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Newborn hearing screening in a South African private health care hospital

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Summary

Objective: Early Hearing Detection and Intervention (EHDI) programs are being established as part of the public health systems in increasing numbers of countries. In developing countries, however, little progress has been made towards implementing NHS programs and South Africa's public and private health care sectors is no exception. The current study presents the first report on a hospital-based UNHS program conducted in the South African private health care sector to provide preliminary results towards advocating for and guiding future programs.
Methods: A retrospective study of a UNHS program at a private hospital in urban Gauteng, South Africa over a 4 year period of time was performed. Screening was conducted with Transient Evoked Otoacoustic Emissions (TEOAE) with a rescreen recommended within 6 weeks if referred. Diagnostic audiological assessments were performed on those infants referring the rescreen. The discharge screening costs were subsidized through the hospital birthing package for the first 22 months of the program.
Results: Six thousand two hundred and forty-one newborns were screened from 13,799 hospital births during the first 4 years. Ninety-four percent of these infants were from the well-baby nurseries. During the initial 22 months, whilst the service was subsidized as part of the hospital birthing package, coverage of 75% was attained compared to 20% during the subsequent 26 months. The overall referral rate for the screening program across the 4 years was 11.1% but referral rates decreased by between 2 and 4% for each year of program existence with a 5% rate in year 4. Only 32% of the rescreens were completed at the hospital and no data was available for the remaining infants because parents were provided a choice of follow up centers. Referral for a diagnostic assessment after the rescreens at the hospital was predictive of sensorineural hearing loss in one-third of cases and the estimated prevalence was 3 in every 1000.
Conclusions: Screening coverage in the current study was not adequately high and can be attributed to insufficient parental knowledge to make an informed decision.

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Improvements in program efficiency over time also suggest that pilot programs must be monitored over sufficiently long periods of time to allow observations of optimal efficiency. Initial referral rates and prevalence data indicate a large hearing loss burden and the capacity to implement increasingly efficient programs in South Africa.

1. Introduction

Early identification of hearing loss through newborn hearing screening (NHS) programs has proven to be the most effective way of identifying affected children early enough to ensure optimal outcomes [1]. NHS yields dramatic benefits, since infants whose hearing loss is identified before 6 months of age have significantly better language abilities compared to those whose hearing loss were identified later [2—4]. Intervention before the age of 6 months enables infants to develop and maintain language skills on par with their cognitive development and in the average range of age-appropriate language skills. This is in stark contrast with the below average language skills demonstrated by infants identified after 6 months of age [2]. The high prevalence of childhood hearing loss and its amenability to early intervention emphasises the importance of screening for the condition.

It is not surprising therefore that Universal Newborn Hearing Screening (UNHS) has become a powerful professional and technological movement with widespread influence within developed countries such as the USA and UK [5]. Early Hearing Detection and Intervention (EHDI) programs are established as part of the public health system in both of these countries and 95% of all newborns in the United States are being screened before discharge. Many other countries are following the examples set by these countries and Poland for example now screens 99% of all newborns before they leave the hospital [6]. It is clear therefore that UNHS is becoming part of standard medical care for neonates [7].

In a country like South Africa, however, the vast majority of children have no prospect of having their hearing screened despite a reasonably established health care infrastructure compared to other developing countries [12—14]. A limited number of small NHS programs are spread across the public and private health care sectors [13]. Unfortunately, there are no surveys documenting the current status of early identification of hearing loss in South Africa. Existing programs are often insufficiently managed and supported within hospitals without systematic data capturing. Apart from a recent report on infant hearing screening at immunization clinics there are no other published reports on NHS in South Africa [10]. This is despite an increased risk amongst South African infants for hearing loss due to environmental risks, especially the burden of infectious diseases such as HIV/AIDS [15].

The South African health care sector is characterized by widespread inequality due to an inherited system from the apartheid era that was originally intended to primarily benefit the white minority. The majority of South Africans, comprising approximately 80—85% of the population, are currently served by a public healthcare sector, which only utilizes 39% of the countries' total health care expenditure. This is in stark contrast to a wealthy minority, comprising 15—20% of the population, which make use of private health care services that constitute 61% of the total health expenditure [16]. Private health care services in South Africa are therefore exclusively reserved for those who can afford to belong to a private medical insurance scheme or who can pay for services out of pocket. Despite these large disparities, however, the public health care sector has succeeded in increasing access to the majority of the population as is evident in the high rates of antenatal care and assisted deliveries compared to other countries in Sub-Saharan Africa [17].

Despite more advanced health care in private hospitals few newborn hearing screening programs are being implemented [13]. Recent reports from South Africa has demonstrated initial developments towards NHS in the public health care sector with no reports on the status of screening in the private sector. The dearth of reports evidences the fact that few hearing screening programs are being conducted in both public and private health care settings [13]. Since it is clear that funds are much more accessible in the private health care sector it is worrisome that even in these settings newborn hearing screening is not part of standard neonatal medical care. Various factors including a lack of awareness amongst gatekeeper health care professionals and parents regarding the prevalence of infant hearing loss and the dramatic benefits of early intervention, may be attributing to the current state of screening in South Africa.

Pilot studies serve as an essential means to advocate the importance of early identification of hearing loss followed by subsequent intervention. Research evidence from such studies provides epi-