is difficulty even with perception of loud speech and loud sounds. A possible explanation is that this study is hospital-based and does not give true community prevalence. Those that are seen in the hospital are those who have come with complaints of hearing loss. This notwithstanding, the fact that the vast majority of those who present in the hospital have disabling hearing loss are significant.

The current study revealed that nearly one fourth of the studied elderly were exposed to regular loud noise in the past. This goes in the same line with the finding of a study carried out in Brazil by Barriviera, et al.⁽²⁵⁾ and reported that 26.90% of the studied individuals has a history of occupational noise exposure, and added that the possible correlations between age and a history of occupational noise exposure in the elderly paints a complex picture due to the variety of factors associated with age.

The present study also demonstrated that slightly less than two thirds of the studied elderly suffered from excessive dry ear wax and used cotton tipped applicators to clean their ears from wax. These findings were in agreement with the a study done in Nigeria by Aremu, et al.⁽²⁹⁾ and confirmed that cerumen impaction is the commonest otological disease amongst the elderly and

accounted for 48.7% of otological diseases seen in patients attending the auditory clinic. In addition, Afolabi, et al.⁽³⁰⁾ carried a study in Nigeria had shown that the incidence of self-ear-cleaning is high with such patients. This means that the patient realized there is a problem which they are trying to solve through self-help, though not knowing how dangerous this may be to their health.

As regards to ear irrigation, the current study revealed that less than two thirds of the studied elderly experience ear irrigation in the past. Consistently, in the same line Roland, et al.⁽³¹⁾ who done a study in the United States and reported that approximately eight million ear irrigations are performed annually for cerumen impaction in the United Kingdom.

Concerning tinnitus, the present study clarified that more than one fourth of the studied elderly suffered from tinnitus at ear. Similarly, Action on hearing loss.⁽²¹⁾ in the United Kingdom reported that, like hearing loss, the risk of developing tinnitus increases with age. Up to 30% of over 70s experience tinnitus, compared to 12% of people in their 60s and just 1% of people aged under 45s.

Concerning the total quality of life domains scores among the studied elderly, It was cleared that more than half of the studied elderly had low score compared to slightly less than two fifth of them had moderate score. While, only five percent of them had high score of quality of life. Similarly, in Italy a study performed by Pelucchi, et al.⁽³²⁾ and demonstrated that, among the population with hearing loss, only 39% of the subjects perceive that they have an excellent global QOL level or very good physical health, compared to 68% of those without

hearing loss. Nearly one-third of the population with hearing loss report being in fair or poor health, compared to only nine percent of the population without hearing loss.

The present study showed that there is a statistical significant positive correlation coefficient between the studied elderly's total quality of life and their degree of hearing loss as well as with increased the elderly's hearing loss degree their quality of life affected negatively low. The results were statistically significant. ($P < 0.05$). These results are supported by Simpson, et al.⁽³³⁾ who performed a study in United States and revealed that mild HL appears to have a small effect on HRQoL and the effect of hearing loss on HRQoL is slightly less than angina, but slightly more than hypertension or asthma. Moderate/severe HL conferred a clear decrement of HRQoL, with an effect size similar to emphysema or blindness. Also, National Institute of Health.⁽³⁴⁾ indicated that the degree of the hearing loss is one of the factors that determine how much hearing loss will negatively affect a person's quality of life. Moreover, Abu-Hijleh,⁽³⁵⁾ who done a study in Australia and noticed that hearing loss has been shown to negatively affect physical, cognitive, behavioral and social functions, as well as general quality of life, and is clearly related to depression and dementia. One possible explanation of this correlation coefficient between the studied elderly's total quality of life and their degree of hearing loss is that, hearing loss can impair the exchange of information, thus significantly impacting everyday life, causing loneliness, isolation, dependence, and frustration, as well as communication disorders as reported by Bianchini, et al.⁽¹⁶⁾

in his study in Italy. The study proved that hearing loss affect quality of life of elderly.

Conclusion

In the light of the current study findings, it might be concluded that the quality of life for elderly with hearing loss was affected. The most affected domain of quality of life was limitations in usual role activities because of physical health problems followed by social then physical functioning.

On the light of the main current study, findings the following

recommendations are suggested:

- 1- Continuous educational programs for elderly with hearing loss and their families about hearing loss, management, complications and ways to alleviate it.
- 2- Continuous monitoring and evaluating QOL for elderly with hearing loss to detect and solve any problem.
- 3- Establish a rehabilitation program for elderly with hearing loss to improve HRQOL.

Table (1): Demographic Characteristics of the Studied Sample (N=200).

Items	No	%
Age (years):		
61-	137	68.5
71-	36	18.0
81-	18	9.0
91+	9	4.5
Gender:		
Male	141	70.5
Female	59	29.5
Education:		
Illiterate (read/write)	145	72.5
Middle	29	14.5
University	25	12.5
Others	1	0.5
Residence:		
Rural	135	67.5
Urban	65	32.5
Income source:		
Retirement	110	55.0
Private source	35	17.5
Family aids	55	27.5
Income:		
Insufficient	22	11.0
Sufficient	142	71.0
More than sufficient	36	18.0
Marital status:		
Married	145	72.2
Divorced	4	2
Widowed	51	25.5
Living with:		
Alone	8	4.0
With family	192	96.0
Crowding index:		
<1	58	29.0
1-	129	64.5
2-4	13	6.5

Table (2): Description of the Hearing Loss Condition in the Studied Sample (N=200).

Hearing Loss	No	%
Side of hearing loss:		
Right ear	17	8.5
Left ear	25	12.5
Both	158	79.0
Duration of hearing loss:		
< 1 year	41	20.5
1-5	104	52.0
5-10	14	7.0
>10 years	41	20.5
Hearing degree at right side (Db):		
Range	9-96	
Mean \pm SD	51.2 \pm 20.9	
Degree of hearing loss at right side:		
Light	30	15.0
Intermediate	59	29.5
Severe	84	42.0
Profound	2	1.0
Normal	25	12.5
Hearing degree at left side (Db):		
Range	11-92	
Mean \pm SD	53.4 \pm 20.0	
Degree of hearing loss at left side:		
Light	43	21.5
Intermediate	46	23.0
Severe	91	45.5
Profound	3	1.5
Normal	17	8.5

Table (3): Distribution of Risk Factors for Hearing Loss in the Studied Sample (N=200).

Risk Factors	No	%
Regular exposure to loud noise	49	24.5
Exposed to ear injury	13	6.5
Surgery at ear	5	2.5
Excessive dry wax at ear	128	64.0
Use cotton tipped applicators to clean the ear	131	65.5
Previous ear wash	120	60.0
Tinnitus at ear	52	26.0

Not mutually exclusive

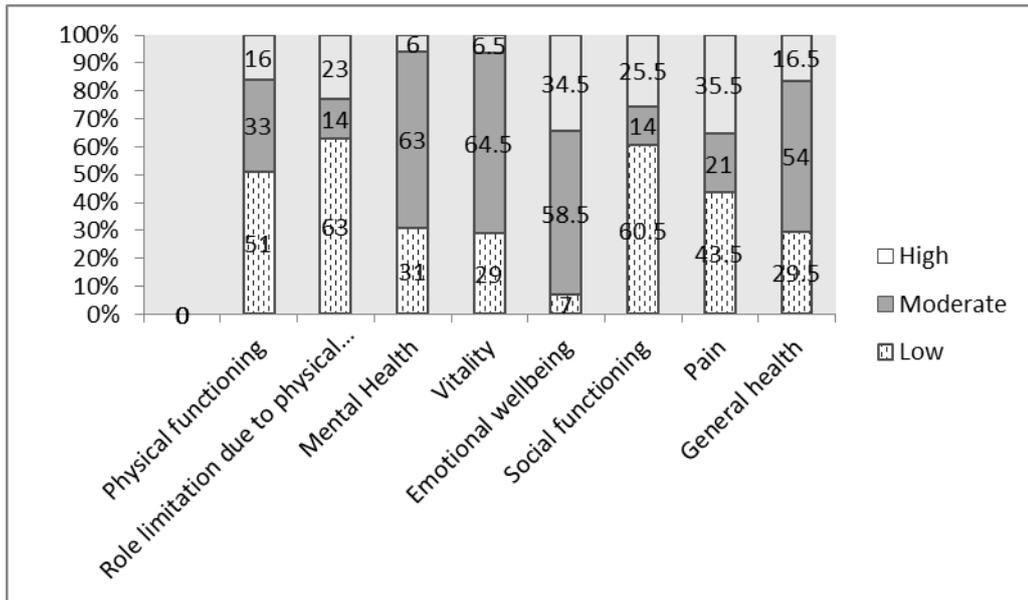


Figure (1): Quality of Life Domains among the Studied Elderly (N=200).

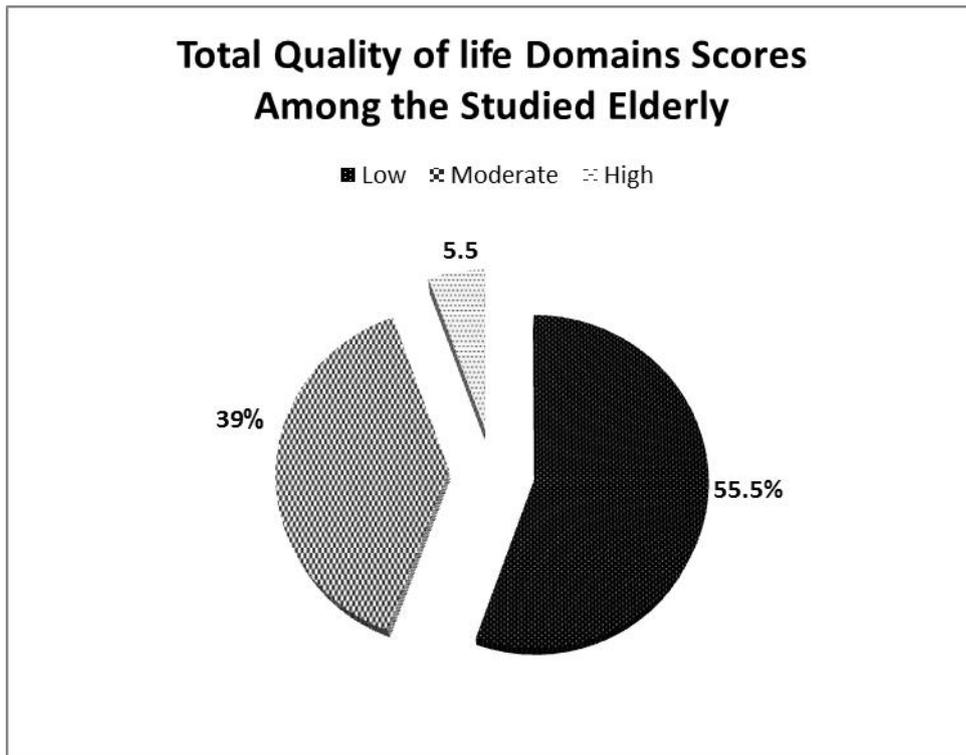


Figure (2): Total Quality of Life Domains Scores Among the Studied Elderly (n=200).

Table (4): Correlation Coefficient between the Studied Elderly's Total Quality of Life and Their Chronic Diseases and Degree of Hearing Loss (N=200).

Items	Total Quality of Life						MCP
	Low		Moderate		High		
	No	%	No	%	No	%	
Chronic diseases:							
Yes	60	60.0	38	38.0	2	2.0	0.073
No	51	51.0	40	40.0	9	9.0	
Degree:							
Normal /Light	10	29.4	20	58.8	4	11.8	0.049 *
Intermediate	36	56.3	25	39.1	3	4.7	
Severe	61	62.9	32	33.1	4	4.0	
Profound	4	80.0	1	20.0	0	0.0	
MCP: P value based on Mont Carlo exact probability (significant)					* P < 0.05		

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