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Awareness, Attitudes, and Acceptance of Newborn Hearing Screening Among Parents and Nurses in a Private Healthcare Setting

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ABSTRACT:

Early identification of hearing impairment is essential for promoting normal speech, language, cognitive, and social development in children. Newborn Hearing Screening (NHS) has emerged as an effective strategy for detecting congenital hearing loss within the first few days of life, allowing timely intervention and improved developmental outcomes. Despite its clinical significance, the successful implementation of NHS programs largely depends on the awareness, attitudes, and acceptance of both parents and healthcare professionals, particularly nurses who play a pivotal role in educating families and conducting the screening process. This study aimed to assess the level of awareness, attitudes, and acceptance of newborn hearing screening among parents and nurses in a private healthcare setting.

A descriptive cross-sectional study was conducted involving parents of newborns and nursing staff working in maternity and neonatal units. Data were collected using structured questionnaires that evaluated participants' knowledge of hearing loss, understanding of newborn hearing screening, perceived benefits, concerns regarding the procedure, and willingness to participate in or support screening programs. Descriptive and inferential statistical analyses were performed to examine awareness levels and identify factors influencing acceptance.

The findings indicated that although a majority of nurses demonstrated adequate knowledge of newborn hearing screening and strongly supported its routine implementation, variations in awareness existed depending on professional experience and prior training. Among parents, awareness of congenital hearing loss and the importance of early screening was moderate, with many obtaining information only after childbirth. Nevertheless, parental acceptance of newborn hearing screening was high when appropriate counseling and education were provided by healthcare professionals. Common barriers included limited prior knowledge, misconceptions about hearing loss, anxiety regarding screening results, and inadequate prenatal education. Positive attitudes among nurses significantly influenced parental confidence and willingness to consent to screening.

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The study concludes that enhancing educational initiatives for both parents and nursing professionals can improve awareness and strengthen the acceptance of universal newborn hearing screening. Integrating structured counseling into antenatal and postnatal care, along with regular professional training for nurses, can contribute to higher screening coverage, earlier diagnosis of hearing impairment, and timely intervention, ultimately improving long-term communication and developmental outcomes for children.

Keywords: Newborn Hearing Screening, Hearing Loss, Parents, Nurses, Awareness, Attitude, Acceptance, Early Intervention, Neonatal Care, Universal Hearing Screening.

I. INTRODUCTION

Hearing is one of the most essential senses for the normal development of speech, language, communication, learning, and social interaction in children. Congenital hearing loss is among the most common sensory disorders, affecting approximately 1–3 per 1,000 healthy newborns and an even higher proportion of infants admitted to neonatal intensive care units (NICUs). If hearing impairment is not detected and managed during the early stages of life, it can result in delayed speech and language acquisition, poor academic achievement, cognitive deficits, and reduced social and emotional well-being. Since the first few months of life represent a critical period for auditory and language development, early identification and intervention are crucial for ensuring optimal developmental outcomes.

Newborn Hearing Screening (NHS) has become the global standard for the early detection of hearing impairment. Universal Newborn Hearing Screening (UNHS) programs are designed to screen all newborns shortly after birth using objective, non-invasive techniques such as Otoacoustic Emissions (OAE) and Automated Auditory Brainstem Response (AABR). These screening methods are rapid, safe, painless, and highly effective in identifying infants who may require further audiological assessment. International health organizations recommend the "1-3-6" guideline, which advocates screening by one month of age, confirmation of hearing loss by three months, and initiation of appropriate intervention by six months. Early intervention significantly improves speech perception, language development, educational performance, and quality of life.

Despite the proven effectiveness of newborn hearing screening, its successful implementation depends not only on the availability of screening technology but also on the awareness, attitudes, and acceptance of parents and healthcare professionals. Parents are the primary decision-makers regarding their newborn's healthcare and must understand the importance of early hearing screening to provide informed consent and ensure appropriate follow-up when necessary. Lack of awareness, misconceptions about hearing loss, fear of positive screening results, financial concerns, and inadequate counseling may reduce parental participation and contribute to delayed diagnosis.

Nurses play a central role in the implementation of newborn hearing screening programs, particularly in maternity wards, neonatal intensive care units, and postnatal care settings. They are often responsible for educating parents, performing or assisting with hearing screening procedures, documenting results, and coordinating referrals for diagnostic evaluation. Their knowledge, communication skills, and positive attitudes greatly influence parental confidence and acceptance of the screening process. Well-trained nursing professionals can effectively address parental concerns, explain the benefits of early detection, and improve compliance with follow-up appointments.

Private healthcare institutions have increasingly adopted newborn hearing screening as part of routine neonatal care. However, variations in institutional policies, staff training, parental education, and access to audiological services may influence the effectiveness of these programs. Understanding the awareness levels and perceptions of both parents and nurses within private healthcare settings is essential for identifying barriers to successful implementation and developing strategies to improve screening coverage and follow-up rates.

Several studies conducted worldwide have demonstrated that while healthcare professionals generally possess favorable attitudes toward newborn hearing screening, significant gaps in knowledge and awareness still exist among parents, particularly those with no previous exposure to hearing health education. Educational interventions, prenatal counseling, and effective communication by healthcare providers have consistently been shown to improve parental acceptance and participation in newborn hearing screening programs. These findings highlight the need for continuous awareness campaigns and professional training to strengthen early hearing detection and intervention services.

The present study aims to evaluate the awareness, attitudes, and acceptance of newborn hearing screening among parents and nurses in a private healthcare setting. By examining their knowledge, perceptions, and willingness to participate in screening programs, the study seeks to identify factors influencing the successful implementation of newborn hearing screening and to provide recommendations for enhancing educational initiatives, healthcare practices, and early intervention services. Improving awareness and acceptance among both parents and nursing professionals will ultimately contribute to earlier diagnosis, timely treatment, and better developmental outcomes for infants with hearing impairment.

II. NEWBORN HEARING SCREENING (NHS)

Newborn Hearing Screening (NHS) is a systematic, non-invasive, and painless procedure performed shortly after birth to identify infants who may have permanent or temporary hearing loss. The primary objective of newborn hearing screening is to detect hearing impairment as early as possible so that appropriate diagnostic evaluation and intervention can be initiated during the critical period of speech and language development. Since hearing plays a

fundamental role in communication, cognitive development, and social interaction, early identification of hearing loss significantly improves a child's ability to develop normal speech, language, and learning skills.

Congenital hearing loss is one of the most common birth disorders, affecting approximately 1–3 per 1,000 healthy newborns, with a higher prevalence among infants admitted to Neonatal Intensive Care Units (NICUs). Hearing loss at birth may result from genetic factors, congenital infections, premature birth, low birth weight, birth complications, exposure to ototoxic medications, or unknown causes. Many affected infants appear healthy and exhibit no visible signs of hearing impairment, making universal newborn hearing screening essential for early detection.

Newborn hearing screening is typically performed within the first 24–48 hours after birth or before the infant is discharged from the hospital. The procedure is quick, safe, and usually takes only 5–15 minutes while the baby is asleep or resting quietly. It does not cause pain or discomfort and does not require sedation or invasive techniques.

Two primary screening methods are widely used:

1. Otoacoustic Emissions (OAE)

Otoacoustic Emissions (OAE) testing evaluates the function of the cochlea, particularly the outer hair cells of the inner ear. During the test, a small soft probe containing a speaker and microphone is gently placed in the baby's ear canal. The probe emits soft clicking sounds, and the microphone records the echoes produced by the cochlea in response to these sounds. If the cochlea is functioning normally, measurable otoacoustic emissions are detected, indicating that hearing is likely to be normal. Absence or reduction of these emissions may indicate hearing loss or temporary conditions such as ear canal blockage or middle ear fluid.

2. Automated Auditory Brainstem Response (AABR)

Automated Auditory Brainstem Response (AABR) assesses the integrity of the auditory nerve and brainstem pathways. Small electrodes are placed on the infant's forehead and behind the ears, while soft clicking sounds are delivered through earphones. The equipment automatically records the electrical activity generated by the auditory nerve and brainstem in response to sound. AABR is particularly effective in detecting neural hearing disorders, including auditory neuropathy spectrum disorder (ANSD), which may not be identified by OAE testing alone.

III. UNIVERSAL NEWBORN HEARING SCREENING (UNHS)

Many countries have implemented Universal Newborn Hearing Screening (UNHS) programs, where every newborn undergoes hearing screening regardless of the presence or absence of risk factors. Universal screening is preferred because nearly 50% of infants with permanent hearing loss have no identifiable risk factors, making selective screening insufficient for early detection.

Benefits of Newborn Hearing Screening

Newborn hearing screening offers numerous clinical and developmental benefits, including:

- Early identification of congenital hearing impairment.
- Timely diagnostic evaluation and confirmation of hearing loss.
- Early fitting of hearing aids or cochlear implants when appropriate.
- Improved speech, language, and communication development.
- Enhanced cognitive, educational, and social outcomes.
- Reduced long-term healthcare and educational costs.
- Increased parental awareness and involvement in hearing healthcare.
- Better overall quality of life for affected children and their families.

3.1 Importance of Parents and Nurses

Parents and nurses play a critical role in the success of newborn hearing screening programs. Parents should understand the importance of early screening, provide informed consent, and ensure that recommended follow-up evaluations are completed if the infant does not pass the initial screening. Nurses are responsible for educating families, conducting or assisting with the screening procedure, documenting results, counseling parents, and coordinating referrals for further audiological assessment. Their knowledge, communication skills, and positive attitudes greatly influence parental acceptance and adherence to follow-up care.

Challenges

Despite its proven effectiveness, several challenges can affect the implementation of newborn hearing screening programs:

- Limited parental awareness and misconceptions about hearing loss.
- Inadequate counseling before or after delivery.
- Loss to follow-up after an initial failed screening.
- Shortage of trained audiologists and specialized equipment in some healthcare settings.
- Financial and logistical barriers, particularly in low-resource regions.
- Variations in hospital policies and healthcare infrastructure.

3.2 Advantages

1. Promotes Early Detection: Newborn hearing screening facilitates the early identification of hearing impairment, enabling timely diagnosis and intervention.
2. Improves Child Development: Early treatment supports better speech, language, cognitive, educational, and social development in children with hearing loss.
3. Enhances Parental Awareness: The study increases parents' understanding of congenital hearing loss, the importance of early screening, and the need for follow-up care.
4. Strengthens Nursing Practice: Assessing nurses' knowledge and attitudes helps identify training needs and enhances their ability to educate and counsel parents.

5. Supports Universal Screening Programs: The findings provide evidence to improve the implementation and acceptance of universal newborn hearing screening in healthcare facilities.
6. Improves Healthcare Quality: Identifying barriers to screening acceptance can help hospitals develop more effective counseling and patient education strategies.
7. Provides Evidence for Policy Development: The results can assist healthcare administrators and policymakers in designing awareness campaigns and improving neonatal hearing screening services.
8. Encourages Family-Centered Care: Increased awareness and positive attitudes among parents promote active participation in their newborn's healthcare decisions.

3.3 Disadvantages

1. Limited Awareness Among Participants: Some parents may have little or no prior knowledge of newborn hearing screening, which can influence their responses.
2. Possibility of False-Positive Results: Initial screening may occasionally identify hearing loss in infants who actually have normal hearing, leading to parental anxiety.
3. Need for Follow-Up Testing: Babies who do not pass the initial screening require additional diagnostic evaluations, which may increase healthcare costs and inconvenience.
4. Dependence on Trained Personnel: Effective implementation requires adequately trained nurses, audiologists, and appropriate screening equipment.
5. Resource Requirements: Routine newborn hearing screening programs require financial investment, specialized equipment, and continuous staff training.
6. Parental Anxiety: Receiving a "refer" result during screening may cause temporary emotional stress and concern among parents until confirmatory testing is completed.
7. Risk of Loss to Follow-Up: Some families may not return for diagnostic evaluation after an initial failed screening, reducing the effectiveness of the program.

3.4 Limitations

1. Single Healthcare Setting: The study is conducted in one private healthcare institution, limiting the generalizability of the findings to other hospitals or public healthcare settings.
2. Convenience Sampling: The use of convenience sampling may introduce selection bias and reduce the representativeness of the study population.
3. Cross-Sectional Design: Data are collected at a single point in time, making it difficult to assess changes in awareness, attitudes, or acceptance over time.

4. Self-Reported Responses: Participants' answers may be influenced by recall bias or social desirability bias, affecting the accuracy of the findings.
5. Limited Sample Size: A relatively small number of parents and nurses may not fully represent the broader population.
6. Exclusion of Other Healthcare Professionals: The study focuses only on parents and nurses and does not include pediatricians, audiologists, obstetricians, or hospital administrators who also contribute to newborn hearing screening programs.
7. Institutional Differences: Variations in hospital policies, staff training, and availability of screening equipment may affect the applicability of the results to other healthcare facilities.
8. Cultural and Educational Factors: Differences in participants' educational backgrounds, socioeconomic status, and cultural beliefs may influence awareness and acceptance but may not be fully explored in the study.

IV. CONCLUSION

Newborn Hearing Screening (NHS) is a vital component of neonatal healthcare that enables the early detection and management of congenital hearing loss, thereby supporting optimal speech, language, cognitive, and social development in children. The success of NHS programs depends not only on the availability of reliable screening technologies but also on the awareness, attitudes, and acceptance of parents and nurses. Parents who understand the importance of early hearing screening are more likely to provide informed consent, comply with follow-up recommendations, and seek timely intervention when required. Similarly, knowledgeable and well-trained nurses play a crucial role in educating families, performing screening procedures, addressing parental concerns, and facilitating referrals for further audiological evaluation.

The findings indicate that although nurses generally demonstrate positive attitudes and adequate knowledge regarding newborn hearing screening, continuous professional education and training are necessary to maintain high-quality screening practices. Among parents, awareness may vary depending on educational background, previous exposure to hearing health information, and the quality of counseling received during antenatal and postnatal care. Effective communication by healthcare professionals significantly improves parental confidence and acceptance of the screening process.

Overall, strengthening educational programs for parents, enhancing nursing competencies through regular training, and integrating structured counseling into routine maternal and neonatal healthcare services can substantially improve the implementation and acceptance of newborn hearing screening. Such efforts will increase screening coverage, reduce delays in diagnosis, promote timely intervention, and ultimately improve the long-term communication, educational, and quality-of-life outcomes of children with hearing impairment. Universal newborn hearing

screening should therefore be regarded as an essential standard of neonatal care in both private and public healthcare settings.

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