Global Scientific JOURNALS

GSJ: Volume 9, Issue 10, October 2021, Online: ISSN 2320-9186

www.globalscientificjournal.com

PROFICIENCY OF CURRENT PRACTICE IN NEONATAL HEARING SCREENING AMONG NURSES IN TAMIL NADU

Kaviya.B

Register No. 193374207

A dissertation submitted as a part of fulfillment for fourth semester of

Master in Audiology and Speech Language Pathology

MANGALORE UNIVERSITY

DR. M. V. SHETTY COLLEGE OF SPEECH AND HEARING

Maladi Court Kavoor, Mangalore-575015,

SEPTEMBER-2020

CERTIFICATE

This is to certify that, student holding the "Registration No: **193374207**", has worked on dissertation entitled **"Proficiency of Current Practice in Neonatal Hearing Screening Among Nurses in Tamil Nadu"** under my guidance in part of fulfillment for the degree of Master in Audiology and Speech-Language Pathology (MASLP), under Mangalore University, Karnataka.

Mangalore

September 2020

Guide

Mrs. Vini Abhijith Gupta

Assistant Professor

Dr. M.V. Shetty College of Speech and Hearing Mangalore – 575015

CERTIFICATE

This is to certify that the dissertation entitled **"Proficiency of Current Practice in Neonatal Hearing Screening Among Nurses in Tamil Nadu"** is the bonafide work in part fulfillment of fourth semester of Master in Audiology and Speech Language Pathology of the student **Kaviya.B** with **Register No. 193374207.**

Mangalore
September 2020

Mr. Satish Kumaraswamy
Principal
Dr. M. V. Shetty College of Speech and Hearing Mangalore – 575015

DECLARATION

I hereby declare that this dissertation entitled is the result **" Proficiency of Current Practice in Neonatal Hearing Screening Among Nurses in Tamil Nadu"** of my own study under the guidance of **Mrs. Vini Abhijith Gupta,** Assistant Professor, Dr. M. V. Shetty College of Speech and Hearing, Mangalore, and has not been submitted earlier at any other university for any other diploma or degree.

Mangalore
September 2020

KAVIYA.B
Registration No: 193374207

ACKNOWLEDGEMENT

First and foremost, thank you Lord for showering your blessings throughout the process of dissertation and without you nothing you nothing would have been possible.

I thank my parents and my little Brother for their understanding, encouragement when it was most required. Thank you for believing in me, boosting me and supporting me NO words can express my gratitude to them for the love and unconditioned support.

Daddy you never fail to rise and conquer you always pulled through for everything and I want to know I'm thankful to have a dad like you.

I am very indebted to my guide prof. Vini Abijith Gupta for her excellent guidance and constant support without which this work would have never taken the shape now. You have always found the simple way to explain a concept an also you have modelled us for achieving greater success in life.

Thank you Sathish sir, for all the extra efforts you make us to help grow, and the challenges you encourage us to face to help us become who we are. I will always be grateful to you for your kindness and support.

Just like any other journey, this one would be difficult without some people who hold special place in my life…. I would like to thank KUTTY MUTTA thank you

so much for the love and care that you have given throughout. Thank you for helping me get through the difficult times, listening to me for hour and for all emotional support.

Keka., we have been together since 6yrs, there is actually pretty much to say and space is not enough, had made beautiful memories, thank u so much for everything my dear.

The language of friendship is not word but meaning, Rii … thank you for the love, care, support and advice u have given in my academics and personal life. We spent many sweet memories together and had made unforgettable….

Ann (su……) good friend are a greatest blessing… you filled my life with pleasure and amusement and had spread so many colors around us. Suuu…. you are the kind of friend who makes the good times even better and the hard times a whole lot easier.

Javed and Andrews Anna… no words can explain the care and motivation you had given me since the day we met. I have got a brotherly affection whenever I needed the most, you could always find a minute changes in me without asking what happened you will try to wash it off soon. I do really need our bond to last forever like this.

I am deeply thankful to all my teaching and non-teaching staff for their direct and indirect inspiration towards the completion of my work in a time bound manner

Thank you so much to my beloved seniors and juniors.

CONTENT

LIST OF TABLES

LIST OF FIGURES

CHAPTER- I
INTRODUCTION

The neonatal hearing screening is a first and important step in understanding if neonate may or may not have hearing impairment. Without newborn hearing screening, it is hard to suspect hearing difficulties in the first months and years of infant life. The most critical period of speech and language development occurs during the first three years of life according to a national institute of deafness and other communication disorder, if a child is not immersed in language and communication during this time due to hearing loss, other difficulties arise involving the development of speech language and reading abilities.

Children with undetected hearing loss often falls behind their peers in school concerning the development of language, cognitive and social skills and it is difficult to interact, learn and follow social skills, cues when hearing loss is present. Academic performance, problem solving skills, and even long-term job opportunities can be affected by hearing loss in infancy or early childhood National Institutes of Hearing (NIH), 2010). Hearing impairment in children across the world constitutes particularly serious obstacle to their optimal development and education, including language acquisition. According to a range of studies and surveys conducted in different countries, around 0.5 to 5 in every 1000 neonates and infants have congenital or early childhood onset sensorineural deafness or severe-to-profound hearing impairment. Hearing-impaired children often experience delayed development of speech, language and cognitive skills, which may result in slow learning and difficulty progressing in school.

Deem, Ordaz and shiner (2012) conducted study on hospital based Universal Hearing Screening (UNHS) where nurses, audiologists and otolaryngologists met for feedback of hospital specific quality of new born screening and improvement opportunities for implementation of UNHS and concluded that nurses and audiology records successfully established for UNHS program.

Congenital and early childhood onset deafness or severe-to-profound hearing impairment may affect the auditory pathway of children at a later developmental stage if appropriate and optimal interventions are not provided within the critical period of central auditory pathway development. Therefore, early detection is a vitally important element in providing appropriate support for hearing-impaired babies that will help them enjoy equal opportunities in society alongside all other children. Screening activities must also be placed in the broader context of rehabilitation approaches. Early detection and the provision of rehabilitation and support services are crucial aspects in preventing disability or mitigating its impact.

Vashistha, and Verma (2016) stated that, 4 in every 1000 children in India suffer from severe to profound hearing loss. The impact of delayed diagnosis and proper intervention in infants with hearing loss has a severe negative effect on the overall speech and language, as well as the cognitive and social skills. However, there are studies being conducted which states that these negative consequences can be reduced to some extent or prevented through early identification and intervention.

Mazlan and Min (2018) investigated the knowledge and attitudes of Malaysian health professionals involved in newborn hearing screening and they concluded that the vast majority of health care professionals believe that newborn screening is critical. However, nurses and pediatricians received bounded awareness of hearing screening.

Lack of awareness and knowledge regarding the neonatal hearing screening program among the non-specialist staff resulting in poor satisfactory referral rate with two stage hearing screening protocol. There is an adverse need for educating nurses regarding the effectiveness of hearing screening programs and hearing impairment as there is a scarcity and dearth of knowledge with respect to identification of hearing loss, rehabilitation options, various communication strategies and learning needs for acquiring education. Henceforth, more initiatives should be taken to spread the awareness regarding the effectiveness of hearing screening among the medical professionals including nurses.

Elkazaz and Berma (2017) conducted a study on nursing in Australia suggested that a nurse can play significant role is five additional areas a such as: a general practice environment, namely organizer, quality controller, problem solver, educator and agent of connectivity.

The nurse also plays a key role in specialty sectors, such as those carried out within the neonatal intensive care unit (ICU). A questionnaire-based study was conducted by Chapman and Burchfield (2008) showed that majority of the nurses they have inadequate training and knowledge regarding the healthcare assistance for hearing impaired individuals. Result also suggested that there is an extreme need to provide additional training with respect to hearing loss and care regarding hearing aids among nurses. As research indicates that nurses are one of the core medical professionals who play a key role in the ICU as they can identify high risk babies who need audiological intervention, provided they should have adequate knowledge available in relation to different facts about pediatric hearing loss. As the role of nurse is being diversified within the healthcare setting, the role of screening for disability within a neonatal or pediatric medical set-up could be promoted by the nurse.

A similar kind of survey was conducted by Goedert and Moeller (2011) to evaluate knowledge, attitudes, and practices of midwives related to newborn hearing screening and intervention across 5255 American nursing colleges. Results showed that midwives had lack of knowledge regarding various screening procedures, steps for referral, and also the availability of resources when an infant doesn’t pass a test.

Hendershot, Pakulski, Thompson, Dowling and Price (2011) did a survey regarding the services and practices being delivered by the elementary and middle school nurses' concerning noise induced hearing loss screening and prevention. Results indicated that 48% of the nurses were not aware of many educational programs being addressed for screening NIHL in students. Thus, they concluded that School nurses need to become advocates and trained regarding the various hearing screening policies and educational programs in order to help reduce hearing loss.

India faces the challenge of a very large population and a high annual birth rate approaching 25 babies per 1000. Moreover, 75% of the population live in rural areas and over 50% of births occur at home and are frequently attended by a trained birth attendant. However, India also has a well-developed health care delivery system, right down to the grassroots/village level, and a well-established immunization program.

Jones, Lambert and Barrnett (2018) studied on effectiveness on training program to equip nursing student in administering universal newborn screening procedures, two group were taken (first semester and third semester nursing students) and they concluded that both group students were benefited from the training.

In 2006, India launched the National Program for Prevention and Control of Deafness (NPPCD). This program is currently running in over 60 districts of the country and its aim is to identify babies with bilateral severe-profound hearing losses by 6 months of age and initiate rehabilitation by 9 months of age. Under this program, the following two-part protocol for infant hearing screening is being implemented.

Institution-based screening – to screen every baby born in a hospital or admitted there soon after birth using OAE. Those who fail the test are re-tested after 1 month. Those who fail the second screening are referred for ABR testing at the tertiary-level centers, community-based screening – to screen babies who are not born in hospitals. Such screening is carried out using a brief questionnaire and behavioral testing. The screening is performed when the baby attends for immunization at 6 weeks of age and onwards. A trained health care worker at the subcenter administers immunization and conducts the hearing screening. The protocol is repeated at every immunization. Any baby failing the universal newborn hearing screening.

(UNHS) programs aim to promote the identification of congenital hearing loss as early as possible in order to initiate appropriate early intervention services and supports. Although the UNHS program has been successful in lowering the age at which children (Pallarito, 2012; Parving & Salomon, 1996).

Sanju, Choudhary and Yadav (2018) conducted research to assess the knowledge and attitudes of issues in pediatric hearing loss among nurses across various range of hospital set up in Northern India. A questionnaire-based study (online survey) of 22 questions was designed and adopted from similar studies to assess the knowledge and attitude among nurses regarding hearing impairment among pediatric population. A total of 115 nurses from primary nursing care, corporate and government hospitals participated in the present study. The outcome of the present

study suggested that poor knowledge and attitude towards hearing impairment of infants among nurses across North India.

Medical Professionals who play a key role in the ICU as they can identify high risk babies who need audiological intervention, provided they should have adequate knowledge available in relation to different facts about pediatric hearing loss. To provide appropriate information to the nurses, audiologists should have basic layout regarding the status of the nurses in respect to the knowledge and attitude-related pediatric hearing loss and significant audiological management. The present research is being conducted to assess the knowledge and attitude of issues in pediatric hearing loss among nurses in Tamil Nadu. The aim of the study is to investigate knowledge and attitude regarding the pediatric hearing loss related to it among nurses in different health sectors in Tamil Nadu.

CHAPTER – II
REVIEW OF LITERATURE

Hearing is one of the most important primary senses which helps us to communicate smoothly with the hearing world. Unfortunately, the sense of hearing is often neglected and people usually fail to realize its importance unless it is diminished or reduced gradually. According to World Health Organization (WHO), 2015) 6.3% of Indians are suffering from significant auditory loss. Hearing is important aspect to learn communication. Babies start hearing sounds before they are born. After birth, they watch their parent's facial expression and gestures. The baby's hearing system continues to develop every day. At three months old, babies will smile when spoken to, and at six months old they will begin to babble and imitate certain sounds. If your baby cannot hear, this process of development will be slowed down and can be detrimental to the cognitive development of your baby. Auditory stimuli during the first 6 months of life are critical for the development of speech and language skills. Several studies have shown that infants who receive intervention before the age of 6 months have better school outcomes, and improved language and communication skills by ages 2 to 5 years. Without early

intervention, children with hearing loss will show irreversible deficit in communication, psychosocial skills and literacy. They are more likely to have academic underachievement, problems with employment and psychological distress.

Although WHO (2009) recommendations do not exclusively rely upon cost-effectiveness or cost- benefit ratios, they are intended to be "cost-sensitive" to reflect the reality of very low health spending in many countries. Newborn and infant hearing screening requires resources and any guidance must take into account the available data on its cost-effectiveness and affordability in developing countries. Many low-income countries will be unable to run national and/or sub-national program unless methods for their financing (including opportunities for public-private partnerships) are identified.

Most existing newborn and infant hearing screening program target permanent sensory or conductive hearing loss, averaging 30–40 dB or more in the frequency region important for speech recognition (approximately 500–4000 Hertz). There is growing agreement that milder hearing loss (20–30 dB) is also important and needs to be detected and treated early because of the negative consequences of such losses on the later development of children. Some programs are designed to identify only bilateral hearing loss, but there is growing agreement that the identification of unilateral hearing loss is also important and valuable. Similarly, fluctuating conductive hearing losses caused by otitis media are generally not targeted by newborn hearing screening program – even though chronic otitis media has serious negative consequences. In all cases, the use of an appropriate and consistent case definition will help to determine the focus of newborn and infant hearing screening program and greatly facilitate assessment of their impact. (WHO), 2010)

Universal newborn hearing screening became mandatory in Minnesota in September 2007 under Minnesota Statute. This legislation has greatly enhanced the comprehensive system of hearing screening for all newborns. The objective of the Minnesota Department of health (MDH) Newborn Screening/ Early Hearing Detection and Intervention (EHDI) program is to ensure that

all infants are screened, test results are promptly reported, and all infants who do not pass their hearing screening are referred to an audiologist or other professional for diagnostic evaluation.

The EHDI program goals are Screen newborns for hearing loss by one month of age, identify hearing loss by three months of age, Offer early intervention services to deaf and hard-of-hearing infants and families by six months of age.

A critical role of the primary care provider is to facilitate appropriate referrals. They should stress to families the importance of following up on hospital referral from Newborn Hearing Screening (NHS) in a timely manner. Up to one fifth of infants referred for further testing after properly administered NHS have a hearing loss. (Central for Diseases control and prevention (CDC), 2013).

The principles of newborn and infant hearing screening are no different from any screening, and activities must be placed in the broader screening context, which typically involves an important health problem with a recognizable latent or early symptomatic stage, ensuring the availability of a suitable diagnostic test that is safe and acceptable to the population, ensuring that an accepted and established treatment or intervention is available to the population, placing the cost of diagnosis and treatment in relation to expenditure on medical care.

Infants who are diagnosed as hearing impaired need the right support, care and early intervention services to promote healthy development. If the hearing status is not identified, it may have negative effects on the infant’s communication and language skills. Missed hearing impairment can also impact the child's academic achievement and social-emotional development. It is particularly important to make sure that those who provide health care to very young children are educated on the importance of early identification of hearing loss, as well as on the newborn and infant hearing screening procedures being implemented in their area. Parents often turn to health care providers for advice and assistance. Health care providers will only be able to provide appropriate support and assistance if they have been well educated. Primary health care providers are often in a good position to help the family access all the various services they need, such as ophthalmological examinations, genetic evaluations and counselling, speech-language therapy and enrolment in educational program. (WHO, 2010).

Nurses in neonatal care should have knowledge on conditions of neonate's state regularly soon after birth and the specialists available for medical management. With increased awareness, nurses can ensure that infants are screened accurately and that families receive referrals for the services they require. This educational activity provides an overview of newborn screening and the processes needed to avoid false-positive or false-negative results. It also discusses several diseases individually and provides information about different modes of inheritance. Professionals who care for newborns should know which conditions their state regularly screens for at birth and the specialists available for medical management. With increased awareness, nurses can ensure that infants are screened accurately and that affected families receive prompt referrals for the services they require. This educational activity provides an overview of newborn screening and the processes needed to avoid false-positive or false-negative results. It also discusses several diseases individually and provides information about different modes of inheritance.

Western studies:

Jones, Lambert and Barnett (2018) evaluated on nursing students for training and maintaining universal newborn hearing screening knowledge. The purpose of the study was to obtain information concerning the effectiveness of a training program to equip nursing students in administering universal newborn hearing screening procedures, correctly recording results and clearly explaining outcomes to parent/guardians. Result showed that all student benefited from the training.

Mazlan, Say and Min (2018) investigated knowledge ad attitude of Malaysian health care professionals towards newborn hearing screening program and results revealed Ear, Nose, And Throat Specialists (ENT) scored significantly higher than pediatricians and nurses and reported limited informative knowledge about hearing screening process and have positive attitude about program whereas 22.5% were not aware of existence of the program.

Khan, Joseph and Adhikari (2018) investigated the hearing screening experiences and practices of primary health care nurses in south Africa and found lack of hearing screening equipment or materials, referral service only for risk factors. Nurses need to be capable to conduct basic screening, referrals and council to facilitate early detection and intervention.

Conti, Marselle, Orlando, Picciotti, Frezza and Russo (2018) Universal Newborn Hearing Screening (UNHS) programs has drastically contributed to the early diagnosis of hearing loss in children. Result showed that intervention with significant results on speech and language development in affected children, and the proper execution of audiological monitoring and diagnosis.

Roberts and Jones (2017) investigated knowledge and understanding of universal newborn hearing screening in nurses. Online educational program provided and pre post measurements were obtained and results showed improvement in pre to post testing and not confident in their current level of training.

Barbosa, Aires, Farias, Linhares and Gris (2013) investigated on knowledge of nursing professional after the educational actions on pediatric hearing. A quasi-experimental with 82 nurses in university Hospital, Brazil. Results showed a significant change in the knowledge of the nurses after the educational activity in most of the variables such as ideal age to perform the newborn hearing screening, ideal age to diagnose hearing loss and start intervention against hearing loss, risk indicators for hearing loss.

Indian studies:

Abhiruchi Galhotra, Preeti and Sahu (2019) investigated challenges and solutions in implementing hearing screening program in India and found that facility is mostly available to newborns brought into tertiary hospitals. some of issues in implementation is lack of resources, inadequate infrastructure, equipment, and low priority for hearing impairment prevention. The government of India initiated efforts on programs toward hearing screening and intervention.

Sanju, Aggarwal, Choudhary and Yadav (2018) conducted research to assess the knowledge and attitudes of issues in pediatric hearing loss among nurses across various range of hospital set up in Northern India. A questionnaire-based study (online survey) of 22 questions was designed and adopted from similar studies to assess the knowledge and attitude among nurses regarding hearing impairment among pediatric population. A total of 115 nurses from primary nursing care, corporate and government hospitals participated in the present study. The outcome of the present study suggested that poor knowledge and attitude towards hearing impairment of infants among nurses across North India.

Ravi, Gunjawate, Yerraguntla, Lewis and Rajasekhar (2017) evaluated the knowledge of, attitudes towards, and practices for newborn hearing screening among healthcare professionals. Results suggested significant gaps in their knowledge about screening procedures, referrals, and the availability of resources.

Ravi and Rajashekhar (2017) conducted a systemic review on Cumulative Index to Nursing and Allied Health Literature (CINAHL). Results showed that newborn hearing screening team members from different countries, healthcare systems and early hearing detection and intervention programs show gaps in critical knowledge warranting outreach and educational programs.

Sharma, Mishra, Sushen and Bhatt (2015) investigated neonatal hearing screening program at rural based tertiary care center to determine the incidence of permanent hearing loss in neonates ranging from moderate to severe hearing loss in a tertiary care rural based hospital in Gujarat which revealed that the follow-up rate for infants was 72.7 %.

Need of the study:

Doctors, Audiologists and Nurses have an important in the neonatal hearing screening program. Nurses play an important contribution in coordinating first level detection and intervention and connectivity nurses could receive training in intervention and how to work with

parents of hearing impaired. Audiologist monitor the program outcome measure for quality assurance for neonatal screening and provide the outcome of early identification and intervention program and neonatal hearing screening draws attention to the positive attitude by the nurses and also exhibited a sheds light on the knowledge gap drives to enhance a better neonatal hearing screening. The present study attempts to evaluate the knowledge and attitude of nurses in the area of issues in pediatric and newborn hearing loss in hospital in Tamil Nadu.

CHAPTER- III

METHOD

Aim:

The aim of the current study was to adapt a questionnaire from English developed by Sanju, Aggarwal, Choudhary and Yadav (2018) consisting of 22 questions related to hearing loss in neonates and it was translated to Tamil language which was given to nurses via online survey to evaluate their knowledge regarding hearing loss in neonates and attitude towards hearing impairment will be asked in order to assess their knowledge. The translated study was validated by 4 speech language pathologist who was fluent in both English and Tamil.

Participants:

115 nurses were selected who were working at primary nursing care, corporate and government hospitals and had a minimum education up to graduation level (B.Sc. Nursing). The mother tongue of all the participants was Tamil simultaneously had a good knowledge in English. The subject was divided into a single group.

Inclusion criteria: Nurses who had a qualification of B.Sc. nursing with minimum 2-3years of experience was included for the study.

Tool used: Knowledge and attitude of nurses towards neonatal hearing screening translated in Tamil which was adapted from Sanju, Aggarwal, Choudhary and Yadav (2018).

Procedure: Data required was collected by distributing questionnaire developed in Tamil language to all subjects chosen as sample. The questionnaire consisted of 22 questions based on knowledge and attitude level of questions.

Scoring: Questionnaire was based on a 3-point rating scale which includes Yes, No or Not sure. 20 questions had a scoring of 3-point rating scale, 1 question had a scoring of only YES or No and remaining 1 question had a scoring of ENT or Audiologist.

Statistical analysis: Collected data was summarized by calculating percentage of each question, mean, standard deviation and frequency.

CHAPTER- IV
RESULTS AND DISCUSSION

The aim of the study was to adapt a questionnaire developed in English by Sanju, Aggarwal, Choudhary and Yadav (2018) which consisted of 22 questions related to hearing loss in neonates and to translate it into Tamil language, which was given to nurses in Tamil Nadu. An online survey to assess their knowledge of hearing loss in neonates and attitude towards neonatal hearing screening.

A. Knowledge/awareness of the nurses towards neonatal hearing screening

Table: 4.1

showing the knowledge / awareness of the nurses towards neonatal hearing screening

	No (No+Not sure)		Yes		Total	
	Count	Row N %	Count	Row N %	Count	Row N %
	Knowledge					
Can babies born with hearing loss?	33	28.7%	82	71.3%	115	100.0%

Can high fever cause hearing loss?	31	27.0%	84	73.0%	115	100.0%
Can measles cause hearing loss?	23	20.0%	92	80.0%	115	100.0%
Can ear discharge cause hearing loss?	27	23.5%	88	76.5%	115	100.0%
Can convulsion cause hearing loss?	21	18.3%	94	81.7%	115	100.0%
Can some type of medication cause hearing loss?	28	24.3%	87	75.7%	115	100.0%
Can jaundice cause hearing loss?	23	20.0%	92	80.0%	115	100.0%
Can prolonged noise cause hearing loss?	17	14.8%	98	85.2%	115	100.0%
Can delayed cry at birth cause hearing loss?	18	15.7%	97	84.3%	115	100.0%
Can consanguinity cause hearing loss?	24	20.9%	91	79.1%	115	100.0%
Is treatment for hearing loss available?	9	7.8%	106	92.2%	115	100.0%
Do you consider early treatment of hearing loss will prevent further complication?	10	8.7%	105	91.3%	115	100.0%
If you find child has problem of hearing which professional you will refer?	115	100.0%	0	0.0%	115	100.0%
Do you think children with hearing impairment can still hear and speak?	101	87.8%	14	12.2%	115	100.0%
Do you think child with speech and language problem due to hearing loss should receive speech therapy?	0	0.0%	115	100.0%	115	100.0%

B. Attitude of nurses towards neonatal hearing screening

Table 4.2

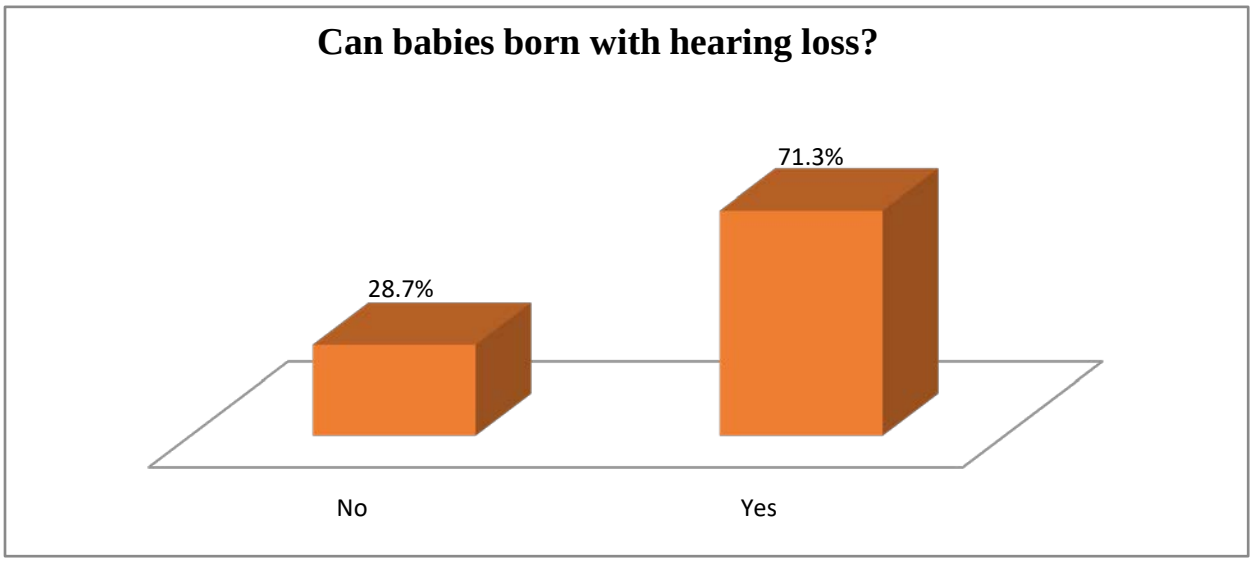
Showing the attitude of nurses towards neonatal hearing screening

	No (No+Not sure)		Yes		Total	
	Count	Row N %	Count	Row N %	Count	Row N %
Attitude						
can hearing loss be identified soon after birth?	25	21.7%	90	78.3%	115	100.0%
Can children with hearing loss able to attend normal school?	24	20.9%	91	79.1%	115	100.0%

Would you like babies hearing tested soon after birth?	16	13.9%	99	86.1%	115	100.0%
Would you let baby use hearing aids if she/he has hearing loss?	20	17.4%	95	82.6%	115	100.0%
can bewitchment cause hearing loss in infants?	115	100.0%	0	0.0%	115	100.0%
Do you think hearing loss in newborn cause anxiety in parents?	0	0.0%	115	100.0%	115	100.0%
Do you think children with hearing loss feel isolated from other child of their age group?	59	51.3%	56	48.7%	115	100.0%

C. Awareness of babies born with hearing loss

Fig 4.1:

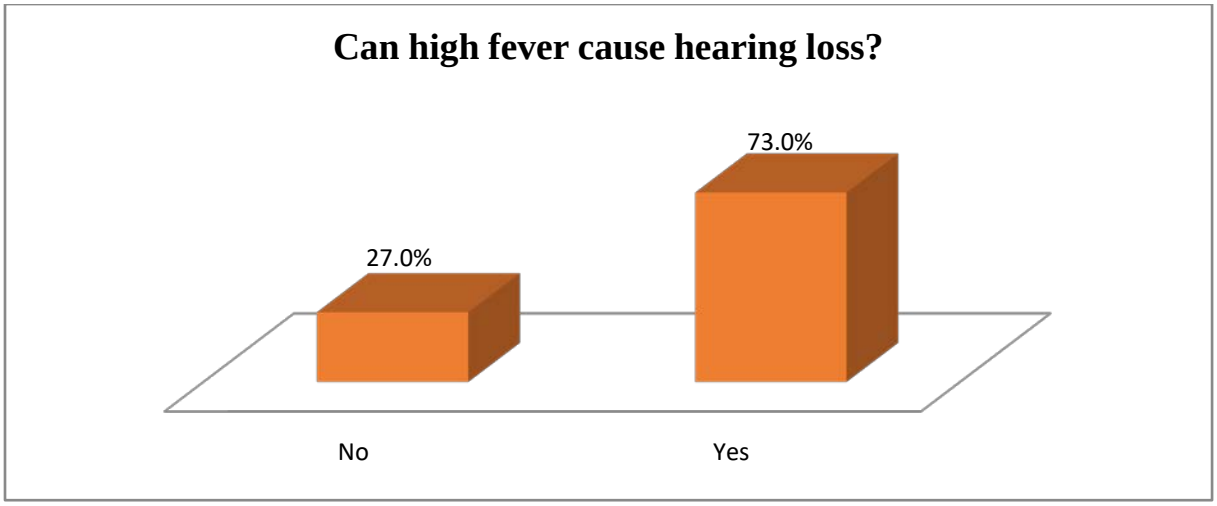


Awareness of babies born with hearing loss

D. Harmful effect of high fever cause hearing loss

Fig 4.2:

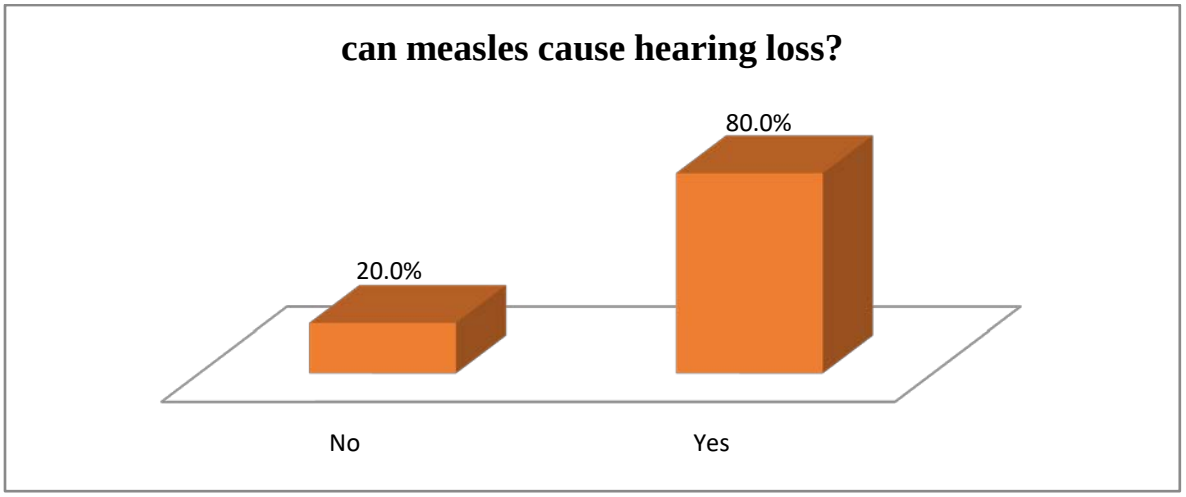
Awareness regarding harmful effect of high fever cause hearing loss



E. Harmful effect of can measles cause hearing loss

Fig 4.3:

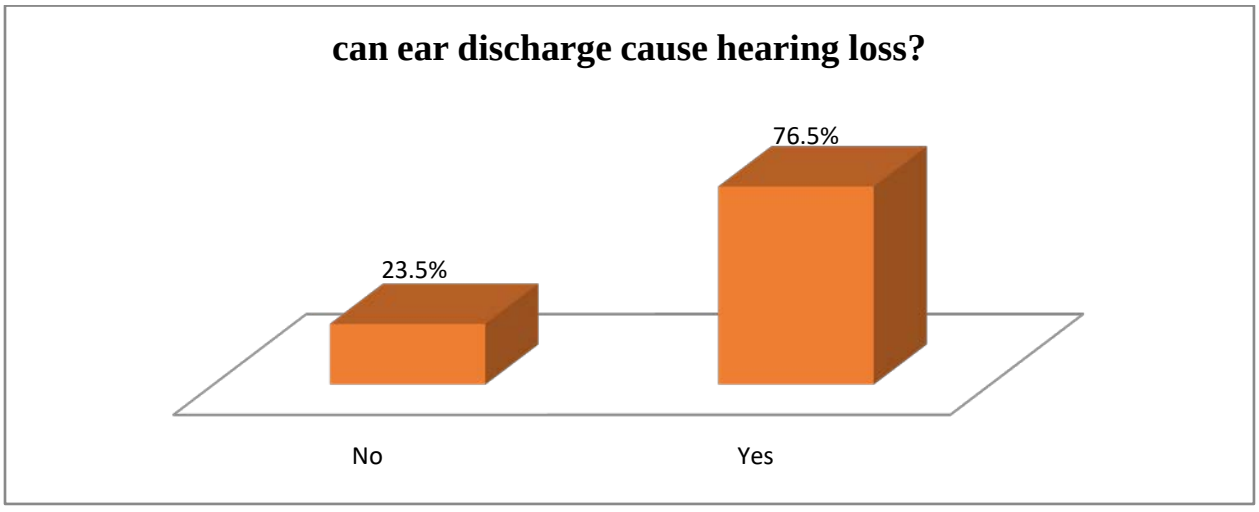
Awareness regarding harmful effect of can measles cause hearing loss



F. Harmful effect of ear discharge cause hearing loss

Fig 4.4:

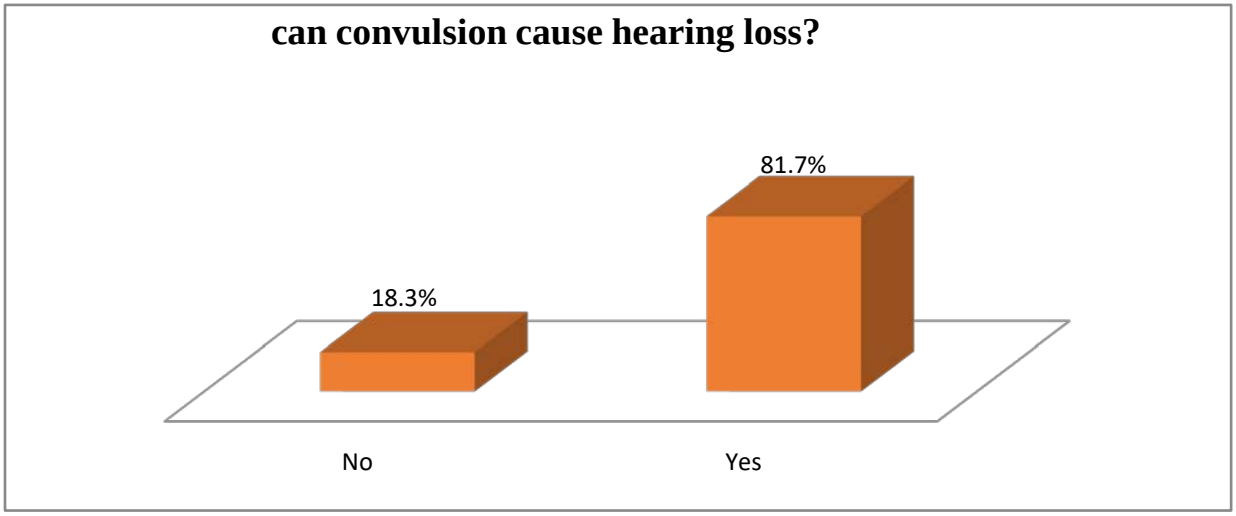
Awareness regarding harmful effect of ear discharge cause hearing loss



G. Harmful effect of convulsion cause hearing loss

Fig 4.5

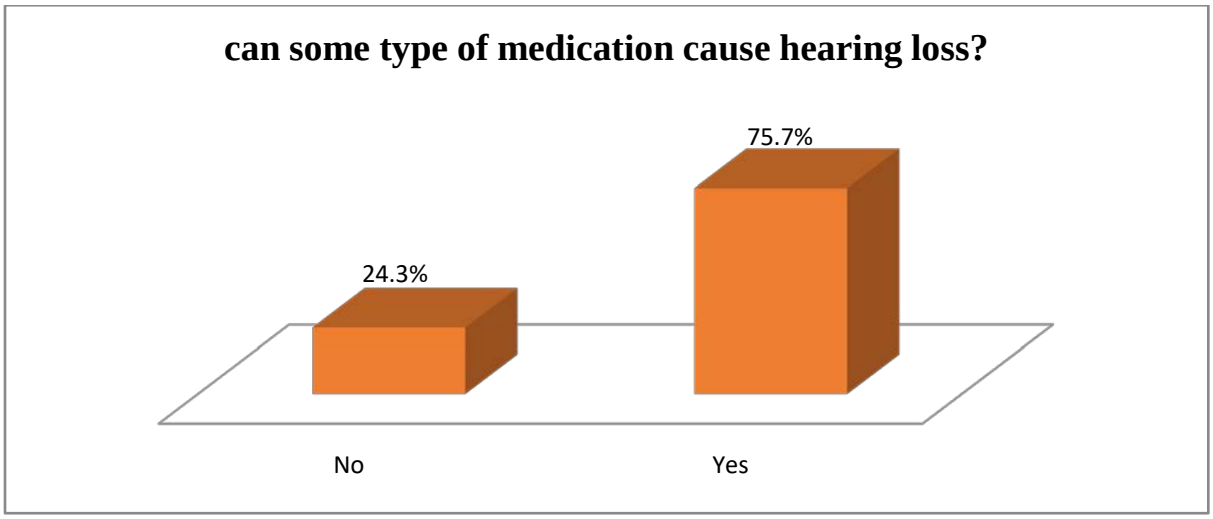
showing awareness regarding the harmful effect of convulsion cause hearing loss



H. Harmful effect of medication cause hearing loss

Fig.4.6:

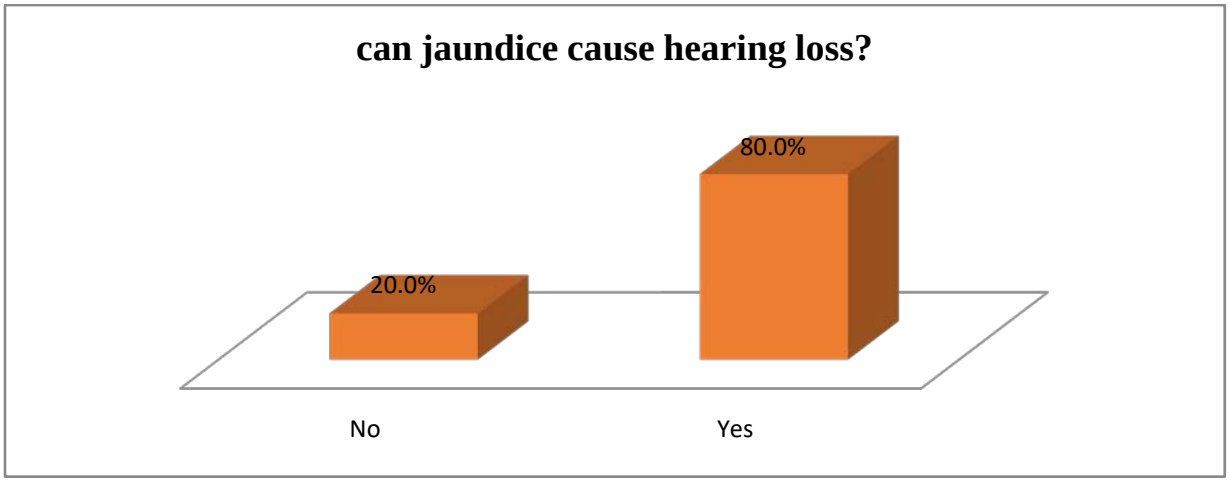
Showing awareness regarding the harmful effect of medication cause hearing loss



I. Harmful effect of jaundice cause hearing loss

Fig: 4.7:

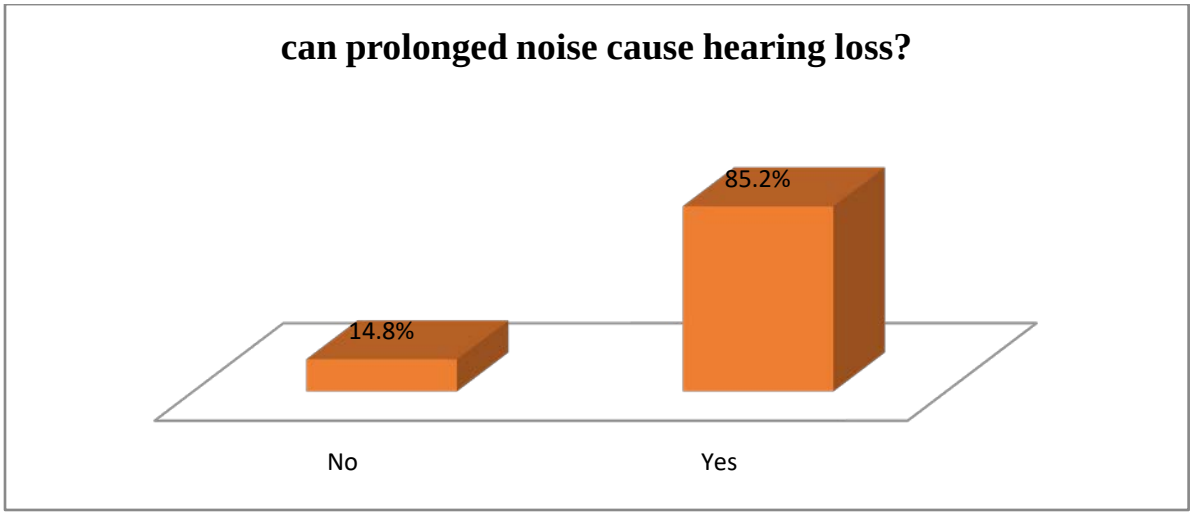
Showing awareness regarding harmful effect of jaundice cause hearing loss



J. Harmful effect of prolonged noise cause hearing loss

Fig 4.8:

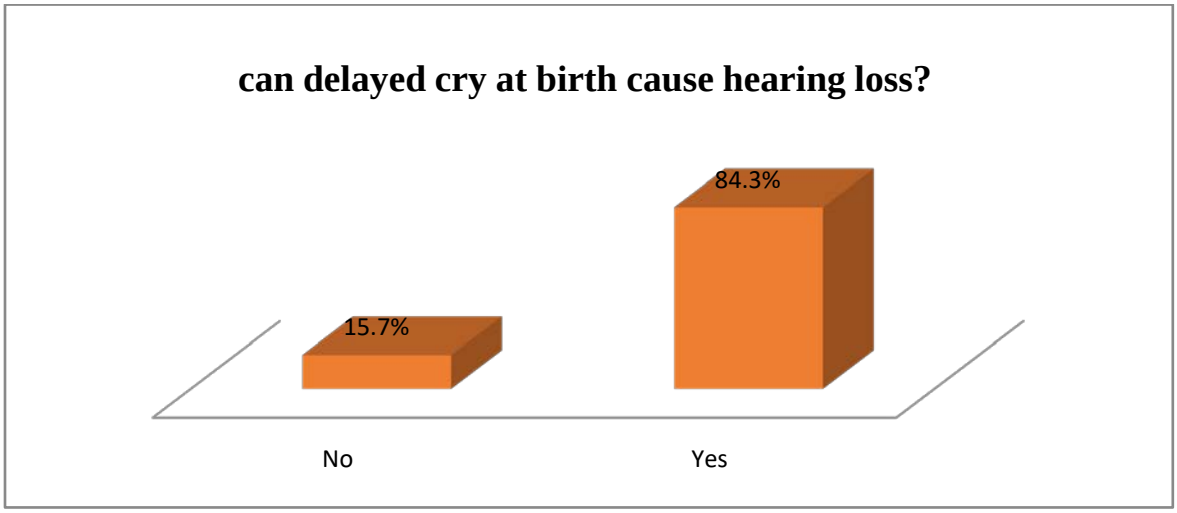
Showing awareness regarding the harmful effect of prolonged noise cause hearing loss



K. Harmful effect of delayed cry at birth cause hearing loss

Fig 4.9:

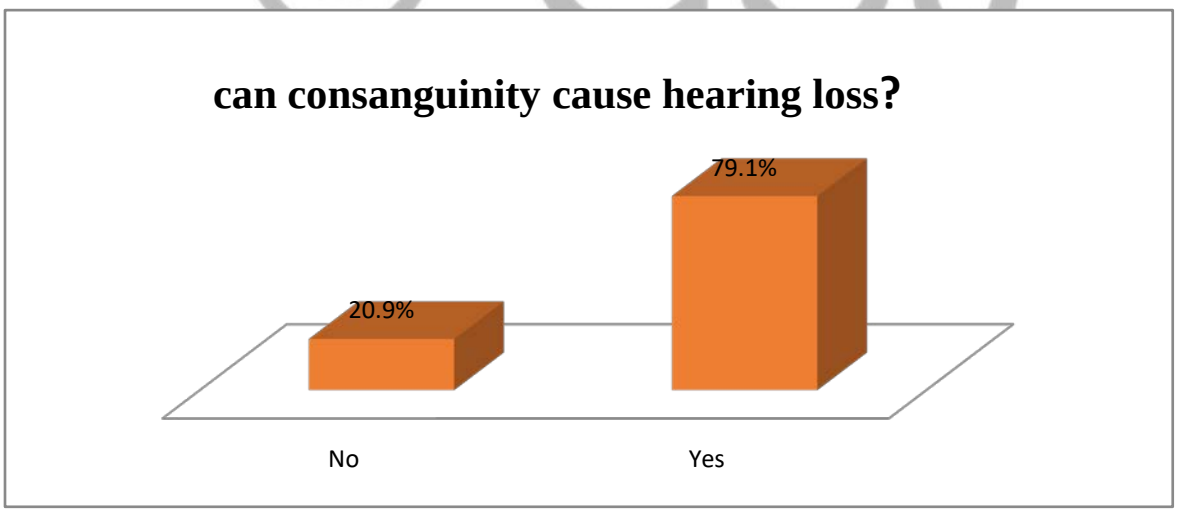
Showing Awareness regarding the harmful effect of delayed cry at birth cause hearing loss



L. Consanguinity on hearing loss

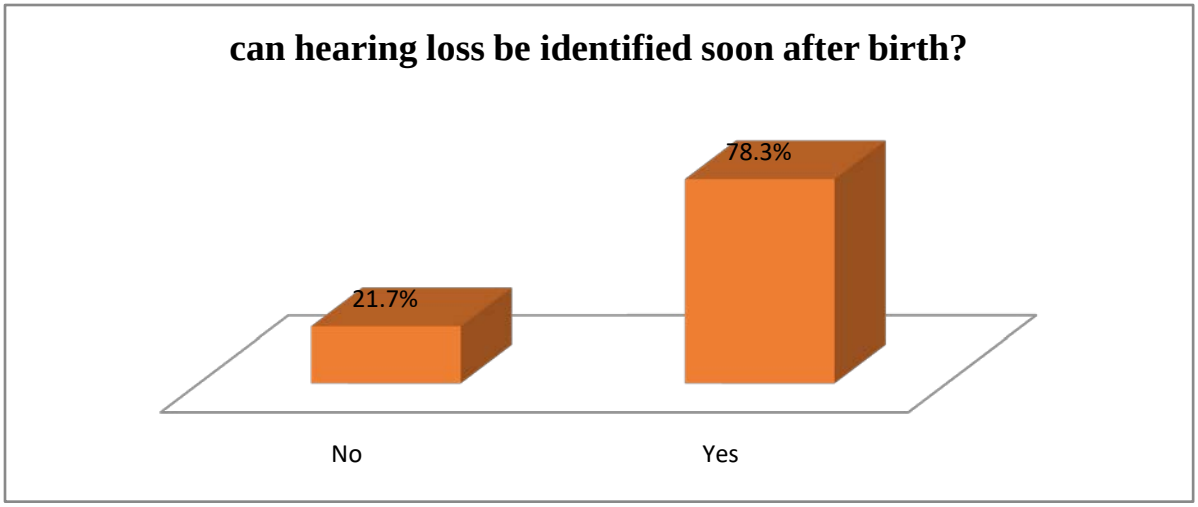
Fig 4.10:

Awareness regarding consanguinity on hearing loss



M. Identifying the hearing loss soon after infant's birth

Fig 4.11

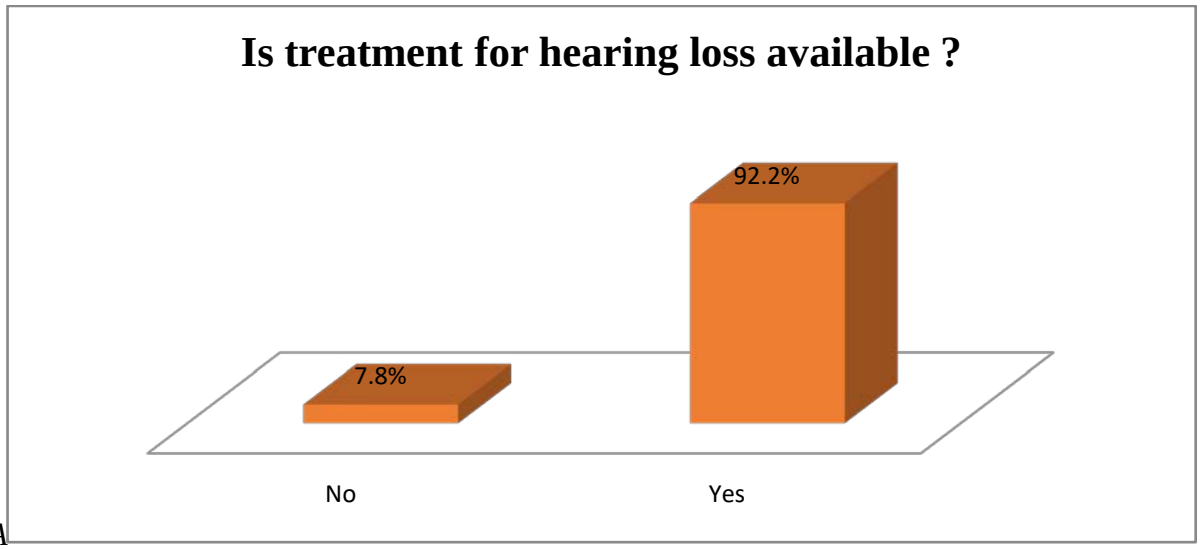


Showing awareness regarding identifying the hearing loss soon after infant's birth

N. Treatment for hearing loss is available

Fig 4.12:

Awareness regarding if the hearing treatment is available

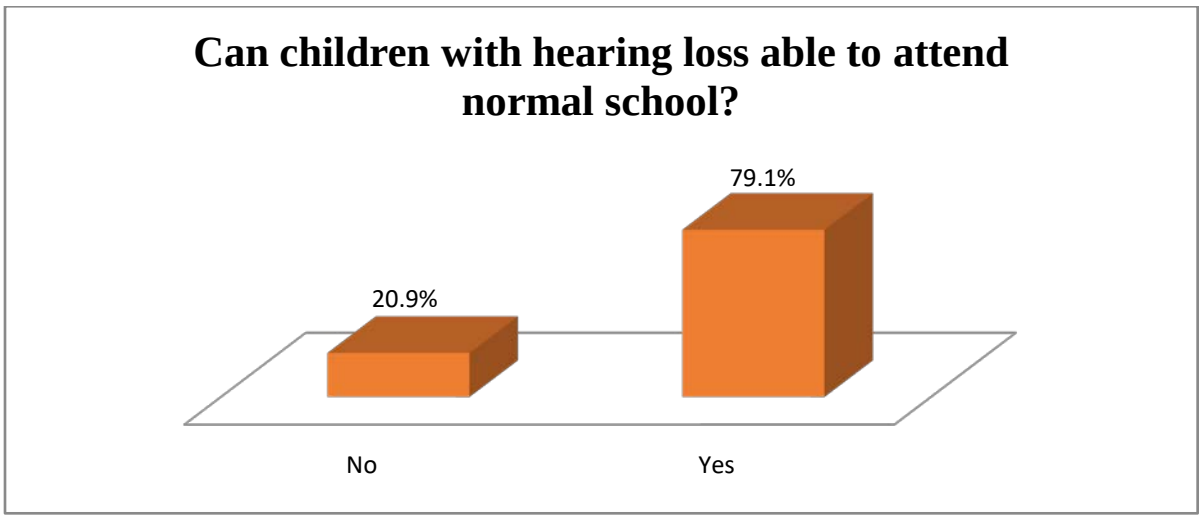


A

O. Effect of children with hearing loss able to attend normal school

Fig 4.13:

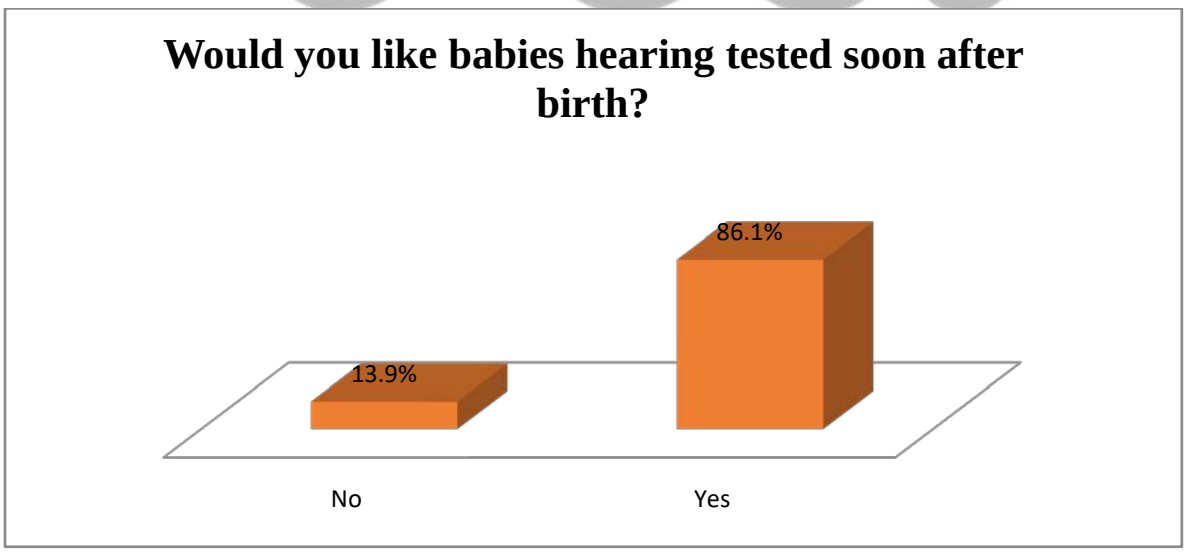
Showing attitude regarding the effect children with hearing loss able to attend normal school



P. Attitude regarding the babies hearing should be tested soon after birth

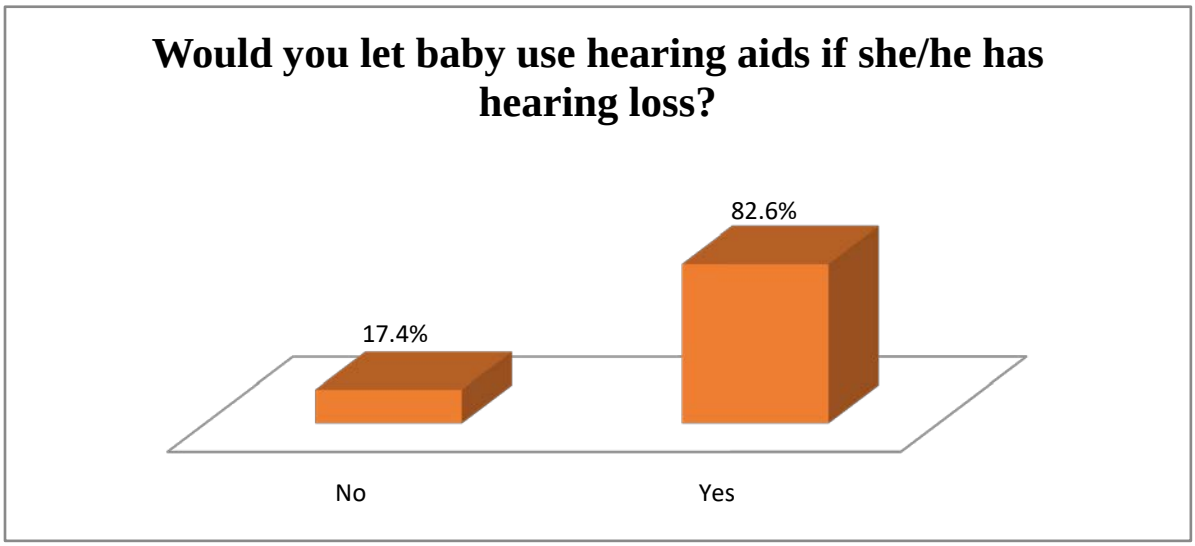
Fig.4.14:

Showing attitude regarding the babies hearing tested soon after birth



Q. Babies using hearing aid if they have hearing loss

Fig 4.15:

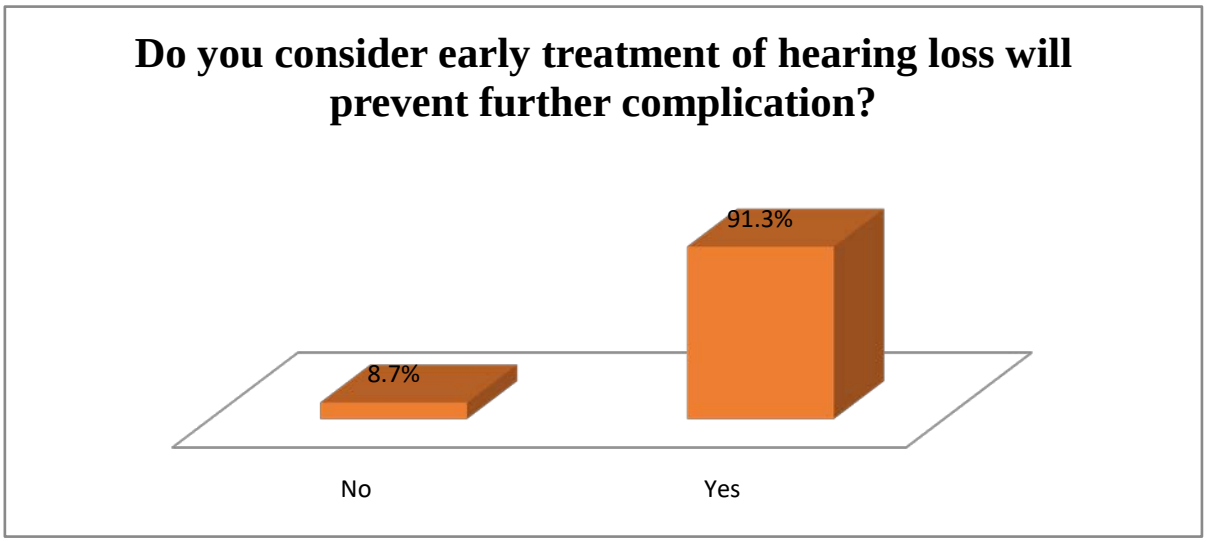


Showing attitude regarding babies using hearing aid if they have hearing loss

R. Importance early identification and intervention

Fig 4.16:

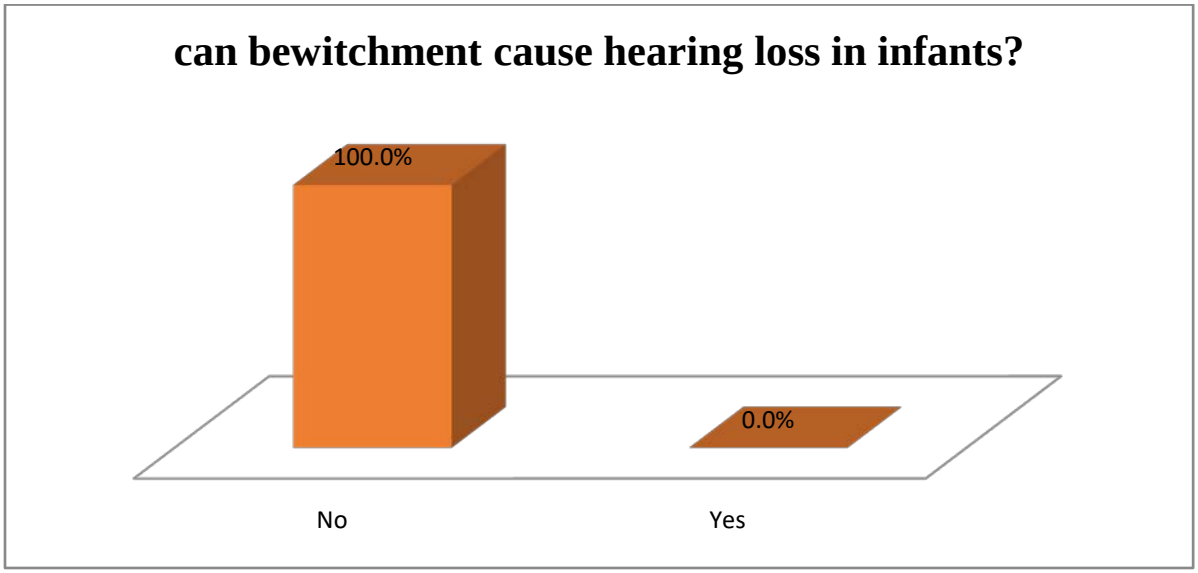
showing awareness regarding importance early identification and intervention



S. Bewitchment on hearing loss

Fig 4.17:

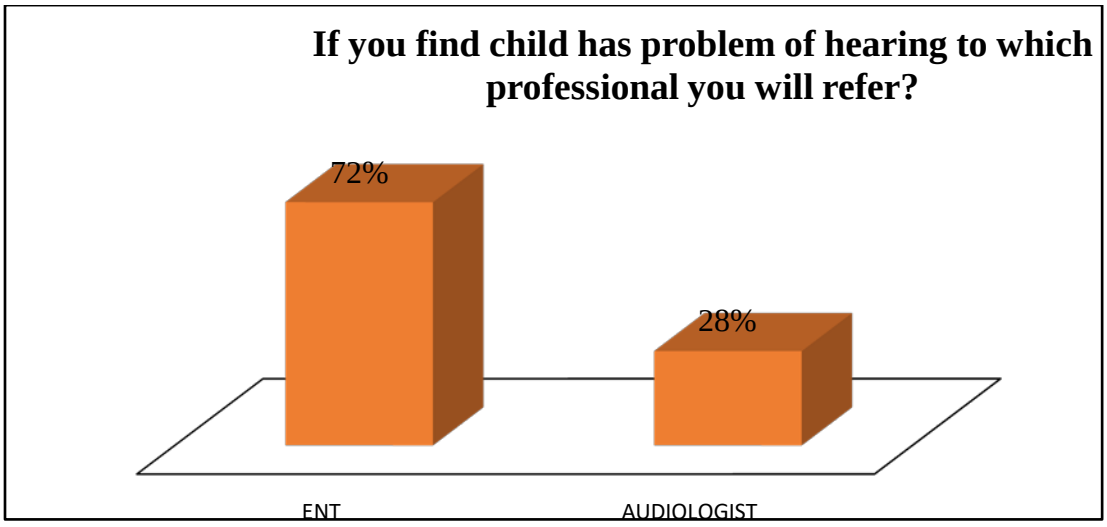
Showing attitude about Bewitchment on hearing loss



T. Professional deals with hearing assessment and management

Fig 4.18:

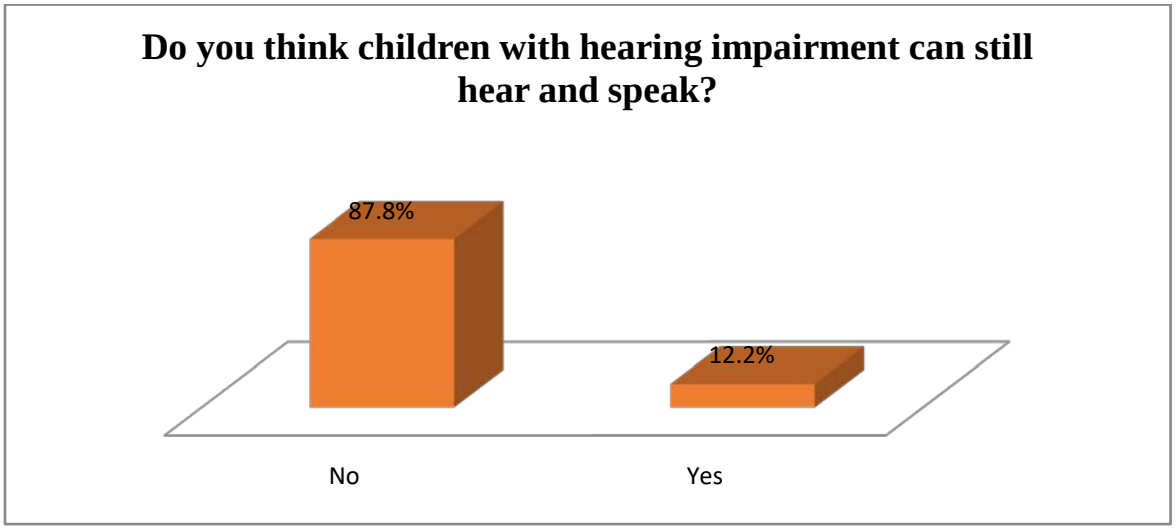
Showing awareness regarding professional deals with hearing assessment and management



U. Children with hearing impairment can still hear and speak

Fig4.19:

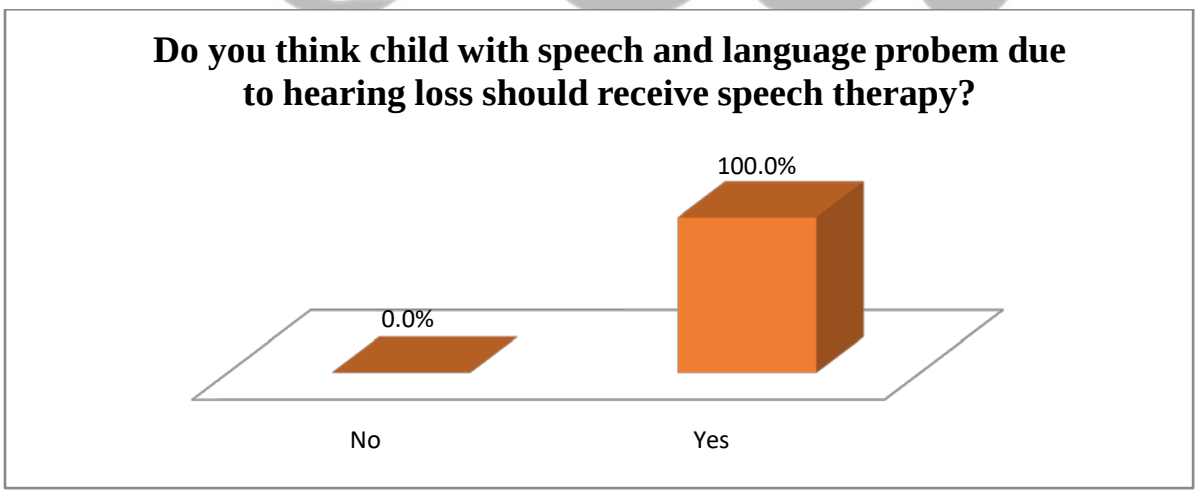
Showing attitude towards children with hearing impairment can still hear and speak



V. Child with speech and language problem due to hearing loss should receive speech therapy

Fig 4.20:

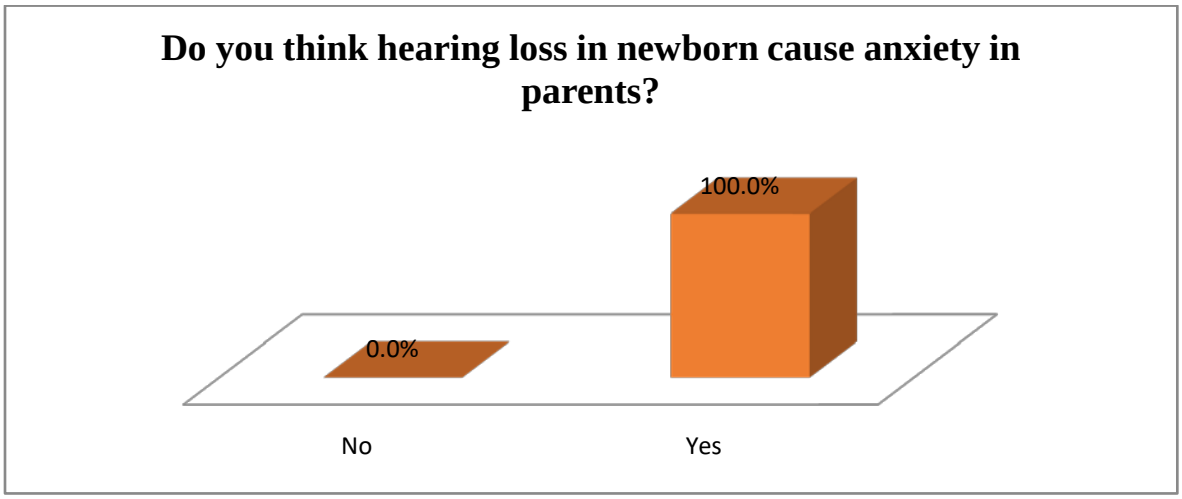
Showing attitude towards child with speech and language problem due to hearing loss should receive speech therapy



W. Hearing loss in newborn cause anxiety in parents

Fig 4.21:

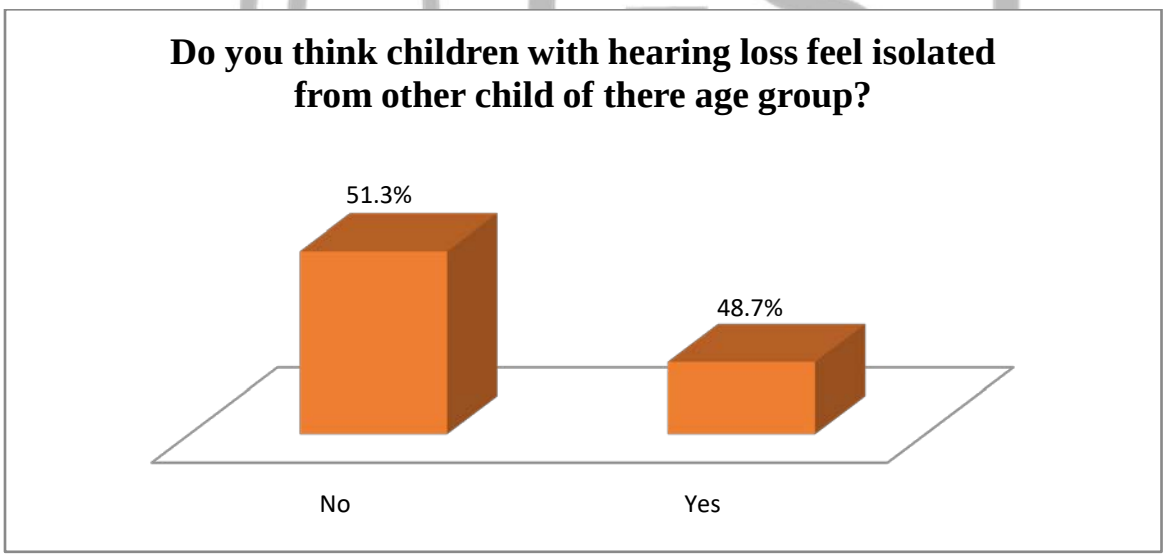
Showing attitude towards hearing loss in newborn cause anxiety in parents



X. Children with hearing loss feel isolated, from other child of their age group

Fig 4.22:

Attitude towards children hearing loss feel isolated, from other child of their age group



On examining the table 4.1 and figures, majority of the nurses are aware or have knowledge about the question no.20 had the highest percentage of awareness followed by question no.17,

question no. 16, question no.12, question no.8 & 9, question no.5, question no.3& 7, question no.10, question no.4, question no.6, question no.2, question no. 18, question no.1 respectively.

And table 4.2 and figures reveal that 96.5% of nurses shows positive attitude the question 21 & 17 followed by question no.14, question no.15, question no.13, question no.11, question no.22 respectively.

DISCUSSION

A questionnaire comprising 22 questions related to hearing loss was developed to assess knowledge and attitudes about newborn hearing screening and the issues related to it in different hospital set ups in Tamil Nadu. The percentage of responses given by 115 nurses was calculated for all 22 questions. As shown in the table 4.1, 71.3% of the nurses were aware about hearing impairment in infants, 71% of the nurses was aware of high fever can cause hearing loss. Only 20% of the nurses were not aware regarding measles can cause hearing loss an 23.5 % of the nurses were unaware about ear discharge as one of the causes of hearing loss. 75.7% of the nurses were aware of the medication can cause hearing loss. 80% of the nurses know harmful consequences of hyperbilirubinemia on infants hearing. Almost 83% of the nurses were aware about ENT and only 32% of them aware of audiologist as a professional.

On contradiction to study done by Hendershot, Pakulski, Thampson, Dowling and Price (2011) 58.2% of the nurses were aware that prolongated noise can cause hearing loss.

78.3% of the nurses where aware hearing loss can be identified soon after birth .40% of the nurses were aware of early identification intervention which was not correlating to the study by Goedart and Moeller (2011).

For the question about infants attitudes regarding hearing loss, almost 21.7% of the nurses replied no for the question ‘ do you think hearing loss can be identified soon after birth, 12.2% of nurses were aware children with hearing loss can still hear and speak, 20.9% nurses were unaware of that children with hearing loss cannot attend regular school, 82.6% nurses knew the importance of hearing aid in management of children with hearing impairment, 82.6% nurses knew the importance of hearing aid in management of children with hearing impairment, .

For the question do you think bewitchment can cause hearing loss' 100% nurses selected 'no' and 0.0 % of reported not sure, 100% of nurses were aware of hearing loss in newborn cause anxiety in parents. 48.7% of nurses were aware of children with hearing loss feel isolated from other child of their age group.

The results of the present study is in accordance with similar study by Sanju, Aggarwal, Choudhary and Yadav (2018) on 115 nurses in North India except for 6 questions related to knowledge and attitude related to newborn hearing screening it may be due to appropriate educational program provided for the nurses in Tamil Nadu related to knowledge, attitude and practices towards newborn hearing, the need of hearing screening, the early identification of hearing loss and impact of hearing loss in children

CHAPTER- V

SUMMARY AND CONCLUSION

Reduced hearing acuity, a hearing level that is greater than 25db HL for adult and 15dB HL for young children in the process of language acquisition, includes the Hard of hearing and the deaf, classified as shown under Hearing loss, oral speech and language disorder are a common concomitant of hearing impairment, there are three type of hearing loss sensorineural hearing loss, conductive hearing loss and mixed hearing loss.

Hearing impairment are caused by abnormalities of structure and function in the auditory system, disorder is often called idiopathic if a specific underlying cause cannot be identified and congenital if it is present at birth, acquired hearing loss which appears after birth.

Infant who are hard of hearing need the right support, care, and early intervention services to promote healthy development. Hearing screening is a first and important step in helping

understand infant may be hard of hearing. Newborn hearing screening the primary purpose of newborn hearing screening is to identify newborns who are likely have hearing loss and who require further evaluation. Secondary purpose is to identify newborn with medical conditions that cause late- onset hearing loss (Joint Committee on infant Hearing (JCIH,2009).

Professionals who care for newborns should know which conditions their state regularly screens for at birth and the specialists available for medical management. Nurses play a important role in neonatal care should have knowledge on conditions of neonate's state regularly soon after birth and in coordinating first level detection and intervention. Nurses can ensure that infants are screened accurately and that families receive referrals for the services they require.

The current study aimed was to adapt a questionnaire from English developed by Sanju, Aggarwal, Choudhary and Yadav (2018) consisting of 22 questions related to hearing loss in neonates and it was translated to Tamil language which was given to nurses via online survey to evaluate their knowledge regarding hearing loss in neonates and attitude towards hearing impairment will be asked in order to assess their knowledge. The translated study was validated by 4 speech language pathologist who was fluent in both English and Tamil. 115 nurses were selected who were working at primary nursing care, corporate and government hospitals and had a minimum education up to graduation level (B.Sc. Nursing). The mother tongue of all the participants was Tamil simultaneously had a good knowledge in English. The subject was divided into a single group. Knowledge and attitude of nurses towards neonatal hearing screening translated in Tamil which was adapted from Sanju, Aggarwal, Choudhary and Yadav (2018). Data required was collected by distributing questionnaire developed in Tamil language to all subjects chosen as sample.

The questionnaire consisted of 22 questions based on knowledge and attitude level of questions. Questionnaire was based on a 3-point rating scale.20 questions had a scoring of 3-point rating scale, 1 question had a scoring of only YES or No and remaining 1 question had a scoring of ENT or Audiologist.

Result revealed that question no.20 had the highest percentage of awareness followed by question no.17, question no. 16, question no.12, question no.8 & 9, question no.5, question no.3& 7, question no.10, question no.4, question no.6, question no.2, question no. 18, question no.1 respectively. And 96.5% of nurses shows positive attitude the question 21 & 17 followed by question no.14, question no.15, question no.13, question no.11, question no.22 respectively. The result of the present study revealed that only few nurses in Tamil Nadu showed poor attitude and knowledge towards newborn hearing screening and the issues related to it. Hence educational program for nursing professional should be continued to improve clinical skill related to newborn hearing screening. This educational program also enhances their professional self-perception.

Limitations of the study:

- Limited sample size.
- Age range above 25years old was not focused on this present study.
- Only 7 questions were there to assess the attitude of nurses towards newborn hearing screening and issues related to it.

Future Directions:

- Sample size can be increased
- More question can be included to assess the attitude knowledge and practices towards newborn hearing screening
- Comparative study can be done on primary nursing care, corporate and government hospital.

CHAPTER- VII

REFERENCES

American Speech and Hearing Association in Hearing screening newborns and infants https://www.asha.org/practice-portal/clinical-topics/hearing-loss/

Abhiruchi, G., Preeti, S., (2019), Challenges and solutions in implementing hearing screening program in India, *Indian journal of community medicine*; official publication of Indian association of preventive & Social Medicine 44 (4), 299.

Alisha, L.J., Ann, W.L., Megan, Barnett., (2018), Nursing students: training and maintaining universal newborn hearing screening knowledge, *Nurse education in practice* 32, 72-77.

Candace H., Lori, A.P., Amy, T., Jamie D., James H.P., (2011) School nurses' role in identifying and referring children at risk of noise induced hearing loss, *The journal of school nursing* 27(5), 380-389.

Camila, P.B., Juliana, B.A., Isabela, Y.D.S.F., Francisca M.P.L., Silvana, M.S.G., (2013), Newborn and infant hearing health education for nursing professionals, *Brazilian journal of Otorhinolaryngology* 79 (2), 226-232.

Caitlyn.R & Alisha.L.J.(2017). Measuring nurses' knowledge and understanding of universal newborn hearing screenings; *Journal of Early Hearing Detection and Intervention*, 2(2),38- 47

Gelfand, S.A. (2009), *Essentials of audiology;* Library of Congress Cataloging-in- Publication Data, Pg No 101-102

Himanshu, K.S., Komal, A., Manisha, C., Arun, K.Y., (2018), Knowledge and attitude of nurses towards infant hearing impairment in north India, *Indian journal of anatomy and surgery of Head & Neck and Brain*, 4 (1).

Kenneth, C.D., Ernesto, A.D., Brian, S. (2012) Identifying quality improvement opportunities in a universal newborn hearing screening program, *American academy of pediatrics* 129 (1), e157-e164.

Linda, A., Cathy, P., Susan, A., Marita, G.T. (2008) Nursing management of hearing impairment in nursing facility residents, *Journal of Gerontological Nursing* 34 (11), 9-17.

Maetha, H.G., Mary,P.M& Karl,R.W.(2011) Midwives knowledge, attitudes, and practices related to newborn hearing screening; *Journal of midwifery & women's health*,56(2),147-153

Minnesota Department of Health (MDH).https: // health. State.mu.us/

Nasim,B.K.,Lavanithum,J & Miriam,A.(2018).The hearing screening experiences and practices of primary health care nurses : Indications for referral based on high-risk factors and community views about hearing loss; *African Journal of Primary Health Care and Family Medicine*,10 (1), 1-11

Rehab, H.E., Abeer, E.B., (2017) Stress and self-efficacy among nurses in neonatal intensive care units, *international journal of research- Granthaalayah* 5 (2), 237-251.

Rafidah, M., Wong, S.M., (2018) Knowledge and Attitude of Malaysian healthcare professionals towards newborn hearing screening program, *Malaysian Journal of public health medicine* 20, 30-39.

Rohit,R.,Dhanshree,B.G.,Krishna,Y.,Judith,A.N.,Lewis.& Rajashekhar.B.(2017).A national survey of knowledge, attitude and practices among pediatricians towards newborn hearing screening in India; *International journal of pediatric otorhinolaryngology* ,95,9-14

.Rosaria, T., Guido, C., Paquela, M., Maria, P.O., Pasqualina, M.P., Simonetta, F., Francesca, Y.R., Alessandro, S., Maria, G.C.S.G., Antonia, G., Massimo, R., (2018) Universal newborn hearing screening in the Lazio region, Italy, *Italian journal of pediatrics* 44 (1), 1-9.

Rohit, R., Dhanshree, R.G., Krishna, Y., Bellur, R., (2018), systematic review of knowledge of attitude towards and practices for newborn hearing screening among healthcare professionals, *international journal of pediatric otorhinolaryngology* 104, 138-144.

The Early Hearing Detection and Intervention (EHDI).

https://mchb.hrsa.gov/material-child-health-initiatives/ early-hearing- detection/

World Health organization (2009) Newborn and infant hearing screening

Retrieved from; https: //newborn and infant hearing screening. WHO 2018.org.

Yojana, S., Girish, M., Sushen, H.B., Somashekhar, N., (2015), Neonatal Hearing screening Program (NHSP): At rural based tertiary care center, *Indian journal of otolaryngology and Head & Neck Surgery* 67 (4), 388-393.

.

CHAPTER VII

APPENDIX

CONSENT FORM

I hereby give my consent for my participation in the project entitled: "PROFICIENCY OF CURRENT PRACTICE IN NEONATAL HEARING SCREENING AMONG NURSES IN TAMIL NADU". I understand that the person responsible for this project is: KAVIYA.B, under the guidance of Mrs. VINI ABHIJITH GUPTA. She has explained that these studies are part of a project that has the following objective: To evaluate nurses' knowledge regarding hearing loss in neonates and attitude towards hearing impairment. She has explained the procedures to be followed and has described benefits to be expected. It has been explained to me that there are no risks involved in participation of this experiment. It has further been explained to me that the total duration of my participation will be less than 10 minutes for . Only KAVIYA.B will have access to the data collected for this study; and that all data associated with this study will remain strictly confidential. KAVIYA.B, under the guidance of Mrs. VINI ABHIJITH GUPTA, has agreed to answer any inquiries that I may have concerning the procedures.

I understand that I may discontinue this study at any time I choose without penalty.

Signature of Subject: _____ Date: _____

Signature of Project Investigator: _____ Date: _____

Signature of Project Supervisor: _____ Date: _____

Proficiency of Current Practices in Neonatal Hearing Screening among Nurses in Tamil Nadu

Name:

Age/Gender:

வ. எண்	கேள்விகள்	பதில்கள்		
1.	குழந்தை பிறக்கும் போது செவிதிறன் இல்லாமல் பிறக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
2.	அதிக காய்ச்சல் ஏற்பட்டால் செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
3.	தட்டம்மையால் செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
4.	காதில் நீர் வெளியேறினால் செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
5.	வலிப்பினால் செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
6.	சில மருந்து வகையினால் செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
7.	மஞ்சள் காமாலை நோயினால் செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
8.	கூடுதல் நேரம் சத்தம் கேட்பதினால் செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
9.	குழந்தை பிறந்தவுடன் தாமதமாக அழுவதினால் செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
10.	இரத்த சொந்தத்தால் திருமணம் நடப்பதினால் பிறக்கும் குழந்தைக்கு செவிதிறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
11.	காது கேளாமை பிறப்புக்குப் பிறகு விரைவில் அடையாளம் காணப்படலாமா?	சரி	தவறு	உறுதியாக இல்லை
12.	காது கேளாமைக்கான சிகிச்சை உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை

13.	காது கேளாமை உள்ள குழந்தைகள் சாதாரண பள்ளியில் சேர முடியுமா?	சரி	தவறு	உறுதியாக இல்லை
14.	குழந்தை பிறந்த உளனே செவி திறன் பரிசோதிக்க நீங்கள் விரும்புவீர்களா?	சரி	தவறு	உறுதியாக இல்லை
15.	காது கேளாமை இருந்தால் குழந்தைக்கு கேள்விச்சாதனம் பயன்படுத்த நீங்கள் அனுமதிப்பீர்களா?	சரி	தவறு	உறுதியாக இல்லை
16.	காது கேளாமைக்கான ஆரம்ப சிகிச்சையானது மேலும் சிக்கலை உண்டாக்காது என்று நீங்கள் கருதுகிறீர்களா?	சரி	தவறு	உறுதியாக இல்லை
17.	மாயமந்திரம் செய்வதினால் குழந்தைகள் செவித்திறன் இழக்க வாய்ப்பு உள்ளதா?	சரி	தவறு	உறுதியாக இல்லை
18.	காது கேளாத குழந்தைகள் எந்த தொழில்முறை நிபுணரை நீங்கள் ஆலோசிப்பீர்கள்?			
19.	காது கேளாத குழந்தைகள் கேட்டு பேசுவதாக நினைக்கிறீர்களா?	சரி	தவறு	உறுதியாக இல்லை
20.	காது கேளாமை காரணமாக பேச்சு மற்றும் மொழி சிக்கல் உள்ள குழந்தை பேச்சு பயிற்சி பெற வேண்டும் என்று நினைகிறீர்களா?	வேண்டுமா		வேண்டாமா
21.	புதிதாக பிறந்த குழந்தையின் காது கேளாமை பெற்றோருக்கு கவலையை ஏற்படுத்தும் என்று நீங்கள் நினைக்கிறீர்களா?	சரி	தவறு	உறுதியாக இல்லை
22.	காது கேளாமை குறைபாடுள்ள குழந்தைகளுக்கு அவர்களின் வயதின் பிற குழந்தைகளிடமிருந்து தனிமைப் படுத்தப்படுகிறார்களா?	சரி	தவறு	உறுதியாக இல்லை

Proficiency of Current Practices in Neonatal Hearing Screening among Nurses in Tamil Nadu

Name:

Age/Gender:

QUESTIONS	YES	NO	NOT SURE
1. Can babies born with hearing loss?			
2. Can high fever cause hearing loss?			
3. Can measles cause hearing loss?			
4. Can ear discharge cause hearing loss?			
5. Can convulsion cause hearing loss?			
6. Can some type of medication cause hearing loss?			
7. Can jaundice cause hearing loss?			
8. Can prolonged noise cause hearing loss?			
9. Can delayed crying at birth cause hearing loss?			
10. Can consanguinity cause hearing loss?			
11. Can hearing loss can be identified soon after birth?			
12. Is treatment of hearing loss available?			
13. Can children with hearing loss able to attend normal school?			

14. Would you like babies hearing tested soon after birth?			
15. Would you let baby use hearing aids if she/he has hearing loss?			
16. Do you consider early treatment of hearing loss will prevent further complication?			
17. Can bewitchment cause hearing loss?			
18. If you find child has problem of hearing to which professional you will refer?			
19. Do you think children with hearing impairment can still hear and speak?			
20. Do you think child with speech and language problem due to hearing loss should receive speech therapy?			
21. Do you think hearing loss in newborn cause anxiety in parents?			
22. Do you think children with hearing loss feel isolated from other child of their age group?			