Early Detection and Intervention in Audiology

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Exploring Early Detection of Hearing Impairment in Sub-Saharan Africa

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Early detection of hearing impairment continues to be a challenge in the sub-Saharan African context, as well as in South Africa specifically. This challenge is due to a number of factors, including the health care context; other health care priorities that are the focus of the government; and a lack of resource allocation for successful, national implementation of newborn hearing screening (NHS). Another major challenge facing the region is linked to the social determinants of health.

This chapter explores early detection services in sub-Saharan Africa. It begins by describing the regional context, particularly health and health care and the availability of audiology and otolaryngology services, which are vital for the implementation of NHS programmes. The prevalence and incidence of hearing loss is presented, followed by a discussion of the principles for early detection of hearing impairment as defined by the Health Professions Council of South Africa’s (HPCSA) early hearing detection and intervention (EHDI) guidelines. These guidelines are the only contextually relevant guidelines in the sub-Saharan context. Thereafter, a review of published evidence related to NHS in sub-Saharan Africa, and specifically South Africa, is presented. The chapter concludes with solutions and recommendations for early detection of hearing impairment in light of the challenges presented.

There are 49 countries in sub-Saharan Africa, of which seven are island states (Agyepong et al., 2018; Simkins, 2019). In 2017, the region had approximately 1.06 billion inhabitants (Statista, 2019). The population in sub-Saharan Africa continues to rise rapidly, and is expected to be the fastest-growing population of any of the world regions between 2015 and 2050 (Simkins, 2019). Given this context, access to equal and equitable health care remains a challenge (Chirwa, 2016).

Several factors contribute to inequality, inequity and poor-quality services in health care. Historically, access to health care has been a challenge for individuals of lower socio-economic status in sub-Saharan Africa. The reasons for this include: poor management of health care institutions; inadequate and insufficient health care personnel; physical and economic aspects related to access, especially when health care facilities are not located close
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to the population they serve; and financial constraints for patients who have to bear health care costs themselves (Olugbenga, 2017).

Health and health outcomes are not only affected by access to health care, but also by multiple, complex factors related to the social determinants of health (Ataguba, Day, & McIntyre, 2015). The social determinants of health are defined as the circumstances in which people are born, grow up, live, work and age, and the systems put in place to deal with illness (World Health Organization [WHO], 2017). Hence, the social determinants of health are influenced by social, political, economic, environmental and cultural factors, as well as those affecting human rights and gender equality (Ataguba et al., 2015). While these factors and the policies governing them do not directly impact health, they have a bearing on health and health equity (WHO, 2008). It is therefore vital to consider the impact of the social determinants of health when addressing health inequalities in specific countries or contexts. Scott, Schaay, Schneider, and Sanders (2017) propose an adapted conceptual framework for the determinants of health in South Africa. This framework describes biological and behavioural factors as having an immediate impact on health, socio-cultural factors as having an intermediate influence, and living and working conditions as well as structural factors (such as inadequate collaborative institutional and governance support and policies, resource distribution and inequity in political power) as having a distal or upstream influence. Khoza-Shangase discusses other contextual realities and challenges in the South African health care context in chapter 5. These need to be faced in order to contextualise EHDI in larger health care systems and against competing health care priorities.

Health priorities in sub-Saharan Africa

Health priorities and health performance have been monitored globally through the initial declaration of the Millennium Development Goals (MDGs) (Blumberg, Frean, & Moonasar, 2014). These eight goals, defined in 2000, are: 1) eradication of extreme poverty and hunger; 2) universal primary education; 3) gender equality; 4) reduction of child mortality; 5) improvement of maternal health; 6) combating HIV/AIDS, malaria and other diseases such as tuberculosis (TB); 7) ensuring environmental sustainability; and 8) developing a global partnership for development (Mayosi et al., 2012; WHO, 2015). Goals 4 to 6 are directly linked to health (Pillay & Barron, 2014).

Fifteen years later, the 2015 MDG report indicated that sub-Saharan Africa’s performance in relation to the health goals was the poorest globally (United Nations, 2015). Maternal deaths were reported to be concentrated in sub-Saharan Africa and Southern Asia, which together accounted for 86 percent of such deaths globally in 2013. Similarly, sub-Saharan Africa was
reported to be one of the two regions with the highest newborn mortality in the world. This is despite an overall reduction in the under-five mortality rate and a global increase in coverage of preventative care strategies such as measles vaccinations. Additionally, this region also accounts for a large proportion of individuals living with HIV and AIDS. East Africa and southern Africa are home to approximately 6.2 percent of the world’s population and just over half of the total number of individuals living with HIV reside in these regions (Avert, 2019; UNAIDS, 2019). South Africa remains the epicentre of the pandemic, with 20 percent of all HIV-positive individuals and 4,500 newly infected individuals per week (Allinder & Fleischman, 2019).

The burden of disease in Africa has predominantly comprised acute and infectious diseases, such as malaria, TB and measles. However, over the last 25 years, both chronic communicable and non-communicable diseases such as HIV/AIDS, ischaemic heart disease, stroke and diabetes have become significant contributors to the burden of disease. This is coupled with weak health care systems as health expenditure, infrastructure and the number of skilled professionals relative to the population remain insufficient (Agyepong et al., 2018). South Africa faces a quadruple burden of disease: maternal, infant and child mortality; HIV/AIDS and TB; non-communicable diseases (NCDs); and injury and violence (Department of Health [DoH], 2011; Naidoo, 2012).

Despite some progress towards achieving the MDGs, major challenges persist in the MDG priority areas. These challenges need to be addressed if further progress is to be made in reducing maternal and child mortality, and in combating communicable diseases such as HIV/AIDS, TB and malaria (WHO, 2018). An expansion of focus on the global health agenda led to a shift from the MDGs to the development of 17 sustainable development goals (SDGs). These pay attention to a broader set of social determinants of health and are sensitive to equity, which could have a substantial effect on health (Scott et al., 2017). Goal 3 has a clear and detailed focus on health, with 10 other goals also concerned with health issues. More than 50 indicators have been agreed upon for the measurement of health outcomes, health provision and proximal determinants of health. These indicators are thematically grouped as follows (WHO, 2018):

- reproductive, maternal, newborn and child health
- infectious diseases
- NCDs and mental health
- injuries and violence
- universal health coverage and health systems
- environmental risks
- health risks and disease outbreaks.

The director-general of the WHO, Tedros Adhanom Ghebreyesus, emphasises that ‘maintaining momentum towards the SDGs is only possible if countries
have the political will and the capacity to prioritize regular, timely and reliable data collection to guide policy decisions and public health interventions’ (WHO, 2018, p. v). Political will and commitment to the goal of universal health coverage should be expressed in legal mandates and translated into policies (Aregbeshola, 2017).

Health and health care in sub-Saharan Africa, where health spending is low, remain a global concern, and aid from the West has been increasingly targeted towards health (Deaton & Totora, 2015). Health spending by governments is generally the primary source of health funding globally. However, in sub-Saharan Africa, only about a third of health spending originates from government (Micah et al., 2019). A study examining government health spending and its determinants found variations in terms of spending across 46 countries in sub-Saharan Africa. Of these countries, South Africa has one of the highest levels of government health spending, thought to be associated with the high burden of HIV/AIDS in the country (Micah et al., 2019).

The growth in global health resources, in terms of government spending and development assistance for health, occurred during the same period as the MDGs (Micah et al., 2019). Since 2000, there has been an increase in foreign aid to low-income countries in order to facilitate their chances of meeting the MDGs (WHO, 2014). As of 2013, health expenditure made up between 20 and 69 percent of government spending in 26 of the least developed countries in sub-Saharan Africa (WHO, 2014). While there are debates regarding the effectiveness of foreign aid, findings from a study in Rwanda indicate positive associations with foreign aid and government spending in terms of service provision for maternal and child health, HIV, malaria and TB (Lu, Cook, & Desmond, 2017). The commitment to these aspects of the burden of disease and their link to the MDGs appear to have resulted in improved dedication and prioritisation of health from 2000 to 2015 (Micah et al., 2019). Within this framework of prioritising health, adequate human resources, such as health care workers, are needed for efficient health care service provision.

Health care and hearing health care services in sub-Saharan Africa

‘Functioning health systems require a qualified health workforce that is available, equitably distributed and accessible by the population’ (WHO, 2018, p. 8). Although the African continent has 25 percent of the global burden of disease, it has 3 percent of the world’s health workers (Crisp, 2011). In many African countries, the primary health care (PHC) workforce has limited training, which results in primary care rarely being equipped to serve
as a foundation for the health care system (Mash et al., 2018). However, countries such as Ghana, Botswana, Uganda, Kenya and Nigeria have established training programmes for family physicians, with Ethiopia and Malawi having implemented such training (Mash et al., 2018). In South Africa, family physicians are positioned at primary and district levels of health care. They require an extended range of procedural skills within a generalist environment, while providing support to the primary care platforms (Mash, Ogunbanjo, Naidoo, & Hellenberg, 2015).

Prevention and promotion are key aspects to service delivery in PHC platforms. Prevention and management of otolaryngology-related diseases require a team approach, with PHC delivered by professional nurses, clinical officers and general practitioners, and specialised care by ear, nose and throat (ENT) specialists, audiologists and other related specialities (Fagan, 2018).

Audiological and ENT services have been reported to be extremely poor in sub-Saharan Africa, with an inequitable distribution of services and limited training opportunities (Fagan & Jacobs, 2009). Hence, individuals requiring audiological and ENT services may not be able to effectively access them. Given the prevalence of hearing loss, this lack of availability of services raises concern for service provision. Furthermore, it risks leading to preventable auditory pathologies going undetected or untreated, which may result in hearing impairment, with a consequent negative impact on quality of life and economic productivity (Mulwafu, Ensink, Kuperd, & Fagan, 2017).

Mulwafu and colleagues (2017) report that there has been some improvement since 2009, with the establishment of six new ENT training programmes in sub-Saharan countries. Two new audiology and speech-therapy training programmes have been established in Ghana and Kenya, and new ENT training programmes in Rwanda, Zimbabwe and Ethiopia. In other countries, such as Malawi, Kenya, Mali, Togo and Cameroon, there has been little overall change in the number of qualifying ENT surgeons, audiologists and speech therapists per year (Mulwafu et al., 2017). In 2014, Zambia reportedly had five otolaryngologists and one audiologist in a population of 14 million (Mwamba, 2014).

A 2015 follow-up survey on services in sub-Saharan Africa indicated that in the 22 countries from which responses were obtained, there were a total of 847 ENT surgeons, 580 audiologists, 906 speech therapists and 264 ENT clinical officers (Mulwafu et al., 2017). When comparing these figures to those in 15 countries that participated in the 2009 survey (Fagan & Jacobs, 2009), results indicate an increase in the number of ENTs and audiologists. However, this increase needs to be viewed in relation to the overall increase in population size during this period, which may still reflect a significantly high patient-to-professional ratio, particularly in countries such as the Democratic Republic of Congo, Lesotho, Madagascar and Senegal (Mulwafu et al., 2017). Moreover, if data from South Africa,
Kenya and Sudan were to be excluded, the actual number of audiologists may be even lower (Mulwafu et al., 2017). This human resource disparity has serious implications for the implementation of EHDI in these regions, particularly if the prevalence and incidence of hearing impairment is on the rise, as estimated by the WHO.

**Prevalence and incidence of hearing impairment**

Globally, approximately 0.5 to 5 in every 1 000 neonates and infants present with congenital or early childhood onset hearing impairment that is severe to profound (WHO, 2010). More recent estimates indicate that 34 million of the 466 million individuals worldwide with disabling hearing loss are children, of whom 7.5 million are below five years of age (Neumann, Chadha, Tavartkiladze, Bu, & White, 2019). Within this global framework, prevalence rates have been reported to be higher in low and middle-income (LAMI) contexts, which are worst affected (Olusanya & Newton, 2007). These countries comprise 80 percent of the world’s population, and are home to two-thirds of individuals with hearing impairment (Tucci, Merson, & Wilson, 2010). A review of population-based studies in 2011 estimated that 16 million children have a hearing impairment ≥35 decibel hearing level (Stevens et al., 2011). From this global estimate, prevalence rates were noted as being the highest in South Asia, sub-Saharan Africa and the Asia Pacific regions (Neumann et al., 2019; Stevens et al., 2011). Although these results are not specific to newborns and infants, prevalence rates in LAMI countries may be attributed to the higher prevalence of environmental risk factors for hearing impairment in these contexts (Olusanya & Newton, 2007). Such risk factors include infectious diseases; the use of ototoxic drugs; limited access to prenatal, perinatal and postnatal health care (Tucci et al., 2010); and pre- and postnatal infections such as rubella, measles and meningitis (Stevens et al., 2011). However, despite the estimated high incidence of hearing impairment in these countries, the causes have not been well documented.

The incidence of bilateral hearing impairment is estimated to be six or greater per 1 000 live births (Olusanya, Ruben, & Parving, 2006). This is in contrast to the lower incidence of bilateral, sensorineural hearing impairment, which is reported to be at a rate of two to four per 1 000 live births in high-income countries where NHS programmes are mostly well established (Tucci et al., 2010).

NHS pilot programmes in Nigeria have suggested a much higher prevalence of 28 per 1 000 live births. This rate is inclusive of all degrees of sensorineural hearing impairment and is thus by far the highest rate reported globally (Olusanya, 2011; WHO, 2010). In South Africa, it is estimated...
nationally that the prevalence of hearing impairment is four to six in every 1,000 live births in the public health care sector. This is approximately double the rate documented for the private health care sector, where a prevalence of three in every 1,000 has been estimated (Swanepoel & Störbeck, 2009). This higher estimated occurrence in the public health care sector highlights a greater need for audiological services in this sector in South Africa.

It is thus evident that prevalence rates differ within developing contexts and may be due to the differences in frequency of common risk factors for hearing impairment in each context, such as rubella, meningitis, measles and congenital cytomegalovirus. Risk factors like rubella, mumps and meningitis have become less common in some regions of the world, but have remained unchanged or increased in other regions (The Lancet, 2017). These differences in the incidence and prevalence of preventable conditions are probably due to a higher incidence of infections or diseases coupled with fewer maternal and child health programmes (Neumann et al., 2019). These risk factors highlight the importance of exploring preventative care and early detection of hearing impairment, which is key to facilitating the provision of timely diagnosis and intervention.

Preventative care in the context of EHDI

Preventative care comprises primary, secondary and tertiary prevention. Primary prevention refers to the elimination of exposure to certain conditions that may result in a specific health outcome. In the context of EHDI, primary prevention of newborn or infant hearing impairment can be achieved through addressing maternal exposure to environmental factors and other diseases or health conditions that may increase the risk of the unborn child developing a hearing impairment (Alvarez, 2008).

Secondary prevention refers to the use of measures that may lead to earlier diagnosis and treatment of conditions. In the context of EHDI, these initiatives may include early identification of hearing impairment through the provision of NHS prior to hospital discharge (Alvarez, 2008). Tertiary prevention refers to strategies that decrease the difficulties associated with disability. In terms of EHDI, this may relate to early intervention services (such as fitting of amplification, aural habilitation and culturally and linguistically appropriate communication interventions) that are provided to newborns and infants with confirmed hearing impairment, as well as intervention services for their families (Alvarez, 2008).

For EHDI programmes to yield positive outcomes, it is important that all three levels of prevention, particularly primary and secondary, are carefully considered and incorporated within the principles of early detection of hearing impairment.
Principles for early detection of hearing impairment

EHDI programmes are aimed at identifying and diagnosing hearing impairment in newborns and infants as soon as possible, as well as providing timely intervention to these individuals in order for them to reach their maximum potential (Joint Committee on Infant Hearing [JCIH], 2007). This objective is guided by a number of principles first outlined by the JCIH in 2000. In the sub-Saharan context, South Africa has taken the lead, with the HPCSA’s Professional Board for Speech, Language and Hearing Professions developing and publishing a set of guidelines that clearly highlight the principles for early detection of hearing impairment (HPCSA, 2018). Of the six EHDI principles, five are specifically related to early identification of hearing impairment:

- **Principle 1:** All infants are afforded access to hearing screening through the use of physiological measures, with the initial hearing screening conducted by one month of age in hospital settings and six weeks of age in PHC clinic settings. Screening can be conducted in a variety of contexts such as the neonatal intensive care unit, high care ward, kangaroo mother care ward, well-baby nurseries, PHC clinics and midwife obstetric units (MOUs). The platform for screening is dependent on the health care system in each district.

- **Principle 2:** All infants should have access to an effective referral system if they do not pass the initial screen and any subsequent rescreen. The referral system should be efficient and prompt to ensure appropriate audiological and medical evaluations in order to confirm the presence of hearing impairment. Confirmation of hearing impairment should occur by three months of age in hospital programmes and no later than four months of age in clinic-based programmes.

- **Principle 3:** Infants who pass the initial hearing screening but present with any risk indicators for progressive, late-onset bilateral hearing impairment, other auditory disorders and/or speech and language delay should receive ongoing monitoring. This should be done by caregivers and/or primary care providers who are informed of the risks and the communication developmental milestones. Audiological monitoring protocols should be evidence-based.

- **Principle 4:** Infant and family rights should be guaranteed through upholding ethical practice in terms of informed choice and consent, and appropriate provision of audiological screening and assessment results that are in agreement with other health care and educational information.

- **Principle 5:** An integrated information system should be used to manage information related to hearing screening and/or any follow-up assessments. Efforts should be made to integrate this information.
These principles serve as a good foundation for ensuring the provision of efficient and integrated early detection programmes, and can also serve as a way of monitoring progress using the suggested ages for completing identification and diagnosis of hearing impairment. Their applicability to a variety of NHS contexts is key, especially for countries in sub-Saharan Africa where different levels of service delivery exist, and they can serve as a platform for early detection programmes.

Early detection of hearing impairment in sub-Saharan Africa

Published literature from sub-Saharan Africa has inconsistently reported on the aforementioned principles. Some studies have focused on aetiologies and degree of childhood hearing impairment (Banda et al., 2018; Gopal, Hugo, & Louw, 2001; Wonkam et al., 2013), while others have focused on NHS programmes for early detection of hearing impairment and the feasibility of telehealth to extend these screening services to larger populations (Ameyaw, Ribera, & Anim-Sampong, 2019). The exploration of telehealth is particularly useful in contexts where road networks, distance from health care facilities and transport costs preclude attendance or follow-up, but this does not come without challenges, including ethical dilemmas. Naudé and Bornman explore the ethical considerations of tele-audiology for EHDI in chapter 13.

Studies specifically focused on early detection through NHS have been documented in Nigeria, Côte d’Ivoire, Malawi and South Africa (Akinola, Onakoya, Tongo, & Lasisi, 2014; Brough, 2017; De Kock, Swanepoel, & Hall, 2016; Okhaku, Ibekwe, Sadoh, & Ogisi, 2010; Tanon-Anoh, Sanogo-Gone, & Kouassi, 2010). NHS has been piloted in hospital settings as well as immunisation clinics in Nigeria. Although immunisation clinics received support from government and the mean age for the initial hearing screening was 10.55 days, the lack of electrophysiological measures for the second-stage screening, high infant mortality from infectious diseases and a poor follow-up return rate were reported challenges when implementing NHS in Benin, Nigeria (Okhaku et al., 2010). Similar challenges were reported in another study conducted in a hospital context in Nigeria (Akinola et al., 2014).

Immunisation clinics in both PHC settings and the neonatal intensive care units in a hospital setting were explored as contexts for NHS in Côte d’Ivoire. A coverage rate of 87.4 percent was reported, with diagnosis of hearing impairment by 22 weeks of age. Despite both these contexts serving as feasible platforms for NHS, investment in equipment, staffing and efficient data management systems for follow-up were reported as being essential (Tanon-Anoh et al., 2010). A pilot project in Malawi explored various contexts for NHS, such as private maternity units, community-based
immunisation clinics and kangaroo or special care units in a hospital setting (Brough, 2017). Screening in a hospital setting was found to be unfeasible due to the lack of follow-up. In addition, there were only two audiology departments equipped for diagnostic assessments. Despite the possible feasibility of immunisation clinics, adequate services for diagnostic assessments need to be carefully considered in this country prior to the expansion of NHS services.

Early detection of hearing impairment in South Africa

Detection of hearing impairment is not considered high on the priority list in South Africa due to the government’s other health care priorities. South Africa faces a quadruple burden of disease with the health system struggling to cope with four major health issues: NCDs which are chronic diseases; communicable diseases, particularly HIV and TB; maternal and child health (morbidity and mortality rates); and death from injury and violence (DoH, 2014; Naidoo, 2012). The South African government is focused on health promotion aimed at combating diseases or reducing mortality rates, while increasing life expectancy and health system effectiveness (DoH, 2014). Specific challenges in the private health care sector include aspects related to NHS services not forming part of the birthing package or institutional policy. Early detection programmes in this sector have also not been supported by medical aid schemes (Meyer & Swanepoel, 2011), although Discovery, one of the largest schemes, started showing an interest in 2019 in funding screening programmes.

Programmes for early detection of hearing impairment in South Africa have not been standardised nationally, with documented differences existing between provinces as well as between the public and private health care sectors (Meyer & Swanepoel, 2011; Theunissen & Swanepoel, 2008). Overall, results from NHS studies in South Africa have revealed poor coverage rates and limited implementation of universal newborn hearing screening (UNHS) due to a number of context-specific challenges (Table 2.1).

The number of UNHS programmes implemented in the private health care sector has been limited. A UNHS programme conducted over a four-year period at a private health care hospital in South Africa reported a 75 percent coverage rate within the first 22 months when hearing screening was included in the hospital birthing package. This coverage rate decreased to 20 percent when parents were financially responsible for the NHS services (Swanepoel, Ebrahim, Joseph, & Friedland, 2007). A national survey conducted in the private health care sector in South Africa indicated that only 14 percent of obstetric units offer true UNHS (Meyer & Swanepoel, 2011).
Table 2.1 Summary of findings from studies related to early hearing detection in South Africa

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<thead>
<tr>
<th>Context</th>
<th>Province</th>
<th>Coverage rates</th>
<th>Age of identification of hearing impairment</th>
<th>Pros and cons</th>
<th>Study</th>
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<tbody>
<tr>
<td>MOUs</td>
<td>Western</td>
<td>Not documented</td>
<td>Mean age at initial screening documented as 6.1 days</td>
<td>Well-trained and -managed screeners can be used successfully&lt;br&gt;Good follow-up return rates for screening&lt;br&gt;Loss to follow-up when referred for diagnostic assessment&lt;br&gt;Variability in diagnostic assessment protocols</td>
<td>De Kock, Swanepoel, &amp; Hall, 2016</td>
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<tr>
<td>MOUs</td>
<td>Gauteng</td>
<td>38 percent at initial screening</td>
<td>Not documented</td>
<td>Screening at the three-day MOU assessment clinic was more practical&lt;br&gt;Time of discharge did not always coincide with audiologist’s working hours&lt;br&gt;Lack of staffing, equipment and resources&lt;br&gt;Noise levels at the clinic were not ideal</td>
<td>Kanji, Khoza-Shangase, Petrocchi-Bartal, &amp; Harbinson, 2018; Khoza-Shangase &amp; Harbinson, 2015</td>
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A significant 47 percent of the private health care units included in the survey reported not performing NHS. Although risk-based or targeted newborn hearing screening (TNHS) may yield a greater coverage rate, more units (18 percent) reported conducting screening on request or referral in comparison to TNHS (Meyer & Swanepoel, 2011). This lack of UNHS programmes has also been documented in the public health care sector (Theunissen & Swanepoel, 2008).

Findings from an earlier national survey among public sector hospitals in eight of the nine South African provinces indicated that an estimated 7.5 percent of public sector hospitals provide some form of NHS, and less than 1 percent provide UNHS (Theunissen & Swanepoel, 2008). As a result, PHC clinics and MOUs were proposed as a platform for UNHS with the rationale that the PHC level provides an opportunity for improved coverage and follow-up return rates (HPCSAl, 2007; Swanepoel, Hugo, & Louw, 2006). PHC has also been viewed as having a set of values and principles that support universal health care access and address the social determinants of health (Mash et al., 2018; Scott et al., 2017). A few studies in South Africa have explored or piloted early hearing detection programmes at different levels of service delivery (Bezuidenhout, Khoza-Shangase, De Maayer, & Strehlau, 2018; De Kock et al., 2016; Kanji, Khoza-Shangase, Petrocchi-Bartal, & Harbinson, 2018; Khoza-Shangase & Harbinson, 2015). Table 2.1 details findings from these studies.

Despite the various programmes piloted in different health care contexts in a few provinces in South Africa, early hearing detection programmes have not yet been implemented at a national level. There is a great need for

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<td>Not documented</td>
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<td>Bezuidenhout, Khoza-Shangase, De Maayer, &amp; Strehlau, 2018</td>
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Table 2.1 details findings from these studies.
resources in terms of staffing and equipment for screening and diagnostic assessment to ensure timely detection and diagnosis of hearing impairment. In chapter 4, Petrocchi-Bartal, Khoza-Shangase and Kanji explore the feasibility of implementing early detection programmes at various levels of service delivery in the South African context.

Solutions and recommendations

Audiologists should engage with EHDI guidelines or position statements where they exist in their countries. In the absence of these guidelines, LAMI countries in sub-Saharan Africa should consider using the South African guidelines as a foundation to contextualise EHDI in terms of key principles and benchmarks for their respective health care context(s). Provincial and national forums should be used as platforms to advocate for the mandating of existing EHDI guidelines by the DoH in South Africa, and by relevant structures in the rest of the continent.

In countries where audiologists or hearing health care services are limited or non-existent, South Africa could lead the way with sharing best practice and suggesting possible solutions for these contexts. One such solution may be to implement appropriate NHS services at different levels of service delivery. For example, UNHS at PHC level and TNHS at hospital level may increase coverage rates and facilitate the screening of both well babies and high-risk neonates. If and where possible, non-audiologists who have been adequately trained, with adherence to the United Nations task-shifting guidelines, may also be used to conduct NHS as this will address the evident human resource shortages. However, NHS programmes would still need to be managed by a qualified audiologist, as is regulated in the South African context.

PHC re-engineering in countries such as South Africa needs to be considered as a platform for early detection services, particularly as this strategy forms the cornerstone of addressing the social determinants of health (Scott et al., 2017). PHC also provides a commitment to universal health coverage and primary care, which are important when considering early detection of hearing impairment. In addition, there should be a key emphasis on health reforms in resource-constrained contexts such as South Africa, by ensuring the inclusion of not only curative but also preventative and promotive primary health services (Ataguba et al., 2015). Early detection of hearing impairment is thus important, particularly as it is a secondary prevention strategy within the PHC service delivery.

The SDGs include indicators related to maternal, newborn and child health, and universal coverage. Framing early hearing detection services within these indicators may facilitate support from government, and ensure that whatever initiatives are implemented have political backing and are
therefore sustainable. Foreign aid and government health spending have reportedly increased during the period of the MDGs. Similarly, addressing SDGs will also require resources. Perhaps the use of foreign aid during the period of SDGs may be effective in supporting the implementation of UNHS services, if mandated by government.

Conclusion

Countries in sub-Saharan Africa face many health-related challenges, including access to health care as well as a high prevalence of communicable and non-communicable diseases, which are prioritised over hearing health care. This is despite some of these diseases, such as HIV/AIDS and TB, having possible audiological manifestations. In some countries, the overburdened health care system is further exacerbated by a shortage of ear and hearing health care professionals in relation to the population that needs to be served. These challenges influence the implementation of early hearing detection services and adherence to the early hearing detection principles, which are aimed at facilitating maximum potential in children presenting with hearing impairment. Hence, interim approaches to early detection of hearing impairment need to be explored in each context as health service delivery models may differ in each country. This exploration may include primary and middle-level workers in NHS as well as the use of PHC settings to ensure universal coverage. Effective data management systems and referral pathways for diagnostic assessment need to be established in order to reduce loss of follow-up, which may result in missed cases of hearing impairment.

References


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