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# KNOWLEDGE OF HEARING SCREENING AMONG HEALTH WORKERS AT THE HEALTH CLINICS IN KOTA BHARU DISTRICT, KELANTAN

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**ABSTRACT**

Hearing screening is very important to be done. It is done to detect among apparently healthy person, those individuals who demonstrate a probability for having a disease or condition, so they may be referred for further evaluation (ASHA, 1997). This survey is aimed to determine the overall view about health workers (medical officers, medical assistants and nurses) knowledge regarding hearing screening at the health clinics in Kota Bharu, Kelantan District. Questionnaires were distributed to the 180 health workers by hand. They were asked to fill in the questionnaires and the researcher collects it after one week. Only 145 of them (80.2%) responded and this was considered sufficient. From the study, it showed that there is no significant difference in knowledge of hearing screening across categories of occupation ($p= 0.135$). Results also showed that there is significant correlation between duration of work experience and knowledge of hearing screening ($p= 0.006$) but the correlation is weak ($r= 0.228$). There is significant correlation between age and knowledge of hearing screening ($p= 0.04$) but the correlation is also weak ($r= 0.167$). In general, the knowledge of hearing screening among health workers is seem to be adequate, at least in this study. Respondents claimed that not enough equipment (66.2%), noisy environment (53.1%), not enough staff (35.2%), not enough time (19.3%) and other reasons (11.7%) like hearing screening is not their scope of practice and they did not learn about hearing test are the problems faced by health workers to perform hearing screening at their clinic. Most of the respondents (85%) showed their interest to perform the hearing test at their clinic if there are chances to do it.

ABSTRAK

Ujian saringan pendengaran sangat penting untuk dilakukan. Ujian ini dilakukan untuk mengesan individu yang berkemungkinan untuk mempunyai masalah daripada kalangan orang yang sihat, jadi individu tersebut akan dirujuk untuk menjalankan pemeriksaan selanjutnya (ASHA, 1997). Kajian ini bertujuan untuk mengetahui pandangan keseluruhan tentang pengetahuan ujian saringan pendengaran di kalangan kakitangan kesihatan (doktor, pembantu perubatan dan jururawat) di klinik kesihatan daearah Kota Bharu, Kelantan. Soalan kaji selidik telah diedarkan kepada 180 orang kakitangan kesihatan melalui tangan. Mereka diminta untuk mengisi soalan kaji selidik tersebut dan penyelidik akan mengutipnya selepas seminggu. Hanya 145 orang (80.2%) sahaja yang memberikan respon dan data dianalisis berdasarkan jawapan yang diberikan. Berdasarkan analisis yang dilakukan, ia menunjukkan bahawa tidak terdapat perbezaan yang signifikan tentang pengetahuan ujian saringan pendengaran mengikut kategori pekerjaan. Selain itu, analisis menunjukkan terdapat hubungan yang signifikan antara pengalaman kerja dan pengetahuan berkenaan ujian saringan pendengaran ($p= 0.006$) tetapi hubungan itu hubungan lemah ($r= 0.228$). Terdapat juga hubungan yang signifikan antara umur dan pengetahuan berkenaan ujian saringan pendengaran ($p= 0.04$) tetapi hubungan itu lemah ($r= 0.167$). Secara umumnya, pengetahuan berkenaan ujian saringan pendengaran di kalangan kakitangan kesihatan adalah mencukupi, sekurang-kurangnya untuk kajian ini. Responden turut menyatakan bahawa peralatan yang tidak mencukupi (66.2%), persekitaran yang bising (53.1%), kakitangan yang tidak mencukupi (35.2%), masa yang tidak mencukupi (19.3%) dan sebab-sebab lain (11.7%) seperti ujian saringan pendengaran bukan tugas mereka adalah merupakan masalah yang dialami untuk menjalankan ujian saringan pendengaran di klinik mereka. Kebanyakan responden (85%) menyatakan bahawa mereka berminat untuk melakukan ujian saringan pendengaran.

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## LIST OF ABBREVIATIONS

ASHA- American Speech Language Association

HA- Hearing aids

Hz- Hertz

JCIH- Joint Committee of Infants Hearing

*MA- Medical Assistant*

MO- Medical Officer

*NIH- National Institute of Health*

NMRR- National Medical Research Register

# CHAPTER 1: INTRODUCTION

# 1.0 INTRODUCTION

## 1.1 Hearing Loss and its Implication

Hearing is one of the important senses in human. Hearing can be defined as ability to perceived sound by the ear. The normal ear has capability to hear sound at frequencies between 20 Hz to 20 000 Hz and speech range is about 500 to 3000 Hz (MedlinePlus, 2012). By having normal hearing, people can learn speech and language without any problem. The first 3 years of life is the best time for the children to acquire speech and languages development. So, early detection and identification of hearing loss is very important step to do. Once hearing loss has been suspected or detected, the family has the opportunity to seek help for further management such as receive the maximum benefit from early language input and amplification.

According to National Institute of Health (2010), about 2 to 3 out of every 1000 children in the United States are born deaf or hard of hearing. Nine out of every 10 children who are born deaf are born to parents who can hear. Sometimes, hearing loss cannot be detected through routine clinical procedures or behavioural observation even though parents reported the suspicion of hearing loss of their child through inattention and unresponsiveness towards sound (Ahmad A. *et al.*, 2011).

The earlier the detection, the earlier management and rehabilitation process will be done. This means that, the earlier the acoustic stimulation of the neural system is given, the better results in term of linguistic, communicative, behavioural and cognitive will be got. Early auditory perception training will help child to achieve the best possible integration into hearing and speech world (Yoshinaga-Itano *et al.*, 1998). Hearing impaired children who received amplification by the age of six months shower better language development than the children received amplification later. A mild to moderate loss of hearing in an adult who

acquire both speech and language skills and the other skills to compensate for disable environment is less serious compared to the child who is not acquire speech and language yet.

In Malaysia, audiological and intervention services for the hearing impaired children have been slowly developing since the early 1990s (Ahmad A. *et al.*, 2011). Early detection in hearing impairment is very important because it is related to the speech and language acquisition. Reduced hearing acuity during infancy and early childhood will affect the development of speech and verbal language skills because when individuals is having hearing impairment, he or she will not receive adequate auditory, linguistic and social stimulation required for speech and language learning, social and emotional development and that family functioning will suffer (NIH, 1993).

If the child with sensorineural hearing loss receives an early amplification and comprehensive rehabilitation program, he or she will show an improvement in speech and language skills, school achievement, self-esteem, and psychological adaptation. Compared to the child with severe to profound hearing loss who's was delayed in detection, this may impede the ability of that child's to adapt to live in family and community life.

## 1.2 Recommendation for Hearing Screening

Hearing screening is done to detect, among apparently healthy persons, those individuals who demonstrate a greater probability for having a disease or condition, so they may be referred for further evaluation (ASHA, 1997). It can be performed to subjects at all ages. Screening is the process of applying a rapid and simple test to the large number of people in certain time. According to Joint Committee on Infant Hearing (JCIH, 2000), all infants should be screened no later than 1 month age. Infants who do not pass this screening need to have comprehensive audiological evaluation not later than 3 months old. If the infants

was confirmed to have hearing loss, appropriate intervention need to be received not later than 6 months old. According to the World Health Organization (WHO, 1992), children in developing country should be screened at school entry using a simple audiometer and that external ear be inspected for the presence of discharge, to study the extent of the problem in the community (Gell *et al.*, 1992). After the introduction of newborn hearing screening in United States, the age of detection of hearing impairment has decreased from 12 - 24 months old to the 3 - 6 months old (Thompson *et al.*, 2001).

Early identification and intervention of hearing impairment had long been recommended by American Speech Language Association (ASHA) and National Institute of Health. In newborn hearing screening, otoacoustic emission (OAE) and Auditory brainstem response (ABR) test are usually been used. In Hospital Universiti Sains Malaysia (HUSM), the first screening was done using distortion product otoacoustic emission (DPOAE) with Bio-Logic Audx with a frequency of 2kHz, 3kHz and 4kHz and it was done in the postnatal ward by trained personnel (technician, staff nurse, ward attendants) supervised by an audiologist (Ahmad A. *et al.*, 2011). OAE screening test has been used because it is a fast, easy test to do and can accommodate the large number of patients. Furthermore, it also does not require highly-trained personnel to operate and the test can be conducted without any sedation. ABR has greater accuracy rate and it usually been used in the third screening because OAE is more cost effective as screening tool (Ahmad A. *et al.*, 2011).

The effectiveness of this screening program highly depends on the test protocol used which include the choice of screener which is depends on the subject's mental age and physical ability, place (quite or noisy) and the administrative procedure.

## 1.3 Multidisciplinary Team

The evaluation and assessment of hearing impairment should be performed by a team of professionals. Abdullah *et al.* (2006) reported that screening programme requires the cooperation of different people including physician, nursing staff, material management personnel, medical record staff and audiologist. While Mukari *et al.*, (2006) reported hearing screening should be consists of multidisciplinary team of health professionals such as otorhinolaryngology doctors, audiologists, speech language pathologists, obstetricians, paediatricians, staff nurses and other personnel.

In Malaysia, undergraduate programmes of audiology and speech language pathology are developed early 1990s and these had made the audiological and intervention service for the hearing impaired children slowly developed. By the year 2005, there are about 90 audiologists and 90 speech pathologists serving about 25 millions populations giving a ratio of ~1 audiologist/speech pathologist to 280,000 populations (Mukari *et al.*, 2006). This ratio is expected to improve with the continuing increment of the audiology and speech pathology graduates every year. Currently audiology and speech pathology services are located in major hospitals in urban areas (Mukari *et al.*, 2006). So, if hearing screening is done by the audiologists only, the percentage of people from rural area having hearing problem will increase and late detection will lead to late rehabilitation.

## 1.4 Problem Statement

In Malaysia, Audiologists are the most appropriate professional to do the hearing test. Unfortunately, not many audiologists are available to do the hearing test. The number of medical officer, medical assistant and nurses are a lot compared to audiologists and they are available in health clinics. If these personnels know how to do hearing test, the chances to identify the people with hearing problem is getting better. Therefore, this study will be conducted to know the knowledge of hearing screening among medical officer, medical assistant and nurses in health clinics.

## 1.5 Research Objectives

### 1.5.1 General Objectives

- To determine the overall view of health workers (medical officers, medical assistants and nurses) knowledge regarding hearing screening at the health clinics in Kota Bharu district, Kelantan

### 1.5.2 Specific Objectives

- To compare the knowledge about hearing screening between the different categories of staff at the health clinics
- To identify whether duration of work experience influence the knowledge of hearing screening among health workers
- To identify whether age influence the knowledge of hearing screening among health workers

## 1.6 Hypothesis

### 1.6.1 Null hypothesis, $H_o$

- There is no significant difference in knowledge of hearing screening across the categories of occupation
- There is no significant correlation between duration of works experience and knowledge of hearing screening
- There is no significant correlation between age and knowledge of hearing screening

### 1.6.2 Alternative hypothesis, $H_A$

- There is significant difference in knowledge of hearing screening across the categories of occupation
- There is significant correlation between duration of works experience and knowledge of hearing screening
- There is no significant correlation between age and knowledge of hearing screening

# CHAPTER 2: LITERATURE REVIEW

## 2.0 LITERATURE REVIEW

### 2.1 The Effectiveness of Hearing Screening Program

The most effectiveness of the hearing tests done depends largely on the skills of the tester in assessing the patient's problem, in selecting and performing an appropriate test and in correctly interpreting response behaviour in terms of hearing impairment (Gell *et al.*, 1992). So, if the testers did not have enough knowledge and experience in doing the test, they will lack in skills in doing the test. In developing countries, hearing screening programme cannot been done as the training staff are not available, provision for the equipment is inadequate, testing environment difficult to find and health services that are overburdened and understaffed may not be able to allocate trained and skilled staff for the time necessary to ensure adequate quality of testing (Gell *et al.*, 1992).

Hearing screening program is the best way to do for early detection and identification of hearing impairment. To develop an effective hearing screening program, a careful and well planning is needed. Comprehensive and coordinated services that comprise of education, testing, diagnosis, intervention and regular monitoring and evaluation activities should be carried out to ensure the effectiveness of this programme (Mukari *et al.*, 2006). Abdullah *et al.* (2006) reported that screening programme requires the cooperation of different people including physician, nursing staff, material management personnel, medical record staff and audiologist. While Mukari *et al.*, (2006) reported hearing screening should be consists of multidisciplinary team of health professionals such as otorhinolaryngology doctors, audiologists, speech language pathologists, obstetricians, pediatricians, staff nurses and other personnel. They must be committed, cooperative and know to play their role effectively to make sure this programme is successful developed.

Other study outcome showed that it is possible to utilize easily available non-professional human resources in the screening and identification of hearing disorders in children. The 2-day training administered to the community volunteers proved successful in enabling them to administer the parent report questionnaire just as well as a specialized professional (Gomes & Lichtig, 2005). Non- professionals can contribute significantly to health program when they receive the appropriate training (Rao *et al.*, 1993). Some countries have already designed special programmes for the training of primary ear care workers to address the acute storages in this field (Olusanya *et al.*, 2004).

Physicians' awareness and attitude towards childhood hearing impairment is a critical success factor for neonatal hearing screening and not all doctors and other health workers can be presumed to be up to date in their knowledge of advances in the field of otology/audiological medicine and the range of possibilities currently available for hearing impaired infants (Olusanya *et al.*, 2004). This study suggested that this problem can be addressed through regular updates and policy statements of local medical/professional associations and special seminars and scientific workshops would also be valuable for this purpose. The involvement of nurses and midwives in this educational process is equally essential (Olusanya *et al.*, 2004). The performance of this screening programme need to be monitored periodically to identified and overcome the issues that impede this programme. Other than that, awareness about hearing loss among the public people needs to be installed to ensure the successful of this screening programme. Developing effective collaborative partnerships require that both partners possess common core knowledge and share a common philosophy about the outcome of their services (Moodley *et al.*, 2000). Utilising interdisciplinary training programmes to improve nurses' knowledge regarding hearing loss and the hearing screening process are the only means of establishing effective partnerships that share a common philosophy regarding the outcome (Olusanya *et al.*, 2004)

## 2.2 Knowledge of Hearing Screening

The main factors that affect the early diagnosis and intervention of deafness and hearing loss are lack of knowledge on the topic by medical personnel and the unawareness of the problem and its solutions among the general population (Lopez-Vazquez, 1997). The knowledge and attitude of physicians is a concern even in countries where universal newborn hearing screening has been performed because general practitioners, paediatricians, otolaryngologist and other physicians play the important role in guiding their patients and their families through diagnosis and treatment procedures (Moorjani, 2003). Moeller and White (2006) in their study found that even though only 14% of primary care physicians believed that their training in medical school prepared them to meet the needs of infants with permanent hearing loss, most respondents were very confident (47.9%) or somewhat confident (41.1%) in explaining the newborn hearing screening process to parents who had questions about their infant's result. Other study done by Olusanya and Roberts (2006) concluded that both medical students and physicians had limited knowledge of some important risk factors of hearing loss but medical students demonstrated greater awareness of early detection possibilities for infant hearing loss than physicians.

The survey done by Paul Popp (2002) found that 37% of the physicians reported screening all of their patients [irrespective of age] for hearing loss during their first physical examinations. In knowledge of medical treatment option aspect, 67% of the physicians rated their knowledge of the medical treatment options for hearing loss to be good or satisfactory and 33% reported their knowledge of the medical treatment options to be fair or poor. This response corroborates McSpaden's observation that a lack of attention to hearing loss and hearing treatment alternatives is not uncommon in medical school curricular and for knowledge of hearing instrument, 60% of the physicians rated their knowledge of hearing

instruments as poor or fair, 36% indicated they had good or satisfactory knowledge, while one physician rated his or her knowledge to be excellent (this individual also indicated a moderate hearing loss and use of hearing instruments).

While the study done by Brown *et al.*, (2006) found that 54% physicians feeling "very confident" about their ability to explain the hearing screening process to the parents but only 21% physicians indicated that their training prepared them to meet the needs of infants with hearing loss. Majority of physicians did not feel that their professional training adequately prepared them to meet the needs of infants with permanent hearing loss. Although most of them correctly indicated that infants younger than 1 month could be screened for and definitively diagnosed with permanent hearing loss, many did not know that these young infants could begin wearing hearing aids or be referred for early intervention services. According to data collected by Lopez-Vazquez *et al* (1997, 2007), one of the worst attitudes that physicians have and the cause of considerable delay in hearing loss diagnosis is ignoring or minimizing parents' doubts or concerns of their child's hearing.

Study done by Chapman & Burchfield (1999) found that majority of the nursing home personnel expressed a positive attitude about hearing loss, hearing impaired and amplification and 85% of the staff understood that hearing loss is seldom an 'all or nothing' obstacle to speech reception, and recognised that speech might be heard at some times (Burnip & Erber, 1997). Although the nurses are knowledgeable in some areas of hearing impairment, there still a need for additional training for them.

To increase physician's knowledge of the hearing screening process and their confidence in explaining the results to the parents, a two-pronged educational approach is needed. The first would make general hearing screening information available to all primary care providers. While the second approach involves giving the primary care physicians of children newly identified with hearing loss immediate access to specific, easily accessible

information about the condition, follow up, and interventions (Brown *et al.*, 2006). The greatest need of information that relates to the care of hearing problem including the screening and early intervention is very important because all of this information will increase physicians' confidence, knowledge, and understanding of newborn hearing screening and their role in the care of a child with permanent hearing loss (Brown *et al.*, 2006).

## 2.3 Rural Area vs Urban Area

Based on previous study, Mann *et al.*, (1998) found that the commonest cause of hearing impairment in school going children in Chandigarh, India is secretory otitis media which present in 5.33% cases among urban children and 33.59% cases among rural children. The prevalence of chronic suppurative otitis media (CSOM) was 9.44% among the rural school children and 1.30% among the urban school children in Tanzania (Minja and Machemba, 1996). This study showed that urban school children have easy access to the dispensaries, hospital and the Muhlmbili Medical Centre with specialist Otorhinolaryngology services, while rural school children have easy access to a dispensary but optimum facilities for diagnosis of otitis media.

In developing countries, audiometers are usually located in urban clinics or hospitals; rural clinics and school medical services are almost never equipped to screen for hearing impairment and staff are rarely trained to use the instrument (Gell *et al*,. 1992). Rao *et al.*, (2002) found prevalence of hearing loss greater in rural compared to urban area associated with economic status and Mann *et al.*, (1998) also reported high incidence of hearing impairment may be attributed to the low socio-economic status and the adverse factors seen in rural people were malnutrition, vitamin A deficiency and exposure to recurrent infections.

Mostly, people from rural area have low educational level, their households are far away from General Hospital and their attitudes towards modern medical care and these are the factors that affect them from getting appropriate management.

Other than that, funding for early detection, prevention and rehabilitative program for hearing impairment in developing countries is very limited and it must compete with other life threatening problems. So, delay in diagnosis and early identification will lead them to have problems in future life especially children who have hearing impairment.

In Malaysia, undergraduate programmes of audiology and speech language pathology are developed early 1990s and these had made the audiological and intervention service for the hearing impaired children are slowly developed. By the year 2005, there are about 90 audiologists and 90 speech pathologists serving about 25 millions populations giving a ratio of ~1 audiologist/speech pathologist to 280,000 populations. This ratio is expected to improve with the continuing increment of the audiology and speech pathology graduates every year. Currently audiology and speech pathology services are located in major hospitals in urban areas (Mukari *et al.*, 2006).

In conjunction of that, there is a need for an intense educational program to motivate general practitioners and health assistants (who man the health centres) for early diagnosis of deafness (Elango *et al.*, 1992). Because of the lacking in trained manpower to do hearing screening, patient will be referred to district hospital or for chronic or special case, patient will be referred to General Hospital or University Hospital for further management. Usually, hearing test are only been done by the Audiologists and Otorhinolaryngology doctors who have the knowledge about the hearing problem and they usually only available at General Hospital and University Hospital.

# CHAPTER 3: RESEARCH METHODOLOGY

## 3.0 RESEARCH METHODOLOGY

### 3.1 Research Design

This is a cross-sectional survey study using questionnaire. The questionnaire was sent to the respondents at the health clinics with consent form after getting the approval by Research Ethics Committee (HUMAN) USM. Permission is also obtained from Ministry of Health, Malaysia and District Health Officer of Kota Bharu. The respondents must be a medical officer or medical assistant or nurse that works at Health Clinic in Kota Bharu District, Kelantan. This research was registered with the National Medical Research Register (NMRR).

### 3.2 Participant

The participants were medical officers, medical assistants and nurses from Health Clinics in Kota Bharu District, Kelantan and they must know Malay Languages

### 3.3 Location of data collection

All health clinics in Kota Bharu District, Kelantan

### 3.4 Sample size calculation

The total number of health clinics in Kota Bharu District, Kelantan is 12. By using Raosoft sample size calculator (Raosoft, 2004), the margin error is set as 8%, confidence level as 95% and the response distribution as 50%. The minimum total number of medical officer, medical assistant and nurses in each clinic are set as fifteen people. Based on the calculation, the recommended sample size is 83 respondents but researcher has decided to use 100 respondents.

## 3.5 Research Instruments and Procedures

There are three stages involved: Development of Questionnaire, Validation of questionnaire, Questionnaire Administration and data analysis.

### 3.5.1 Development of questionnaire

A structured questionnaire was designed to ascertain information about the perception and knowledge of hearing screening and the confidence level to do hearing screening among medical officers, medical assistants and nurses. The questionnaire was constructed based on the relevant sources and based on objectives.

#### 3.5.1.1 Content validity

Once the items of questionnaire were constructed, its content validity needed to be assessed. The discussion with supervisors about the contents is done to make sure that an appropriate question will be asked to the respondents. The inappropriate questions are removed and replaced with the new questions.

### 3.5.2 Validation of questionnaires

Developing a valid questionnaire is very important in this study. But for this study, it is a subjective explanation and no data to be presented.

### 3.5.3 Test reliability

Any questionnaire that involve in the research should have high consistency in order to be a reliable tool. A pilot study was conducted prior to the main study to test the logistic and gather information in order to check the feasibility of the questionnaire and to make refinement as required. The questionnaire was distributed to eight nurses and one medical assistant at ORL department Hospital Universiti Sains Malaysia (HUSM) and ten final year

degree nursing students. Informed consent was obtained prior to the data collection. This validation process is important to ensure that the items were appropriate and could produce reliable outcomes.

Subjects were invited to this study and they need to fill the questionnaire. Then, the data will be analyzed using statistical method known as Cronbach's alpha. If the value of alpha is more than 0.7, the questionnaire is good and no adjustment is required.

3.5.4 Questionnaire administration

The final and validated questionnaire was written in Bahasa Melayu. The questionnaire consists of 4 parts.

i. BAHAGIAN A: LATAR BELAKANG RESPONDEN. This part is about the respondent's details.

ii. BAHAGIAN B: PANDANGAN DAN PENGETAHUAN TENTANG UJIAN SARINGAN PENDENGARAN. This part consists of questions regarding the perception and knowledge about hearing screening. The questions were constructed using the five point Likert scale.

iii. BAHAGIAN C: SALAH FAHAM TENTANG MASALAH PENDENGARAN. This part consists of questions regarding the misconception about the hearing.

iv. BAHAGIAN D: PENGALAMAN MENGENAI UJIAN PENDENGARAN. This part consists of questions regarding the experience of hearing screening.

After the questionnaire is being validated, the questionnaires were distributed to the respondents (Medical Officers, Medical Assistants and nurses in Kota Bharu District Health Clinic) with the informed consent form. In this assessment, respondents were given few days to fill in the questionnaire and after that the researcher will go to the clinic to collect it.

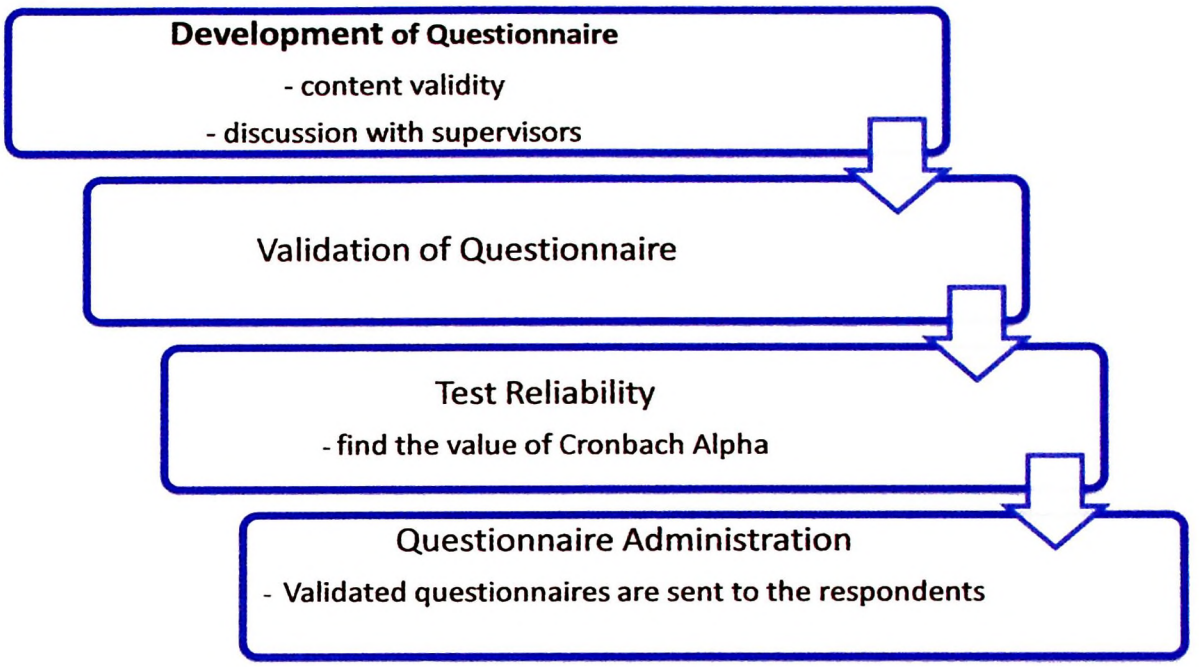


Chart 1: Flow-chart of Questionnaire Validation

3.6 Data Collection

Data were collected from questionnaires returned by the respondents.

3.6.1 Flow-chart of Data Collection

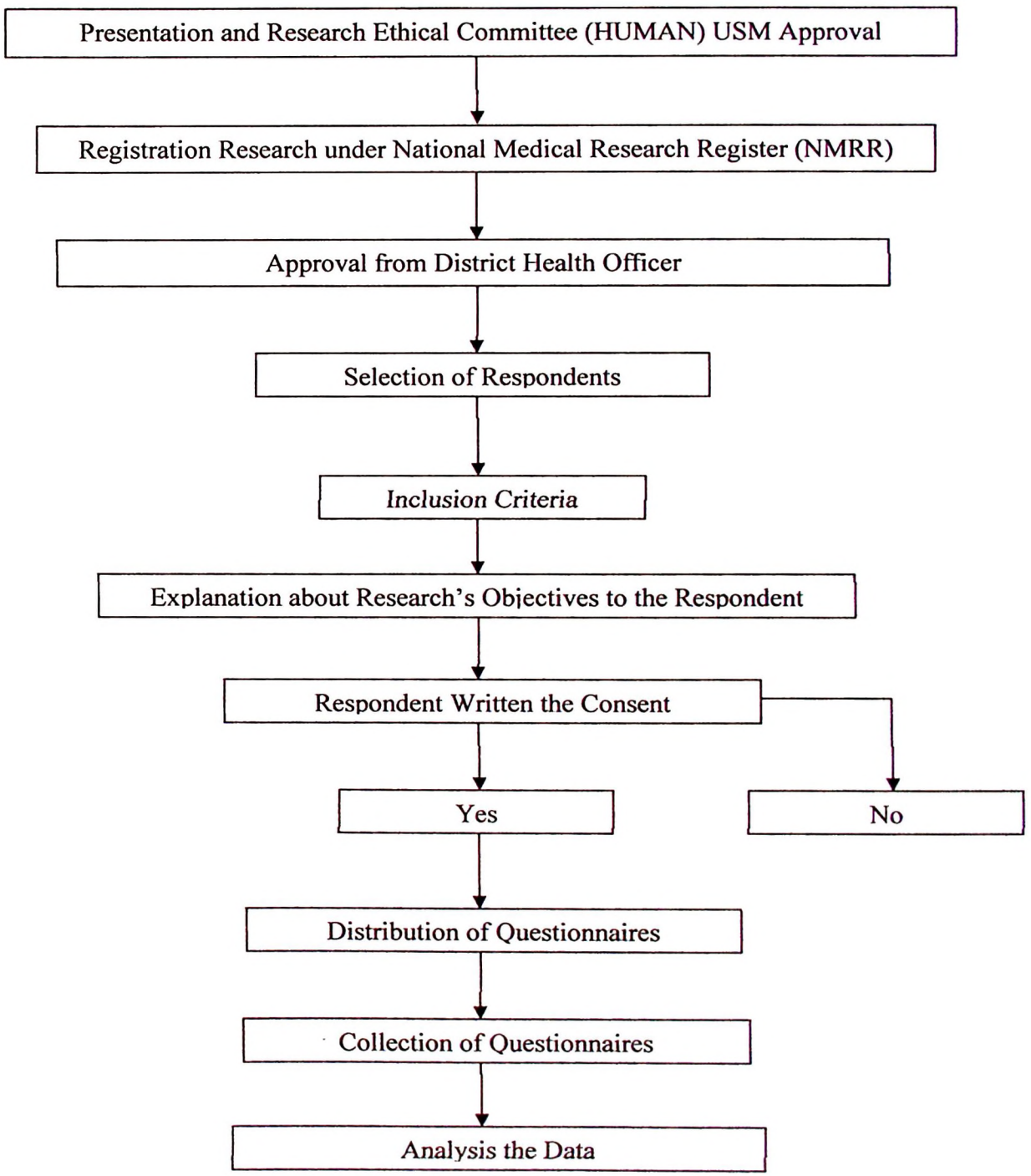


Chart 2: Flow- chart of Data Collection

## 3.7 Data Analysis

Scores from each question answered were analyzed. The data were analyzed using Statistical Package for Social Science (SPSS) version 18's software and Microsoft Office Excel 2007. The statistical tests that were used are:

- Kolmogorov-smirnov test to check the normality of the data
- Spearman Correlation test to check the correlation between variables
- Kruskal wallis Anova test to compare the knowledge of hearing screening across categories of occupation

# CHAPTER 4:
# RESULTS

## 4.0 RESULTS

### 4.1 Pilot Study

As mentioned earlier in Chapter 3, the purpose of performing the pilot study was to validate the questionnaire. So that, the questionnaires can be administered in a valid manner and sensitive enough to know about the perception of hearing screening among health workers in health clinic.

19 participants were recruited in this study. However one participant did not send back the questionnaire to the researcher. The Cronbach alpha analysis was done and the value is 0.78. This suggested that the questionnaire has a good internal consistency and is reliable. Consequently, no further changes are required.

### 4.2 Return Rate

This study aimed to obtain result from 100 health workers (medical officer, medical assistant and nurses) throughout health clinics in Kota Bharu district. However, about 180 questionnaires were distributed to the respondents. Fortunately, 145 of them agreed to participate and fill in the questionnaire. The return rate for this survey was therefore 80.6%. The return rate was considered to be adequate (more than half of the targeted subject).

4.3 Demographics

4.31 Age

As shown in Table 1, the mean age of all respondents was 38.9 ± 7.8 years old.

Table 1: Descriptive statistic showing the mean and standard deviation of participant's age

**Descriptive Statistics**

| | n | Minimum (years) | Maximum (years) | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Age | 145 | 22 | 60 | 38.94 | 7.842 |
| Valid N (listwise) | 145 | | | | |

4.3.2 Gender

As shown in Figure 1, most of the respondents were female, 83% while the rest were male respondents, 17%.

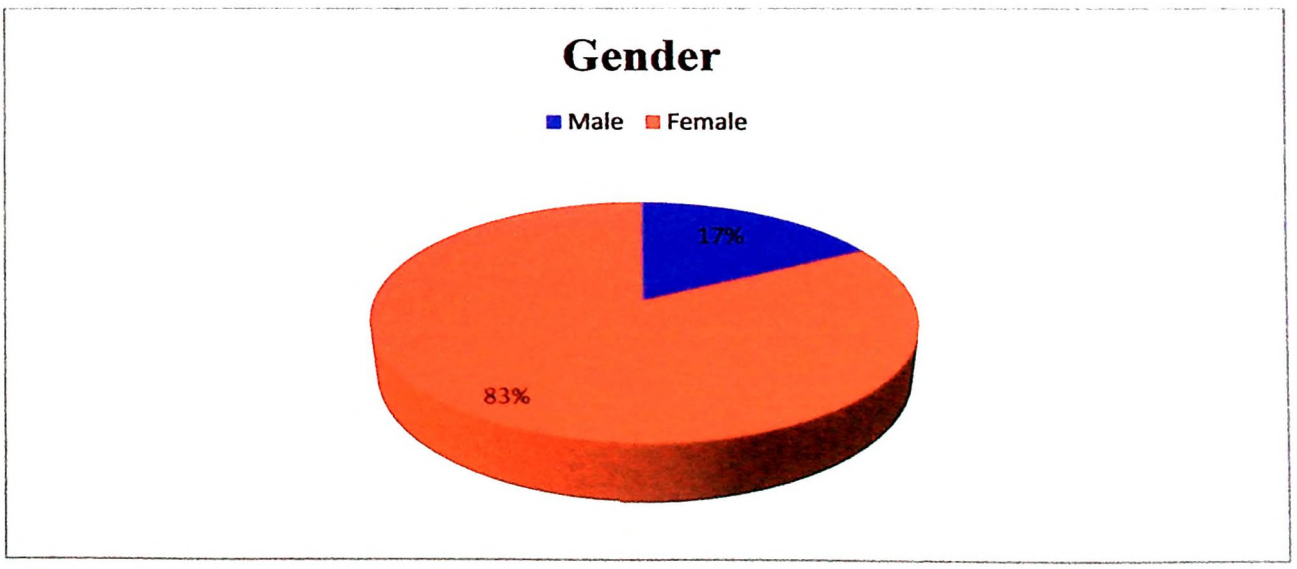


Figure 1: Gender distribution of respondent

4.3.3 Academic qualification

As shown in Figure 2, most of respondents have the diploma (67%), followed by certificate (18%) and degree (15%). None of the respondents hold postgraduate education.

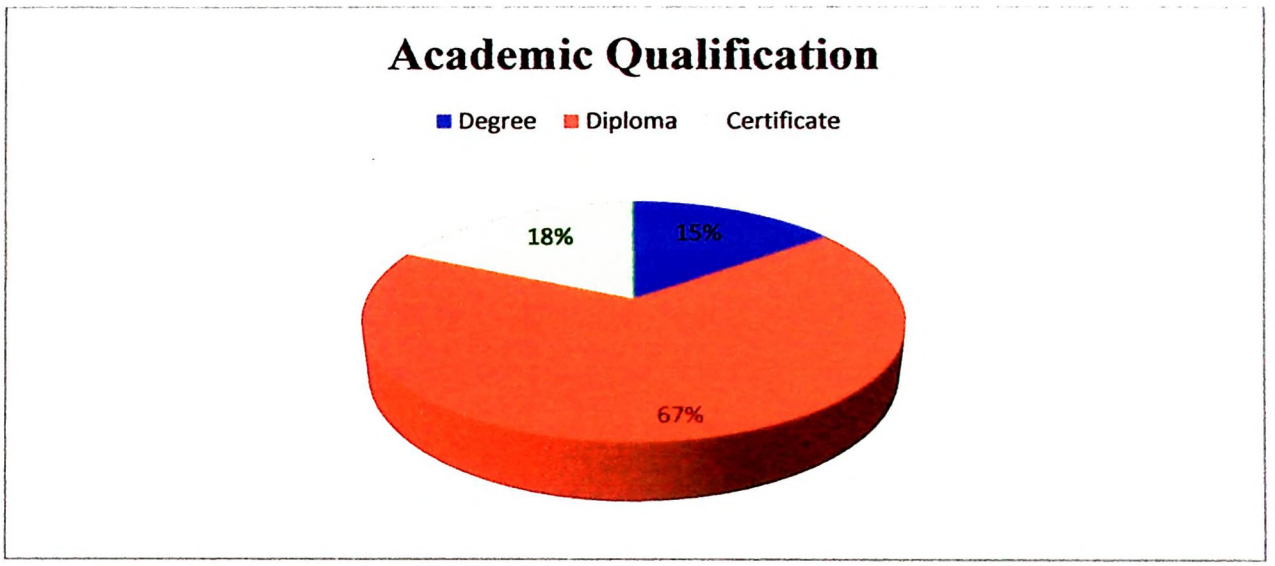


Figure 2: Academic qualification of respondent