



## A study to identify hearing problem among elderly

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### ABSTRACT

*In India the global morbidity rate of hearing problem is 63 million. The current scenario is to increase the life span of the old age population. Our focus is to provide a good quality of life for the people by identifying people with hearing problem. Methods: Descriptive research design was chosen to the study to identify hearing problems among elderly in PSG Hospitals, at Coimbatore. The sample consists of 30 patients. Elderly patients who met the inclusion criteria were selected by using purposive sampling technique. Using the self-administered questionnaire did the data collection. Collected data was analyzed by using descriptive statistics and inferential statistics. Results: Out of 30 samples, 15 were identified to have hearing problem. Out of 15 patients, (27%) had no hearing problem, (60%) had mild to moderate hearing problem and (13%) had significant hearing problem. There was a significant association between the severity of hearing problem and with Age of the elders.*

**Keywords:** Hearing problem, Nursing, Ederly people

### 1. INTRODUCTION

The ear is a marvelously complex and sensitive organ. Unfortunately, damage to the organ, whether through disease, physical insult, long-term exposure to excessive noise, some drugs or simply the effects of aging, can cause the ear to malfunction. The result of malfunction is usually to produce some degree of deafness. Hearing impairment is most frequent sensory deficit in human population, affecting more than 250 million people in the world.

Hearing loss affects a high percentage of society. It may be due to diseases affecting middle ear or inner ear, may be congenital, age related or due to noise exposure.

In India, 63 million people (6.3%) suffer from significant hearing loss. The National Sample Survey (NSS)58<sup>th</sup> round (2002) surveyed disability in India households and founded hearing disability was 2<sup>nd</sup> most common cause of disability and top most cause of sensory deficit. In the same study about 56% of rural population and 62% of urban population reported the onset of hearing disability at  $\geq 60$  years of age.

Obstruction of external auditory canal, impairment of external membrane function, middle ear condition, ear wax build up, viral and bacterial infections, stroke, head injury, trauma, certain medicines and hereditary are the causes of hearing problems in old age group.

The major causes of hearing loss and ear diseases in India have been listed by WHO survey. Earwax (15.9%) was the most common cause of reversible hearing loss. Non-infectious causes such as aging and presbycusis are the next most common causes of auditory impairment in India (10.3%). Middle ear infections such as CSOM (5.2%) and serous otitis media (3%) are other leading causes of hearing loss. The other causes include dry perforation of tympanic membrane (0.5%) and bilateral genetic and congenital deafness (0.2%).

Consequences of hearing impairment leads to inability to understand speech, sound, decreased capability to communicate, delay in language development, economic and educational backwardness, social isolation and stigmatization.

Psychological impacts on individual are like feeling of anger, low confidence, especially in social settings, frustration, depression, difficulty in concentration such as in communicating, embarrassment, short temper and less tolerance towards others and mistrustful towards others (Royal Institute for deaf people)

The family often experience a range of reactions which includes shock, bewilderment, anger, depression and difficulty in coping with the fact that older have a hearing loss (Article written by Shanna Mortenson)

## **2. BACKGROUND OF THE STUDY**

The global morbidity rate of hearing problem in America is 12.7 million, Europe 71 million, Africa 42 million, Asia 25 million, Italy 7.2 million and in India 63 million.

In current scenario due to increase in life span there is an increase of old age population. Our focus is to provide a good quality of life for the people. By reviewing literature, hearing impairment is the major problem faced by elderly. Hence, we felt there is a need to identify elderly patients with hearing problems at an early stage there by to reduce the severity of hearing handicap and improve the quality of life. We focus on the elderly to create awareness among them to bring them into the vision of medical professionals.

**Davis, et al., (2007)** according to National Institute of Deafness and other Communication Disorder (NIDCD), 36 million Americans have hearing loss, this includes 17% of adult population. The incidence of hearing loss increases with age, approximately one third of Americans between ages 65-74 and nearly half of those over age 75 have hearing loss.

**Deepthi Ramamurthy et al., (2014)** conducted a cross sectional study related to dual sensory impairment among 175 community dwelling rural elderly. Hearing ability was measured using pure tone audiometry. The prevalence of hearing impairment was 72%. The overall prevalence of DSI among the study subject was 17.7% and 32.6% depending on whether traditional pure tone average or high-frequency pure tone average was used to define moderate or worse degree of hearing impairment. Prevalence of DSI is high among community dwelling rural Indian elderly.

**Leticia Raquel Baraky, et al., (2009)** conducted a study related to disabling hearing loss prevalence in Juiz de Fora, Brazil. This was a descriptive – sectional population study held from January to October 2009. They randomly selected 349 households with 1050 individuals who with ages ranging between 4 days and 95 years. DHL prevalence was estimated at 5.2% (95% CI=3.1 to 7.3) which was classified as moderate in 3.9% (95% CI=0.001 to 0.134), severe in 0.9% (95% CI=0.001 to 0.107) and profound in 0.4% (95% CI=0.001 to 0.095). They found correlation between DHL and tinnitus; age over 60 years and low educational level.

**Ramesh Chand Chauhan et al., (2015)** conducted a study related to self reported hearing impairment among rural adult population of coastal Tamil Nadu. Community – based descriptive study was conducted in a rural area of Tamil Nadu state in India. A semi structured questionnaire was used to collect the information and hearing impairment was assessed by self-reporting by the participants. Among a total of 5621 participants interviewed and examined, 232 (4.1%) participants reported to have hearing impairment. Hearing impairment due to advanced age or non-specific causes resulted hard to hearing (77.6%) and (12.5%) reported to have deafness. The hearing impairment increased with age and was common in elderly. The reported hearing impairment ranges from 1.5% to 11.3% in different age groups Age, Sex, Education, and Occupation were significantly associated with hearing impairment.

**Denise K Houston, (1999)** conducted a study related to age related hearing .106 elderly hearing impairment patient was taken. Audiometric assessment was done. Age group above 65 years was taken for the study. The study reveals that deficiency of vitamin B12 and folate may be associated with age related auditory dysfunction.

**Karenj. Cruickshanks and Ronald Klien, (1998)** conducted a population based cross sectional study on cigarette smoking and hearing loss at community of Beaver dam. The examination included otoscopy, screening tympanometry, and pure tone air conduction and bone conduction audiometry. Smoking history was ascertained by self-report. As a result smokers are likely to have hearing loss of 1.69 times than non-smoker.

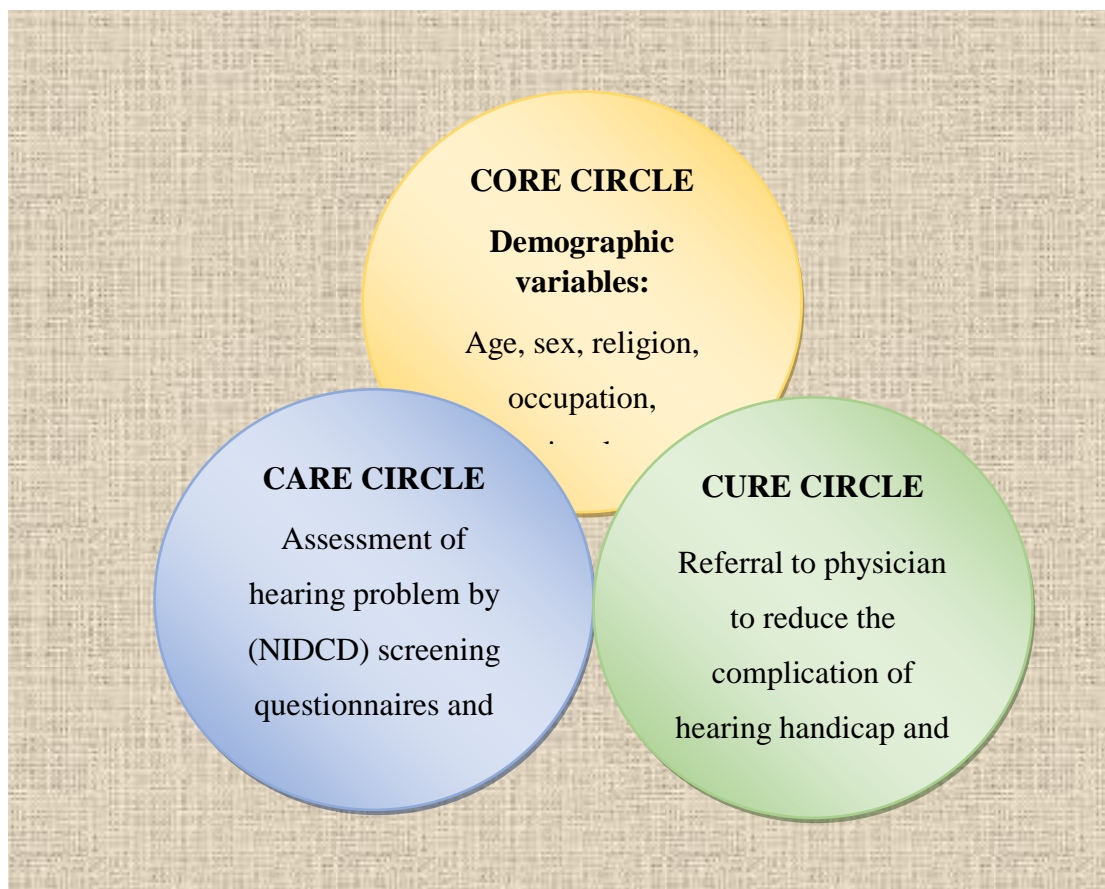
**Sheetal Krishnappa, et al., (2014)** conducted a clinical study of age related hearing loss among diabetes patients. Our study aims at evaluating auditory dysfunctions in patients with diabetes mellitus aged above 50 years as compared to non-diabetic patient. A cross-sectional study on 106 patients with type 2 diabetes mellitus and 90 non-diabetic patients with age and sex matched was carried out during November 2011 to October 2013. A prevalence of 73% hearing loss increased with age. Diabetes mellitus was associated with higher hearing loss compared to presbycusis and hearing threshold was seen to affect all frequencies. But significantly the higher frequencies in diabetes. As duration of diabetic increased, the severity also increased. Poorer the HbA1c more severe was the hearing loss.

**Andrea Ciorba, et al., (2010)** conducted a study related to severity of age related hearing loss is associated with impaired activities of daily living. A total of 1952 Blue Mountain hearing study participants aged  $\geq 60$  years had their hearing levels measured using pure tone audiometry. The findings suggested that severely diminished hearing in older adults can impair the ADL.

**Olusola Ayodele So Gebi**, conducted a study related to hearing impairment in elderly patients. This was a cross-sectional comparative study of elderly patients aged above 60 years with hearing impairment .130 individuals aged 60-94 years were taken for the study. It also explored factors that may be associated with functional impairment in hearing impaired elderly patients. Elderly patients with hearing impairment have vital functional limitation in daily living activities.

### 3. OBJECTIVES

- To identify the elderly patients with hearing problem and hearing handicap.
- To find out the association between severity of hearing problem with their selected demographic variables of elderly.



Conceptual framework based on Lydia Hall's core, care and cure model (1964)

### 4. RESEARCH METHODOLOGY

Descriptive design is used for the present study. The present study was conducted in outpatient departments such as, General Medicine, ENT, Gastroenterology, Cardiology, Neurology and Ophthalmology of PSG Hospitals, Coimbatore.

The population of the present study consists of elderly coming to PSG hospitals, Coimbatore. Sample size was 30. Purposive Sampling Technique were used

#### 4.1 Instrument

**Part-A:** It includes the baseline information such as age, sex, marital status, occupation and income.

**Part-B:** It is a self-administered questionnaire which consists of eight questions for screening by using National Institute on Deafness and other Communication Disorder (NIDCD) for hearing problem. It has options like "yes" and "no".

**Part-C:** It consist of 10 questions for screening severity of hearing handicap. It has the option like no, sometime, yes.

#### 4.2 Instrumental scoring

**Part-B:** According to National Institute on Deafness and other Communication Disorder (NIDCD) screening question if you answer "yes" to three or more of these questions, you could have a hearing problem and may need to have your hearing checked.

**Part-C:** According to Hearing Handicap Inventory for the Elderly screening version Scoring for the questions is "no"=0 points, "sometime"=2 points, and "yes"=4 points. 0-8 suggests no hearing handicap, 10-24 suggests mild to moderate hearing handicap, and 26-40 suggests significant hearing handicap.

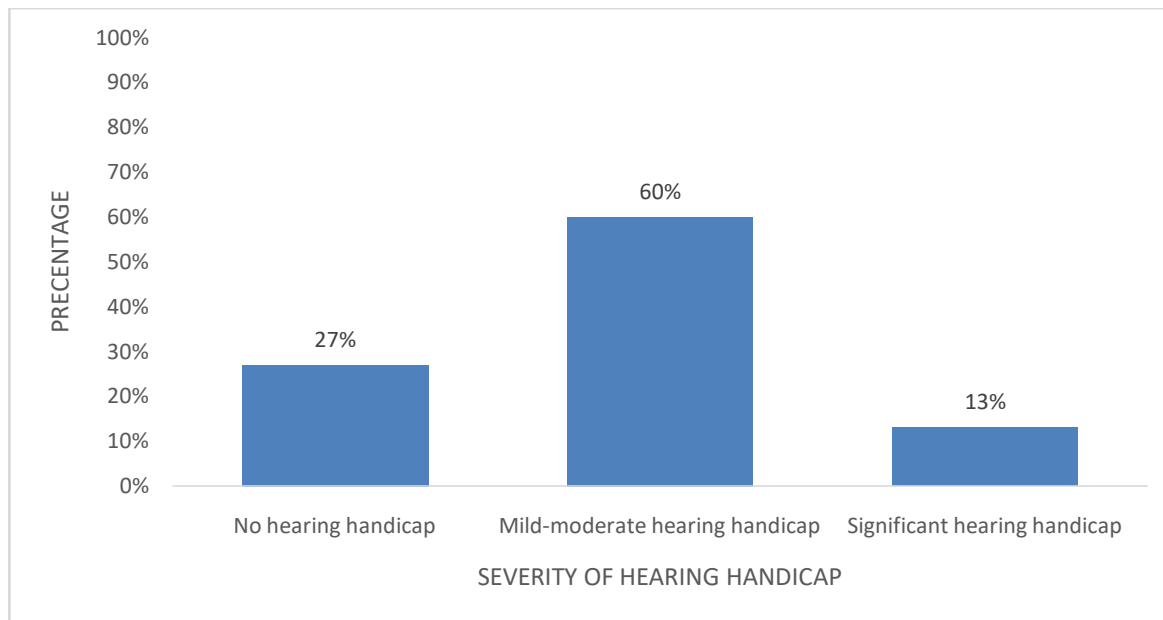
The collected data was organised, tabulated and analysed by using descriptive and inferential statistics. Frequency and percentage distribution was used to describe demographic variables of elderly. Chi square test was used to associate the severity of hearing handicap with selected demographic variables of elderly.

### 5. DATA ANALYSIS AND INTERPRETATION

**Table 1: Frequency and percentage distribution of elderly with hearing problem based on severity of hearing handicap(n=15)**

S no.	Category based on severity of hearing handicap	Frequency(f)	Percentage (%)
1.	No hearing handicap	4	27%
2.	Mild-moderate hearing handicap	9	60%
3.	Significant hearing handicap	2	13%

Table shows that out of 15 elderly patients with hearing problem (27%) had no hearing handicap, (60%) had mild to moderate hearing handicap, (13%) had significant hearing handicap.



**Percentage distribution of elderly with hearing problem based on severity of hearing handicap**

**Table 2: Association of severity of hearing handicap with their selected demographic variables of elderly.(n =15)**

S no.	Demographic variables	No hearing handicap	Mild- moderate hearing handicap	Significant hearing handicap	$\chi^2$ value (calculated value)	P Value (tabulated value)	Inference
1.	Age	4	9	2	6.05	5.99	S
2.	Sex	3	10	2	0.32	5.99	NS
3.	Marital status	4	9	2	0	12.59	NS
4.	Occupation	4	9	2	2.72	15.51	NS
5.	Income	4	9	2	0.31	12.59	NS

S-Significant NS-Not significant

Table Shows that there was a significant association of severity of hearing handicap with the demographic variable (Age) of the elderly.

**6. RESULT**

- Out of 30 samples, 73% of the samples were in the age group of 60-70 years
- 57% were males
- All (100%) were married
- 40% of the samples were unemployed
- 70% of them had monthly income below Rs.15,000
- Out of 30 elderly patients,15 of them had hearing problem
- Out of 15 patients who were identified to have hearing problem, 27% had no hearing handicap, 60% had mild to moderate hearing handicap and 13% had significant hearing handicap.

In this study out of 30 elderly patients who came to opds ,15 of them had hearing problem which is identified by using National Institute on Deafness and other Communication Disorder (NIDCD) tool for screening. Those 15 elderly patients were given Hearing Handicap Inventory for the Elderly Screening version (HHIE-S) tool to identify severity of hearing handicap. Inthat 27% have no hearing handicap,60% have mild to moderate hearing handicap,13% have significant hearing handicap.

A study was done by Thomas Niklausin (2011) on prevalence of age related hearing loss in Europe. The study reveals that in above 70 years of aged people, 30% of men and 20% of women were found to have hearing loss. And, in above 80 years 55% of men and 45% of women were found to have hearing loss. This is consistent with our study findings as nearly 50% of elderly patients had hearing problems.

A study was done by Dayna S Dalton, et al.,(2000) related to impact of hearing loss on quality of life in older adults. A population based longitudinal study was done for 2688 older adults (age group 53-97 years). They were assessed by HHIE-S questions and ADL scale. Severity of hearing loss was significantly associated with having a hearing handicap and with self reported communication difficulties. Severity of hearing loss was significantly associated with decreased function in both the mental component and the physical component. The study concluded that severity of hearing loss is associated with reduced quality of life in older adults. This is in consistent with our study findings as 60% of elderly patients with hearing problem have mild-moderate hearing handicap.

The present study on identification of hearing problem and hearing handicap among elderly showed an association between the demographic variables (age) and severity of hearing handicap.

A Study was done by Ann Mary Augustine et al., among 50 adults with USNHL(unilateral sensory neural hearing loss) in the ENT outpatient clinic of a tertiary care center. In this study they concluded that USNHL in Indian adults does not usually produce severe handicap when present, the handicap is more emotional than social. But in our study the results showed there is an association between the demographic variables (age) and severity of hearing handicap and about 60% had mild to moderate hearing handicap.

## 7. CONCLUSION

Elderly people are facing numerous challenges ranging from problems of physical and mental growth. Most of the hearing problem was increasing as age increases. The medical surgical nursing (nurses) are responsible to identify the elderly people those who are prone for hearing problem. Through this study we will help the elderly people and nursing students to understand the magnitude of hearing problem and its impact among elderly. This will help to plan the program on health promotion in elderly. In this study the patients with mild to moderate and significant hearing handicap were counselled to consult the physician to prevent the complication of hearing handicap like dementia, depression, anxiety, irritation, fatigue and also to improve their quality of life. This can be utilized to plan future program to reduce the risk of hearing problem among elderly and help them to lead a healthy life style and there by improve their quality of life.

## 8. REFERENCES

- [1] Balakrishnan, Hazarika, Nayak, (2012) "Textbook of Ear, Nose, Throat, Head, Neck Surgery"(3<sup>rd</sup>ed.). New Delhi: CBS Publishers.
- [2] Brunner and Suddarth's, (2014) "Textbook of Medical Surgical Nursing"(13<sup>th</sup>ed.). New Delhi: Wolterskluwer Pvt Ltd.
- [3] Bs. Tuli, (2013) "Textbook of Ear, Nose, Throat"(2<sup>nd</sup>ed.). New Delhi: Jaypee Brothers Publication.
- [4] BT Basavanthappa, (2014) "Biostatistics for Nurses" (1<sup>st</sup>ed.). New Delhi: Jaypee Brothers Medical Publisher (P) Ltd.
- [5] Charlotte Elipponlos, (2010) "Gerontological Nursing"(7<sup>th</sup>ed.). Philadelphia: Lippincott Williams.
- [6] Denise P.F (2004) "Nursing Research Principles and Methods" (7<sup>th</sup>ed.). Philadelphia: Lippincott Williams and Wilkuis Publications.
- [7] Dr. DagaBipin. V, (2010) "Self-Assessment and Review of ENT" (2<sup>nd</sup>ed.). New Delhi: Pulse Publications.
- [8] DL. Dhingra, ShrutiDhingra, (2014) "Diseases of Ear, Nose, Throat, Head and Neck Surgery" (6<sup>th</sup>ed.). Elsevier Publisher.
- [9] Gupta, (2000) "Statistical Method" (5<sup>th</sup>ed.). New Delhi: SulthanChaud Publications.
- [10] Hodder Arnold, (2006) "Diseases of the Nose, Throat and Ear" (10<sup>th</sup>ed.). London: Edward Arnold Publishers Ltd.
- [11] K.Park, (2011) "Textbook of Preventive and Social Medicine" (21<sup>st</sup>ed.). Jabalpur, India: M/S BanarsidasBhanot Publishers.
- [12] KhavidAAi-Abdulhadi, (2010) "Handbook of ENT Surgery"(1<sup>st</sup>ed.). Oman: DivyeshArvid Kothari Published.
- [13] M.S. Bhatia Nirmaljitkaur, (2012) "Otorhinolaryngology" (2<sup>nd</sup>ed.). New Delhi: CBS Publishers.
- [14] Peggy.L, (K94) "Theory and Nursing" (3<sup>rd</sup>ed.). Australia, Belmont: Mosby Publication.
- [15] Phipps, (2007) "Medical Surgical Nursing Health and Illness Perspectives" (8<sup>th</sup>ed.). Missouri: MosbyElsiver's Publication.
- [16] Patricia.P, (2005) "Basic Nursing Theory and Practice" (5<sup>th</sup>ed.). USA: Mosby Publications.
- [17] Polit.F beck, (2008) "Nursing Research Principle and Methods" (6<sup>th</sup>ed.). Philadelphia: Lippincott Company.
- [18] Prof. K.K. Ramalingam, (2008) "A Short Practices of Otorhinolaryngology" (3<sup>rd</sup>ed.). New Delhi: All India Publisher and Distributor Publication.
- [19] Sakshi Arora, (2010) "Self-Assessment and Review ENT" (2<sup>nd</sup>ed.). New Delhi: Jaypee Brothers Publication.
- [20] Suresh K Sharma, (2013) "Nursing Research and Statistics" (5<sup>th</sup>ed.). Elsevier India Pvt. Ltd.
- [21] Sue E. Meiner, (2011) "Gerontologic Nursing" (4<sup>th</sup>ed.). Missouri: Elsevier Mosby Publication.
- [22] Wold, (2008) "Geriatric Nursing" (4<sup>th</sup>ed.). Missouri: Elsevier Mosby Publication.
- [23] AbdulrazzakAbyad (1997) "In Office Screening for Age – Related Hearing and Vision Loss" Geriatrics.
- [24] Ciorba. A, Benatti. A, (2011) "High Frequency Hearing Loss in the Elderly: Effect of Age and Noise Exposure in an Italian Group" The Journal of Laryngology 87(1)
- [25] Daniel, Eileon, (2007) "Noise and Hearing Loss: A Review" The Journal of School Health 90(3)
- [26] Daris.A.C, girad, (2009) "Multiple Work – Related Accidents: Training the Role of Hearing Status and Noise Exposure" Occupational and Environmental Medicine.
- [27] Erler, Susan. F, Dean.C, (2002) "Hearing Loss and Hearing Aid – Related Stigma: Perceptions of Women with Age – Normal Hearing" American Journal of Audiology 11(2)

- [28] Fransen, Erik, (2008)“Occupational Noise, Smoking and a High Body Mass Index are Risk Factors for Age – Related Hearing Impairment and Moderate Alcohol Consumption is Protective: A European Population – based Multicenter Study” *Journal of the Association for Research in Otolaryngology*7(4).
- [29] Joo, Park, Joung-Hoon, (2015) “Association of Hearing Loss and Tinnitus with Health 16(10) – Related Quality of life: The Korea National Health and Nutrition Examination Survey;e0131247” *PLOS One*.
- [30] Kim, Si-su, (2015) “Prevalence and Factors Associated with Hearing Loss and Hearing Aid Use in Korean Elder” *Iranian Journal of PublicHealth* 22(4)
- [31] Mccullagh, Maijorie (2011) “Prevalence of Hearing Loss and Occurance of Self – report among Factory Workers” *Noise and Health* 16(11)
- [32] Nadine, Krister, (2007) “Age – Related Change in Vestibular Evoked Myogenic Potentials” *Audiology and Neurology*.
- [33] Park, Kim, (2016) “Age and Gender – Related mean Hearing Threshold in a Highly – Screened Population; The Korean National Health and Nutrition Examination Survey 2010 – 2012” *PLOS One*.
- [34] Peracine, Andrea, (2015) “Hearing Loss and Dementia in the Aging Population” *Audiology and Neurology* 22(14)
- [35] Ranga, Rupendar, (2014) “Prevalence of Occupational Noise Induced Hearing Loss in Industrial Workers” *Indian Journal of Otology* 13(3)
- [36] Rosenhall, (2013) “The influence of Aging on Noise induced Hearing Loss” *Noise and Health*.
- [37] <http://www.medline>
- [38] <http://www.health web.org>.
- [39] <http://www.nurse.friendly.com>.
- [40] <http://www.better health.vic gov.au/bhcv>.
- [41] <http://www.patient.w.uk/...>