INFANT HEARING SCREENING AT MATERNAL AND CHILD HEALTH CLINICS IN A DEVELOPING SOUTH AFRICAN COMMUNITY

BY

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SUBMITTED IN
PARTIAL FULFILMENT OF THE REQUIREMENTS
FOR THE DEGREE
D.PHIL. COMMUNICATION PATHOLOGY
IN THE
DEPARTMENT OF COMMUNICATION PATHOLOGY
FACULTY OF HUMANITIES
UNIVERSITY OF PRETORIA
PRETORIA

NOVEMBER 2004

ACKNOWLEDGEMENTS

The author is especially grateful to

- *Prof. René Hugo*, for her motivational guidance, support and wisdom, not only in my studies but in my career and future as an audiologist and academic – … the years under your guidance have been a privilege and your example has left an indelible impression

- *Prof. Brenda Louw,* for her dedicated guidance, high standards of excellence and continued support – … your academic and personal support leaves me thankful and inspired

- *Rina Owen* and *Andre Swanepoel,* for their statistical support and patient explanations

- *My family,* for their continued support, understanding, and prayers

- *Marli,* for her understanding, prayers and willingness to help wherever she could – … you have made finishing this study all the more sweet

'...so that God may be all in all'

1 Cor 15:28b

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LIST OF ABBREVIATIONS

AABR	-	Automated Auditory Brainstem Response
AAP	-	American Academy of Pediatrics
ABR	-	Auditory Brainstem Response
AIDS	-	Auto-immune Deficiency Syndrome
AN	-	Auditory Neuropathy
ANHSC	-	Australian National Hearing Screening Committee
ASHA	-	American Speech-Language-Hearing Association
daPa	-	Deca Pascal
DPOAE	-	Distortion Product Oto-Acoustic Emissions
EHDI	-	Early Hearing Detection and Intervention
ENHR	-	Essential National Health Research
HIV	-	Human Immune Virus
HL	-	Hearing Level
HPCSA	-	Health Professions Council of South Africa
HRR	-	High-Risk Register (for Hearing Loss)
HSPS	-	Hearing Screening Position Statement
IHS	-	Infant Hearing Screening
JCIH	-	Joint Committee on Infant Hearing
MEE	-	Middle-Ear Effusion
MCH	-	Maternal and Child Health
NHS	-	Newborn Hearing Screening
NICU	-	Neonatal Intensive Care Unit
NIDCD	-	National Institute for Deafness and Other Communication Disorders
NIH	-	National Institute of Health
OAE	-	Oto-Acoustic Emissions
TEOAE	-	Transient-Evoked Oto-Acoustic Emissions
TNHS	-	Targeted Newborn Hearing Screening
TPP	-	Tympanic Peak Pressure
UNHS	-	Universal Newborn Hearing Screening
UNICEF		United Nations Children's Fund
USPSTF		US Preventative Services Task Force
WHO		World Health Organisation

ABSTRACT

TITLE: Infant hearing screening at maternal and child health clinics in a developing South African community
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Newborn hearing screening has become an increasingly important element of neonatal care in developed countries whilst only a few fragmented screening programmes are evident in developing countries. The numerous socio-economic, cultural and healthcare barriers in developing contexts do not, however, negate or diminish the need to ensure optimal outcomes for infants with hearing loss through early identification and intervention programmes. South Africa has taken a first step toward addressing this need by publishing a Year 2002 Hearing Screening Position Statement that was produced by the Professional Board for Speech, Language and Hearing Professions of the Health Professions Council of South Africa. Interim recommendations are made toward universal newborn hearing screening programmes in three contexts: well-baby nurseries,; neonatal intensive care units (NICU) and Maternal and Child Health (MCH) clinics through their 6-week immunisation programmes. Although these clinics constitute an unfamiliar hearing screening context, they are essential platforms toward widespread screening of the majority of infants in South Africa. An urgent need therefore exists to ascertain the feasibility of hearing screening programmes at MCH 6-week immunisation clinics in order to guide the future implementation of widespread hearing screening services in South Africa.

To attend to this need, an exploratory descriptive design that jointly implements quantitative and qualitative methods in a dominant-less-dominant model of triangulation was utilised to critically describe a screening programme conducted at two MCH clinics in Hammanskraal (a developing, peri-urban South African community). The quantitative methods included a structured interview to compile

biographical and risk information; high frequency immittance measurements; hearing screening with OAE and AABR according to specified protocols, and diagnostic assessment of referred infants. The qualitative methods included field notes and critical reflections describing clinics as screening contexts and elucidating interactional processes involved in sustaining programmes. A total number of 510 infant-caregiver pairs were enrolled as subjects during the five-month research period.

Results indicate that clinics not only provide a suitable context, but also the possibility of effective collaborations toward facilitating effective initial infant hearing screening programmes. The caregivers and infants who attended the clinics demonstrated significant degrees of socio-economic deprivation. They also reported an increased incidence of risk indicators exacerbating the population's risk for congenital hearing loss, poor participation in the hearing screening/follow-up process, and subsequent poor involvement in a family-centred early intervention process for infants identified with hearing loss. The screening protocol effectively classified infants into risk categories for hearing loss and established useful norms for high frequency immittance in infants. The efficiency of the programme was acceptable considering the short period of implementation, but inefficient coverage with the AABR and poor follow-up return rates were obtained at the clinics.

Despite prevailing barriers, the MCH 6-week immunisation clinics showed promise as platforms for widespread hearing screening programmes for infants in South Africa. The clinical implications and recommendations that emerged from the research conducted in this study were compiled and presented in the form of a preliminary service delivery model for infant hearing screening at MCH clinics.

***Key words**: audiological services, developing countries, early hearing detection and intervention programmes, high frequency immittance, high-risk register, immunisation programmes, infant hearing, maternal and child health, newborn hearing screening, services delivery model, South Africa.*

OPSOMMING

TITEL:	Gehoorsifting van babas by moeder-kind-gesondheidsorgklinieke in ‘n ontwikkelende Suid-Afrikaanse gemeenskap
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Neonatale gehoorsifting het ‘n toenemend belangrike element van neonatale sorg in ontwikkelde lande geword terwyl daar in ontwikkelende lande slegs enkele gefragmenteerde siftingsprogramme bestaan. Die uitdagings op sosio-ekonomiese, kulturele en gesondheidsorggebied in ontwikkelende kontekste verminder egter nie die behoefte aan optimale uitkomste vir kinders met gehoorverlies deur middel van vroeë identifikasie- en intervensieprogramme nie. Die Professionele Raad vir die Spraak-, Taal- en Gehoorprofessies van die Suid-Afrikaanse Raad vir die Gesondheidsprofessies het ‘n eerste tree geneem om hierdie behoefte aan te spreek met ‘n Jaar 2002 Gehoorsiftingsverklaring. Interim aanbevelings is gemaak met die oog op universele neonatale gehoorsiftingsprogramme in drie kontekste: gesondebaba-eenhede; by ontslag uit neonatale intensiewesorgeenhede en deur die 6-week immuniseringsprogramme van moeder-kind-gesondheidsorgklinieke. Hoewel hierdie klinieke ‘n ongewone gehoorsiftingskonteks is, bied dit ‘n essensiële platvorm vir uitgebreide sifting van die meerderheid babas in Suid-Afrika. Daar bestaan dus ‘n dringende behoefte aan die bepaling van die toepaslikheid van gehoorsiftingsprogramme by moeder-kind-gesondheids- en immuniseringsklinieke om leiding te gee ten opsigte van die implementering van toekomstige uitgebreide gehoorsiftingsdienste in Suid-Afrika .

Ten einde hierdie behoefte aan te spreek, is ‘n eksploratiewe beskrywende ontwerp, wat beide kwantitatiewe en kwalitatiewe metodes in ‘n model van triangulasie implementeer, aangewend om ‘n kritiese beskouing van ‘n gehoorsiftingsprogram by twee moeder-kind-gesondheidsklinieke in Hammanskraal (‘n ontwikkelende,

buitestedelike Suid-Afrikaanse gemeenskap) te verskaf. Die volgende kwantitatiewe metodes is gebruik: ‘n gestruktureerde onderhoud om biografiese en risiko-inligting te versamel, hoë-frekwensie immittansiemetings, gehoorsifting met OAE en OBR volgens gespesifiseerde protokolle, en diagnostiese assessering van babas wat verwys is. Die kwalitatiewe metodes het veldnotas en kritiese refleksie aangaande die klinieke as siftingskonteks ingesluit, en ook lig gewerp op die interaktiewe prosesse vir die volhoubaarheid van programme. Altesaam 510 babaversorger-pare is tydens die vyf-maandelange navorsingsperiode as proefpersone ingeskryf.

Resultate dui daarop dat die klinieke nie slegs ‘n gepaste konteks daarstel nie, maar ook die moontlikheid bied van doeltreffende samewerking met die oog op die fasilitering van suksesvolle gehoorsiftingsprogramme. Die versorgers en babas wat die klinieke besoek het, het beduidende grade van sosio-ekonomiese agterstand vertoon. Daar was ook by hulle ‘n verhoogde voorkoms van risikofaktore wat die bevolking se kanse vergroot om aan kongenitale gehoorverlies te ly en om onvoldoende in te skakel by die gehoorsiftings- en opvolgproses, asook by ‘n gesinsgesentreerde vroeë-intervensieproses vir babas met gehoorverlies. Die siftingsprotokol was effektief om babas in risikokategorieë vir gehoorverlies te verdeel en het bruikbare norme vir hoë-frekwensie immittansiemetings in babas verskaf. Die doeltreffendheid van die program was aanvaarbaar, gesien dat dit nog maar vir ‘n baie kort tydperk geïmplementeer is. Die OBR se bruikbaarheid en die swak terugkeersyfer vir opvolgevaluasies was egter oneffektief.

Ten spyte van voortdurende uitdagings hou die moeder-kind gesondheidsorg- en immuniseringsklinieke heelwat belofte in as platvorms vir uitgebreide gehoorsfitingsprogramme van babas in Suid-Afrika. Die kliniese implikasies en aanbevelings wat uit die navorsing in die huidige studie voortspruit, is saamgestel en aangebied in die formaat van ‘n voorlopige diensleweringsmodel vir gehoorsifting van babas by moeder-kind gesondheidsorgklinieke.

***Sleutelwoorde**: oudiologiese dienste, ontwikkelende lande, vroeë gehooridentifiserings- en intervensieprogramme, hoë-frekwensie immittansie, hoë-risiko register, immuniseringsprogramme, gehoor by babas, moeder-kind gesondheid, neonatale gehoorsifting, diensleweringsmodel, Suid-Afrika.*