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Universal Newborn Hearing Screening Programme in Nigeria: Overview and Emerging Issues

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ABSTRACT

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Although universal newborn hearing screening (UNHS) program is indispensable to improving the health level of newborns, two thirds of the people with simple to extreme hearing impairment live in developing nations including Nigeria. Thus, surveying the current UNHS practices in Nigeria is considered imperative to discern the existing UNHS model and identify the existing issues and challenges facing UNHS implementation in the country. Based on the comprehensive review of reports, published research, and other relevant materials, this paper presented a logic-based and empirically-based conceptual discussion regarding the existing UNHS model in Nigeria. The findings of this research indicate that implementation of the UNHS in Nigeria is still at low ebb. The little success recorded in the implementation of UNHS is mostly noticeable in Lagos, South-western Nigeria. There are however problems and challenges, which include deficiency of the screening equipment and inadequate facilities for training the manpower, hindering the implementation of the program in Nigeria. Although there is no problem that is unsurmountable, some of the ways-out of these problems and issues include: recruitment of more hands to handle the screening, creation of awareness using both print and electronic media to sensitize the parents on the importance of UNHS, and creation of awareness to the expectant mothers by the health providers during the pre- natal periods. Also, government should create more screening centers which should be well-equipped. There should also be periodic seminars and workshops to update the knowledge of the concerned health workers caregivers. In addition, literature review conducted in this paper revealed that there is dearth of research on UNHS in the context of Nigeria. Therefore, future researchers should direct their focus towards UNHS research field as this will expand the scope of the existing body of knowledge.

Keywords:

UNHS, audiologists, hearing problems, hearing screening, Nigeria

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1. Introduction

Universal newborn hearing screening (UNHS) program is indispensable to improving the health level of newborns. This assertion is underpinned by the fact that UNHS facilitates early diagnosis and treatment of hearing problems in the newborns and prevention of hearing impairment associated with deficiency in language, social, emotional, and cognitive growth of newborns [1]. UNHS was introduced to facilitate early discovery of newborn hearing problem and intervention so that the increasing rates of hearing-related problems would be curbed [2], because the hereditary and initial-on-set deafness or acute-to-extreme hearing damage ranged from 0.5 to 5 per 1000 newborns, and thus signified alarming rate at which in-born hearing impairment spread in the global nations. Nevertheless, it is held that half of all cases of hearing impairment are avoidable via primary prevention [3].

Drawn upon World Health Organization's (WHO) report, which indicates that two thirds of the people with simple to extreme hearing impairment live in developing nations [4], and the fact that the level of UNHS implementation in Nigeria is low, surveying the current UNHS practices in Nigeria is considered imperative to discern the existing UNHS model in Nigeria and identify the existing issues and challenges facing UNHS implementation in the country. It is hoped that this would ensure that the objectives of the program are achieved successfully, and any evolving problem is dealt with effectively using some probable recommendations regarding what could be done to improve the program's implementation.

2. Overview of UNHS

To have a full understanding of what UNHS is all about, it is pertinent to examine the key terms that constitute UNHS as a concept. The term "screening" from medical point of view is a method of recognizing evidently healthy persons who could be at risen risk of an infection or circumstance. Its target is to classify persons who are at possibility of suffering certain disease or medical disorder before they demonstrate some indication of experiencing it while the term newborn refers to a human infant from the time of birth through the 28th day of life [5]. Newborn screening refers to several tests done in the early existences of a baby's life in a bid to prevent perilous health effect on babies and their families [6]. These tests may be carried out to detect health effects such as measles, meningitis, severe malaria, hearing loss among others in the newborns. Moreover, UNHS is an approach devised to classify hereditary deafness and earshot damage in babies before they leave the hospital [7]. It involves the application of neutral testing techniques (usually Oto acoustic emission (OAE)) and assessing or automated auditory brain stem response (AABR). The genesis of baby earshot screening is traceable to the recommendation of Babbidge Report of 1965 in U.S.A. The report projected the expansion and general execution of universally functional procedure for timely discovery and valuation of hearing deficiency [8]. The major milestone in implementation of UNHS was the establishment of the joint committee on infant hearing (JCIH) in 1969. The committee made up of agents of audiology otolaryngology, pediatrics and nursing. It started with a declaration of dual obligations: first, to effect proposals vis-à-vis the initial documentation of offspring with a possibility of having earshot loses; secondly, baby in earshot screening may perhaps not be justified at that stage, owing to lack of proper assessment procedures.

The committee's key submission has been publication of position statement summarizing the circumstance of science and art of baby earshot, besides advocating the perfect practice in timely discovery and proper involvement of babies and kids who are likely to have earshot injury. In 1972, the proclamation of Joint Committee On Infant Hearing (JCIH) outlined the major great risk factor

for earshot damage and offered next toddlers with these great danger of factors: account of transmissible baby hearing deficiency, inborn perinatal contamination such like rubella or other none bacteria fetal contagion like cytomegalovirus and herpes; Croniofaciad Anomalies; birth weight fewer than One Thousand and Five Hundred (1500) grains and a Billirubin level more than Twenty (20) by 1982, bacterial meningitis and severe asphyxia were additional. Between this 1982 and 1994, JCIH added additional risk indicators. All these were used as yardsticks by JCIH for detecting and observing the suspected earshot injury. In 1994, JCIH adopted universal detection of hearing loss in newborns and infants and specified that all babies with hearing deficiency be known before three (3) months of ages and get intervention by six (6) months. JCIH then recommended that the neonates be evaluated and assessed prior to hospital discharged.

Pursuant to this recommendation, JCIH's first stakeholders' meeting was held in 1995 in Dallas. The meeting's reports were issued in the American Journal of Audiology where it was acknowledged by the committee followers that wrongly planned programs would be harmful to timely discovery efforts. JCIH in 2000 recommended universal screening of earshot injury before clinic release and ascertains ethics and procedures for infirmaries and national level programs. The proclamation promoted a method that was indispensable for discovery and intervention of early earshot harm. It endorsed screening before clinic release, persistence and diagnosis for babies requiring further upkeep and the intervention and recuperation for kids known with earshot deficiency. It should be noted that the 2000 JCIH's statement was midwived by the publication and recommendation of pediatric clinics of North American in 1999. In 2007, JCIH endorsed timely revealing of and intervention for toddlers with earshot damage by joined interdisciplinary federal, state and community systems of UNHS appraisal and family centered in intervention [9].

The 2013 JCIH's statement was a supplement to that of 2007. It offered broad guidelines for prompt earshot discovery and intervention programs on inaugurating strong suitable intervention system with applicable proficiency to proffer a solution to the children who are deaf or hearing injury. Finally, the 2017 recommendation of the JCIH was tagged newborn screening contingency plan.

The essence of this idea is to expedite collaboration amid central, local and state agencies efforts to examine newborn for known situations through a civic health emergency. This determination is narrow to those sites of the newborn screening system (screening assessment, diagnosis and persistence treatment and administration, appraisal and teaching), for which the state civic health organization undertakes an oversight responsibility.

3. Functions of UNHS

UNHS is mainly for timely discovery and intervention of hearing loss among neonates. UNHS aims at ensuring that babies are exposed to testing for every edge of human role capacity mainly to discover the kid's earshot status [10]. Also owing to the establishment of JCIH in 1969, the aim of UNHS was divided into two: to give advices about the initial documentation of offspring with or at possibility for earshot damage and to screen the newborns who are at risk [11]. Moreover, the JCIH (2007) broadened and extended the aims of UNHS as its recommendation aims at applying the screening services to all newborns regardless of whether the newborns are at high risk or not [12]. In addition, implementation of UNHS has a lot of advantages. It is significant to the caregivers, the newborns and their parents as well as the society at large; one of the advantages of UNHS is the ability to reduce the average age at which permanent hearing loss could be established from three (3) months to around twenty-four (24) months.

4. UNHS in Nigeria and the Emerging Issues

Like many other developing countries, implementation of the UNHS in Nigeria is still at low ebb. The great pervasiveness of earshot injury (about 14%) has been acknowledged by one investigation conducted in 1995 among college age youths in normal schools. Meanwhile, Federal Government of Nigeria established National Child Health policy in the year 2002, and the policy is saddled with the responsibility of reducing the effect of earshot damage on initial baby development. Thus, it could be asserted that UNHS program started in Nigeria in the year 2002 [13].

However, there was no meaningful development and success recorded. The first significant implementation of UNHS in Nigeria was carried out in the year 2005 by a local non-governmental institute (Hearing International Nigeria) in alliance with Lagos State and Federal Ministries of health, which was the first preliminary child hearing assessment conducted between May 2005 and April 2006, and total number of three thousand, three hundred and thirty-three (3333) children were examined either in the clinic at delivery ($n=1330$) or in four (4) communal infirmaries when they have gotten Bacille de calmette-Guerin (BCG) immunization (2003). About ninety-nine percent (99%) of qualified babies were fruitfully examined at a mean age of 1.3 days in the infirmaries compared to eighty-eight percent (88%) of children at a mean age of 17.7 days in the community where the majority were born outside hospital services [14].

Also, a similar screening was done in Benin City South-South Nigeria in 2005 by University of Benin Teaching Hospital. Children at the chosen vaccination center in Benin Town were examined for earshot damage via discovery and investigation of distortion product Oto Acoustic Emission. A total of four hundred (400) neonates comprising two hundred and eighteen (218) males and one hundred and eighty-two (182) females were examined for the occurrence of Otoacoustic emission in the two (2) ears. The assessment test revealed that 6.5 per cent of bilateral brand-new hearing injuries in Benin Town demands authorization and intervention [15].

Moreover, it can be inferred that the current development of UNHS in Nigeria is not encouraging. So far, the numbers of hospitals implementing the program are not increasing. This is buttressed by the opinion by the duo of Professor Abayomi Somefun and Professor Julius Ademokoya, in which the duo expressed sadness that despite the emphasis on UNHS implementation in the advanced nations, it is still at low ebb in Africa, particularly Nigeria [16]. They highlighted dearth of rehabilitative and diagnostic apparatus, insufficient workers and training services among others as the problems impending implementation of UNHS in Nigeria.

Two studies regarding UNHS were carried out in Nigeria between 2005 and 2006. The first study indicated that screening was carried out in Lagos by Hearing international Nigeria (HIN), which is a non-governmental organization in alliance with the Federal and Lagos State Health Ministry. The results of the study signified that, in the community-based program, positive and negative probability ratio were two hundred and six-eight (268) and zero-point-two (0.2) respectively. Also, there are high cost of testing per child and the fee per baby identified with sensorineural earshot damage and hyperbilirubinemia necessitating interchange blood transfusion, and dearth of capable guide at delivery. The results however show that regular examination of kids attending BCG vaccination health center by community health personnel without preceding anthropological knowledge is feasible and effective in the initial discovery of perpetual congenital or preliminary commencement of hearing injury in Nigeria [14].

The second study was carried out in Benin City by Okhakhu and colleagues of the University of Benin. The study is titled "Neonatal Hearing screening in Benin City". The study identified the fact that inborn earshot damage is a foremost health care challenge that tends to hinder the growing indicators of kids. The study revealed a great unpolished incidence of six-point-five percent (6.5%)

of two-sided newborn hearing deficiency in the City of Benin necessitating authorization and intervention. The study buttresses the requirement for earshot assessment amid all newborn in emerging states [15]. Another finding regarding UNHS is that highly trained health workforce of the community could magnificently examine babies for PCEHL. This is in line with the view that professionals could play an increasing function in the delivery of basic community-oriented earshot health-care services and validates recent initiatives addressed at reducing the shortage of health workers in resource-poor settings. Likewise, significant is the practicability of utilizing consistent immunization infirmaries as a useful platform for carrying out child hearing screening/assessment in an emerging state.

Thus, infant health intervention need to be adapted to provide for both hospital and non-hospital deliveries [17]. The most worrisome and disturbing issues and challenges regarding execution of UNHS in Nigeria is the effects of inability of stakeholders, particularly the government to implement the program based on the standard of the World Health Organization (WHO). This is evident from sadness expressed by the experts and professionals in the health sectors in Nigeria. Government is tasked on screening newborn for hearing loss, given that an association of speech pathologists and audiologists is apprehensive over the growing occurrences of earshot injury despite the progresses recorded in medical teaching. Similarly, Professor Abayomi Somefun of Orhinology of the college of Medicine, University of Lagos, has expressed fear over excessive occurrence of hearing damage, revealing that over eighty-point-five (8.5) million of the citizens suffers from the challenge. Somefun acknowledged that kids are the highest susceptible group to ear deficiencies. He expressed further that no fewer than three-point-five (3.5) million Nigeria kids have hearing problems which got worsen by poor implementation of UNHS.

The most current National Survey's report on earshot deficiency and deafness in Nigeria revealed that about three-point-five (3.5) million babies within the phase of 0-15yrs are suffering from devastating hearing damage. Moreover, at the international conference of the SPAAN, which was held in 2016 and organized in Lagos, Somefun pointed out that shortage of diagnostic and apparatus, together with the insufficient workforces and training amenities in the nation deteriorate the hearing conditions of Nigerians as over one hundred and seventy (170) million has about two hundred and fifty (250) ear, nose, and throat challenges, while there are less than 50 audiologists and speech psychoanalysts each. This indicates shortage of ear specialists. In the entire nation, we have merely ten (10) equipped and audiological centers, and they are completely privately-owned, but poorly equipped. There are no training programs for medical audiologists and speaking/speech therapists in the nation's universities [18].

Additionally, the little success and achievement recorded in the implementation of the program is mostly noticeable in Lagos, South-western Nigeria. For instance, with the support of international donors such as Natus Medical inc; USA, Oto dynamics (UK) Ltd and Oticon foundation among others, community-based and hospital-based UNHS programs were carried out in Lagos between 2005 and 2008 [19]. To ensure effective implementation of UNHS program all over the country, several issues identified by the association of speech pathologist and Audiologist in Nigeria (SPAAN) such as deficiency of the screening equipment and inadequate facilities for training must be addressed.

5. Conclusion

Going by the foregoing, there is no gain saying in the fact that UNHS is beneficial to both the caregivers and the neonates, and it is very important to their neonates' growth and development. Nevertheless, implementation of the UNHS in Nigeria is still at low ebb. The little success recorded

in the implementation of UNHS is mostly noticeable in Lagos, South-western Nigeria, and with the support of international donors, community-based and hospital-based UNHS programs were carried out in Lagos between 2005 and 2008. There are however problems and challenges hindering the implementation of the program in Nigeria. Although there is no problem that is unsurmountable, some of the ways-out of these problems and issues include: recruitment of more hands to handle the screening, creating awareness using both print and electronic media to sensitize the parents on the importance of UNHS, and creation of awareness to the expectant mothers by the health providers during the pre- natal periods. In addition, government should create more screening centers which should be well-equipped. There should also be periodic seminars and workshops to update the knowledge of the concerned health workers caregivers. Functional equipment and program layout are significant predictors of enhanced knowledge of health practitioners [20].

It is noteworthy here that the literature review conducted in this paper revealed that there is dearth of research on UNHS in the context of Nigeria. Therefore, future researchers should direct their focus towards UNHS research field as this will expand the scope of the existing body of knowledge.

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