International Journal of Innovation and Applied Studies
ISSN 2028-9324 Vol. 31 No. 2 Dec. 2020, pp. 223-238

http://www.ijias.issr-journals.org/

A situational analysis of ear and hearing care in the northwest region of Cameroon

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ABSTRACT: The Sustainable Development Goals focus on promoting the wellbeing and health of everyone, including persons with hearing impairments, estimated at 466 million globally. Service provision is needed for these goals to be realized. This paper presents a situational analysis of ear and hearing care services in the Northwest Region of Cameroon, to contribute to the development of improved services. The paper provides a baseline overview of what is known about ear and hearing care, including a context analysis, suggestions on realistic targets for change, and recommendations for further work, policy development, and research. The World Health Organization Ear and Hearing Care Situational Analysis Tool for data collection and analysis was used to collect data from a cross section of respondents including providers and beneficiaries of services. Results indicate that there is a severe shortage of ear and hearing services, limited accessibility to medical products and health technologies, no training avenues locally available and no clear strategy to identify and address components and gaps. The study recommends an urgent need for the design of a 5-year strategic plan to address the gaps which should include strong representation from the deaf and hearing-impaired communities. This plan should ensure that every hospital and health center has a clear process for assessing clients of all ages for hearing impairments and that processes facilitating the acquisition of hearing care technologies are established. More broadly Information on hearing care needs to be shared in the mainstream and the deaf communities.

KEYWORDS: Hearing, Deafness; Hearing Loss, Hearing care, Hearing Impairment, Ear Diseases, Health Surveys, Situational Analysis.

1 INTRODUCTION

Ensuring healthy lives and promoting wellbeing for everyone at all ages, including persons with hearing impairments, constitutes a focus of the Sustainable Development Goals (UN, 2015). Given that 466 million people are estimated to be living with disabling hearing impairments, many of them living in sub-Saharan Africa (WHO, 2019), there is need for good service provision for these goals to be realized.

Hearing loss can be prevented and managed, and people with hearing loss can be supported to have good quality lives when health and hearing care services are provided. The fact that most of the causes of hearing loss are preventable (Wonkam et al 2015) further emphasizes the need for hearing care related services. As is the case in many parts of Africa, thousands of people in Cameroon live with hearing loss, which is not well documented or supported (Wonkam et al 2013). Additionally, little is known about ear and health care (EHC) services in Cameroon.

The WHO defines ear and hearing care as "comprehensive, evidence-based interventions to prevent, identify, and treat ear diseases and hearing loss, and to rehabilitate and support persons with hearing loss" (WHO, 2015: 6). The provision of such services takes commitment from governments, non-governmental organizations, and related stakeholders. At a national level, the development and implementation of a strategy to provide comprehensive EHC assures that all people who need EHC receive it at the appropriate time with limited socioeconomic constraints. For those involved in EHC, an assessment of the situation related to EHC is necessary. Having a clear understanding of what is known about the epidemiology, including

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common and rare causes of hearing loss, can assist governments and health organizations to plan and deliver services. Clearly assessing the available human resources, programs, and associations can identify strengths and gaps in systems to facility system strengthening. EHC services need to be understood in the broader context of health, disability, rehabilitation, and social systems, as well as other sectors such as industry and education, in which they occur. It is within this framework that this situational analysis was done.

According to the World Health Organization, conducting a situation analysis can achieve several objectives, including:

- "to assess the available direct and indirect policies, services and human resources related to ear and hearing care;
- to describe the framework and functioning of the health care system in the country, in the context of ear and hearing care;
- to assess the need for ear and hearing care services;
- to identify opportunities for promoting and sustaining integrated ear and hearing care along the continuum of care, at all levels of the health system." (WHO, 2015 p.6)

Situational analyses can be conducted at national and subnational levels, and used for policy change, advocacy, and strategic planning. A situational analysis may be initiated by the Ministry of Health, by ear and hearing care professionals and associations, or by nongovernmental organizations (NGOs) working in the field. In the case reported here, the analysis was done by an international team to inform practice, research, and project development.

The purpose of this situational analysis was to provide a baseline overview of the situation of EHC in the Northwest Region (NWR) of Cameroon, including what is known and not known about EHC; provide some analysis and context for the situation; suggest realistic targets for change; and identify recommendations for further work, policy development, and research.

We used the guidance from the *Ear and Hearing Care Situational Analysis Tool* provided by the World Health Organization (WHO, 2015) for data collection and analysis. Our methodology is explained in more detail below. Following the Methodology section we present the analysis and discussion of the situation, with a description of the key points relevant to EHC strategy development. The last section provides some suggested recommendations and targets which could be achieved in the next 5 years and a general conclusion to the paper. We do refer to information about the national situation and information from other regions in Cameroon when necessary to provide additional contextual information and when information about the NWR is not available.

2 BACKGROUND TO THE STUDY

This study was initiated by researchers and practitioners who wanted to know more about the current EHC situation in the NWR in preparation for research and program development. Our experiential knowledge from past research and program delivery in the NWR was that services were lacking, and therefore we wanted to have an empirical and clearer picture of specifically what was available, and the nature of the gaps. Over the past several years, we have identified the need for situational analyses in a number of areas related to impairments, disabilities, rehabilitation, and social inclusion in the NWR of Cameroon (Ray, Wallace, Mbuagbaw, & Cockburn, 2017). It is within the context of a community of practice on disability and rehabilitation known as the GRID Network (Cockburn, Mbibeh and Awa, 2019) that this situational analysis was initiated and conducted as part of a program planning and evaluation process.

At the time of writing, the NWR was experiencing significant crisis and conflict (International Crisis Group, 2017; CHRDA and Wallenberg Centre, 2019), making it difficult to collect information and hold meetings. This crisis made it even more important to document available hearing services to inform future interventions for the population. The authors have taken all reasonable precautions to verify information and considering the crises situation that at the time of writing the information contained in this report was accurate. Our hope is that this paper will be modified as more information and services are developed in subsequent years.

3 METHODS

The WHO Ear and Hearing Care Situational Analysis tool was chosen as the guiding framework to collect information for the project. The questionnaire itself is available in full in the WHO document (WHO, 2015), and an overview is provided in Appendix 1.

The study used qualitative approach (Merriam & Tisdell, 2016) to data collection. Data was collected through interviews and focus group discussions with informants including practitioners, duty bearers, service providers, service users and persons with hearing impairments.

Due to the desire to document the situation and develop a baseline document, we decided to use convenience, purposive and snowball techniques to identify information and informants. Considering the backgrounds and work experience of the people consulted, the sources of data used for this analysis are based on the experiences of the informants, and from peer reviewed and grey literature.

A systematic search and review of literature in the domain provided information. Informants were invited through mail and phone calls to provide information on the WHO Situational Analysis Tool adapted for this project. The information provided was recorded by the research team. This information was collected over a 5 month period, and informants were given time to review their responses and information to ensure accuracy.

3.1 DATA COLLECTION PROCESS

Several sources of information were used. The first step in our process was to adapt the questions from the WHO document for the context in the NWR. We drew from the information found in the WHO guidance document, including the concepts, definitions, and methods used, rephrasing some items to suit the context while maintaining the general purpose and chronology of the tool. In the process, some words and grammatical structures were revised by the research team to address anticipated comprehension challenges by informants.

The first author convened meetings with practitioners in the area to gather the information and to discuss the analysis with them in an iterative process. During these meetings, practitioners discussed possible ways of understanding the situation, given the contextual realities. Consensus on the best ways to collect information was reached. Key persons with interest in EHC were identified and asked to contribute information.

Simultaneously, a literature search conducted by the authors identified articles directly related to EHC in Cameroon.

3.2 DESK-BASED DATA COLLECTION

Information such as the country profile, burden of disease, epidemiology of hearing loss, and health status indicators was searched for using peer-reviewed literature, WHO statistics, the available national statistics, and accessible Ministry of Public Health documents. An extensive online search for information related to EHC in Cameroon was conducted, not limiting the search to academic publications but also to any available gray literature or project reports. The key articles from this search are included in the reference list.

3.3 INTERVIEWS WITH RELEVANT STAKEHOLDERS

The WHO (2015) suggests doing interviews with stakeholders. We did conduct in-person meetings with key stakeholders. We used phone calls, WhatsApp, and email for gathering data with key people when in person meetings were not possible. Responses were recorded as email messages or in handwritten notes. However, extensive interviews were not possible due to the current crisis situation in the NWR which made travel and communication extremely difficult.

3.4 ANALYSIS

As information was collected, it was collated and organized in the format provided by the WHO Tool. Sources of information were recorded. When documentary evidence was not available, the source or person who provided the information was included in the list. Abstract tables were completed carefully and were used to record the information on different aspects of ear and hearing care services. When possible, notes were made to show changes over a period of time. A thematic analysis following the tool used was done by the research team and a final report was produced, first as a draft for review. As intended, the report focused on the NWR as of 2019. To situate the information about the region, reference was made to the national situation to provide context as relevant.

3.5 ITERATIVE VERIFICATION

Once written, the draft situation analysis report was shared with 8 EHC professionals including clinicians, educators, researchers, managers and public health professionals, requesting their responses. Specific areas to be verified by each individual were highlighted. The responses received were then incorporated into the final report.

4 PRESENTATION OF FINDINGS AND DISCUSSION

This section presents comprehensive findings from the general data collected with reference to the data collection instrument as adapted from the WHO situational analysis tool earlier presented. While the data was collected and analyzed using this tool, the presentation of findings and discussion in this paper follows key thematic areas found indispensable and useful to the context of study. We do not follow the chronology of items in the tool but have presented them in a way suitable for easy comprehension and reading. Key articulations include analysis of the situation of stakeholder involvement and participation in ear and hearing care and the development of ear and hearing care strategy.

4.1 SITUATION OF STAKEHOLDER INVOLVEMENT IN EHC

We used the WHO Tool to identify relevant stakeholders in ear and hearing care in the region. The stakeholders included government ministries, key professionals, and non-governmental structures. This section describes the stakeholders as listed in the guidance document, their involvement in EHC, and the implications thereof.

4.1.1 GOVERNMENT STRUCTURES

In terms of government ministries, the Regional Delegations of the Ministries of Public Health and of Social Affairs were present in the NWR. Although these ministries were present and the fact that EHC falls within their mandates, they reported very limited consideration given to ear and hearing care within their programs. The Regional Delegation of Public Health, for instance, had no personnel specifically designated for hearing impairment, ear services, disability, or rehabilitation services. Some information related to ear and hearing problems, and EHC services were considered in the general data that was collected about health in the NWR. Although the Ministry of Social Affaires did report a service in charge of persons with disabilities, there was no one specifically designated in this service for hearing impairment or ear services.

Government hospitals in the region reportedly had very limited services for ear and hearing care. There was a recently created Ear Nose and Throat (ENT) service at the Regional Hospital in Bamenda with one specialist for the population of the NWR.

We did not identify comprehensive information on EHC from literature or publicly available data, and learned that EHC information was not specifically collected. There was no central registry or publicly available source of EHC services in the NWR.

From our interactions, there appeared to be a few people (stakeholders) in the regional Ministry of Public Health offices who had an interest in promoting EHC strategies, however none were able to do so without support from their central Ministry offices, and without financial support, neither of which appeared to be available.

4.1.2 BENEFICIARY GROUPS

Our data shows that a national committee for ear and hearing care was being formed although it was not currently active and did not yet have regional representation in the NWR. Another national association, The Cameroon National Association of the Deaf (CANAD), had a regional branch in Bamenda. According to the president of CANAD, this was the only functional association of deaf persons in the NWR. Unfortunately, this branch association faced difficulty bringing its members together as they had mostly been reticent to join in activities and meetings organized at the national level citing reasons such as poverty and lack of education hampering progress.

There was little activity in associations of persons with hearing impairments in the NWR. Several people reported that there were no associations for the deaf in the region, and that although many attempts had been made to create some, they had failed, even prior to the current crisis. There were some private, non-governmental initiatives and organizations working for the social participation of persons with hearing impairment such as the Association for the Empowerment of Deaf and Vulnerable, created in 2016, and which was not functional due to the crisis.

The North West Development Association for the Deaf began in 2001 and ended in 2003. Reasons advanced for this failure by the founders indicated the lack of participation from members of the deaf community. They noted that documents related to the creation of the organization were deposited at the Senior Divisional Officer's office, but deaf persons were not working together to see the development of the association hence the legal documents were not received and the association ended.

In Abstract, there was no active association of persons with hearing impairment in the NWR and no involvement in any significant way of persons with hearing impairments in hearing care activities, except for occasional participation in meetings.

4.1.3 KEY PROFESSIONALS

There was an acute shortage of key professionals involved in ear and hearing care service provision and planning in the NWR. As mentioned above, there was no central listing of professionals or services. However, the Societe Camerounaise d'Oto-Rhino-Laryngologie et de Chirrurgie Cervico-Faciale known as SCORL, (in English, the Cameroon Society of Otophonolaryngology Head and Neck Surgery) most recent online list of members (2011) did not identify any members from the NWR[1]. Since there was no EHC professional organization in the NWR, we were unable to use that avenue to contact people. The few professionals identified were through the personal lists of the authors and colleagues.

We noted that there were 4 physicians in ear and hearing care in the NWR (see Table 3, Appendices 4), and 3 trained ENT nurses, 1 audiologist, 4 hearing aid technicians and many sign language practitioners[2]. There were no personnel for other specialties like otologists, speech therapists, and trained sign language interpreters.

There were several sign language practitioners, mostly found in schools for the deaf, and these were often people who had been trained as part of teacher training programs. There were no professional organizations where these professionals could meet or engage in professional development. The only national organization for sign language practitioners as indicated by one of the interviewees was very dormant as no meetings had recently been held with no professional activities going on.

Our information shows that there was no strategy for developing, supporting, or training the EHC workforce in the NWR, or in the country. There was an extreme shortage of EHC workforce for both service provision and training in the NWR.

4.1.4 TRAINING INSTITUTIONS AND NGOS

Of the five universities in the NWR, none had programs for training EHC professionals (specialized nurses, doctors, audiologists, or others). There were some small private training institutions which occasionally provided training but they did not appear to be any ongoing training programs.

A few local and international NGOs working in the field of ear and hearing care were identified in the region. These organizations included the Cameroon Baptist Convention Health Services (CBCHS) and some individual initiatives (see Table 2 Appendices 3). It was noted that expatriates had provided ear care services through these NGOs which were appreciated by beneficiaries.

Two Audiologists had worked in Mbingo Baptist Hospital and volunteers from the UK registered charity organization, Sound Seekers, had been present in the NWR to provide services within the CBCHS. Experiential training was provided by these expatriates to personnel in the structures who further provided primary health care services related to ear and hearing care. Further information on basic audiology service, school improvement programs, and primary ear and hearing care in the country was limited[3].

In summary, there were a few stakeholders in private organizations interested in promoting EHC strategies. Some had initiated EHC initiatives leading to identification of people with hearing impairment, referrals, and treatment such as the CBCHS and some Catholic Health Institutions with one and two Ear, Nose, and Throat surgeons respectively.

4.2 EAR AND HEARING CARE STRATEGY DEVELOPMENT

Based on the information obtained, this subsection describes the key points relevant to EHC strategy development in the NWR. This strategy is based on the expressed necessity for ear and hearing care services, a consistent leadership and governance structure, and engaging stakeholders amongst other strategies discussed below.

4.2.1 NEED FOR EAR AND HEARING CARE (EHC) SERVICES

There was extremely limited information available about hearing impairments and deafness in the NWR. This review of the situation indicates that there was no clear strategy to identify the components and gaps of the severe shortage of EHC services,

[1] http://www.medcamer.org/wp-content/uploads/2011/01/orl

[2] These are mostly grade 1 teachers trained in inclusive teacher training colleges and who are practicing and using sign language. Most often they serve as interpreters in churches, ceremonies. They are not trained sign language interpreters as they told us.

[3] e.g. https://www.sound-seekers.org.uk/cameroon

and no publicly available EHC strategy in the NWR[4]. Specifically, there is a need for the full range of planning, implementation, and evaluation of EHC services.

The experts consulted for this study did not have clear information about EHC services or the need for them. During focus group discussions, it was noted that only estimates of the number of persons with hearing impairment could be made and such estimates from association member lists could not be referred to as the population of persons with hearing impairment in the region. Estimates included 30 members for the Association for the Empowerment of Deaf Persons, and CANAD estimated that there are about 2000 deaf persons in the NWR. It is evident that efficient planning may not take place considering these kinds of figures that are rough estimates.

We identified one study which addressed the need for EHC in the NWR. Mactaggart, Ferrite, and colleagues (Ferrite et. al, 2017; Mactaggart, et al, 2016) reported a prevalence of hearing impairments in the Fundong area (one part of NWR) of 3.6%, which was lower in younger people. With respect to functional limitations due to hearing impairments, they identified 6 children in the age range 2 – 17, and 33 people over the age of 18. In total, they identified 127 people over the age of 3 with hearing impairments: 76 moderate, 15 severe, and 9 who had profound impairment (deaf). Children under the age of 3 were not assessed. They noted that missing hearing severity data for 23 participants excluded them from some of the analysis. Several EHC service needs were identified and can be extrapolated from this study.

There was noticeable indication of the need from studies done outside of the NWR. Agborbechem and Orok (2020), focusing on workers with hearing impairment in the Southwest Region of Cameroon, reveal that collaboration competencies significantly improves career development for workers with hearing impairment. Oyono and colleagues (2018) reported a high prevalence rate of speech and language disorders in children 3 to 5 years old in Yaoundé. There is limited information about genetic causes of hearing impairment among Cameroonians: Wonkam, Lebeko and colleagues (Lebeko et al, 2017; Wonkam, 2015) report on the prevalence of novel genetic mutations in persons with hearing impairment, stating that mutations do not appear to be common in familial cases of hearing impairment and therefore do not need to be investigated in routine clinical practice but would be worth understanding for service provision.

Overall, it was noted that there were very limited services and there was no current strategy for service delivery for EHC services in the NWR. From a focus group discussion with persons with hearing impairment, it was found that communication challenges make it difficult for persons with hearing impairment to access the few services available. Information passed through radio and word of mouth or even in written formats was not accessible to most persons with hearing impairment.

4.2.2 SERVICE DELIVERY

The study notes that there were very limited EHC services available in the NWR. There was some awareness among policy-makers about the need for EHC services but there was no coordination or regional plan for how this would be done. Development and implementation of a strategic plan for hearing care appeared to be unlikely but could be put in place to address the current conflict, and for when the current crisis subsides.

EHC services (including surgical and audiological services) were available in limited centers at secondary level only, through privately operated organizations (faith-based non-profit and for profit organizations). Key informants said *"these people do not operate in the open. Some are doctors in the regional hospital with friends abroad allowing them to access materials. Clients who need hearing aids can be directed to go to them from the hospital level. Some don't actually have the necessary permit to do so but the population needs the services, so they just go*." It appears some practitioners provided hearing aids without hearing tests or the facilities to adjust the aid to the needs of the recipient. Some people went to Douala or Yaoundé if they could afford it.

At the regional or national level, there were no government-led:

- Infant hearing screening and intervention programmes,
- School hearing screening and intervention programmes,
- Provision of hearing devices, or
- Provision of other assistive devices.

Basic EHC screening was noted to be standard practice in many, but not all, antenatal clinics in the NWR. However, there was no clear referral process for infants who were identified as possibly having a hearing impairment. In 2013, guidelines for

[4] Please see information and summary tables in Part 2 for specific information about the services which are available

screening children were developed (NWR Best Practices Group, 2013) but these appear to not have been adopted or implemented by either public or private organizations.

The total number of hearing aid and ear mold technicians in the NWR was 4, giving a ratio of about 0.2 per 100,000 population (4/2,000,000 pop.) All of them were employed by one faith-based organization, Cameroon Baptist Convention Health Services, with 3 in one hospital, and 1 in another. The minimum educational qualification required for entry to become a technician was a Bachelor's degree in Nursing sciences. There was no training opportunity in the country, therefore training was done out of the country in places such as Zambia and Kenya.

An initiative in auditory verbal therapy (AVT) was started by Courtney Bell, SLP from the United States in Mbingo Baptist Inclusive School and Sign Language Centre in 2017. In this initiative, students that were fitted with hearing aids received group AVT sessions with her. She was in the process of training an ENT Nurse at the Integrated School for the Deaf when the crisis forced her to leave the NWR, and did not permit her to complete the program. It would be beneficial to continue this initiative with a focus on the relationship between EHC and the speech and language services.

EHC was not well integrated into other services, policies, or strategies such as those for child health, tuberculosis management, HIV management, occupational health services, strategies for healthy ageing, disability policies, or the provision of assistive devices. Integration is crucial for appropriate, good quality healthcare, and we provide just one example here. Kuaban and colleagues (Kuaban et al., 2015) demonstrated that hearing impairments can be a result of treatment for multidrug-resistant tuberculosis, affecting approximately 43% of patients receiving the treatment, and therefore should be addressed in tuberculosis programs. Reports from gray literature indicate that the recent COVID 19 disease can affect the patient's sense of hearing. If this is confirmed, it will be that there is need to consider hearing care in the treatment protocol.

Several informants reported that many families turned to traditional or religious healers when medical services were not available for affordable costs. Therefore, our consideration of EHC service delivery included these sectors. However, there was no published information available about these services in relation to EHC that we were able to identify.

The incidence of congenital or early-onset childhood hearing loss (ECHL) is not available and there was only limited information about prevalence; therefore, services were not based on clear epidemiological information. The expert informants consulted stated that many children develop hearing impairments because they are not screened for preventable causes of impairments and are treated by non-experts or traditional healers.

4.2.3 LEADERSHIP FOR EHC AND GOVERNANCE STRUCTURE

This investigation showed that there was very little institutional leadership for EHC. Neither the Regional Delegation for the Ministry of Public Health nor the Regional Delegation for the Ministry of Social Affairs had programs to provide leadership or guidance for EHC services. The central ministries in Yaoundé did not appear to have strategies for EHC in the NWR.

In the non-governmental sector, there was also a lack of leadership in EHC services. We identified a few organizations that had hearing services; these appeared to be developed on an ad hoc basis within organizations. From our analysis, the regional branch of the national hearing association was yet to take full responsibility and to be active in the NWR. Most of its activities seemed to be about representing persons with hearing impairment in meetings. There was no formal association of hearing professionals in the NWR, and little activity in the country that had an impact on the NWR. It was very difficult to get information about professional associations. It is therefore evident that for all three areas of leadership very little to no information was available online.

4.2.4 TECHNOLOGY

This study showed that there is no EHC technology available on a consistent basis in the NWR. At times, charitable and for-profit organizations provide services and technology such as hearing aids. People who required technologies such as hearing aids usually needed to travel outside of the NWR (to Yaoundé and Douala, or out of country) to obtain them.

In 2014 the ENT Department of the Cameroon Baptist Convention's Mbingo Baptist Hospital (MBH) screened pupils in the CBC Inclusive School and Sign Language Centre (ISSLC) and in the community. They gave hearing aids to 10 people at subsidized costs with funds from the international non-governmental UK-based organization, Sound Seekers. There have been similar one-time initiatives in the past, however we were not able to obtain written reports of these initiatives.

The earmold laboratory at MBH started working in 2017, with 5 molds made by 2019. The lab was financed, and its personnel trained, by Sound Seekers. This was the only earmold laboratory functioning in the country at the time of our study. In services in Yaoundé, the silicone ear impression is sent to France, where the final acrylic earmold is made, and then it is sent back to the hearing aid dispenser in Cameroon. Once the earmold is attached to the hearing aid, the user can then wear it.

These initiatives were financed entirely through private initiatives, either personally or through charity. People needing hearing aids and other EHC technologies mostly had to organize and pay for EHC technologies themselves, including making arrangements with specialists abroad, which was very expensive. At times the technologies were not adapted to local realities and just acquiring an accessory like a battery meant that the client ordered it individually from abroad. Likewise, repairs were not done in the NWR.

In MBH, the audiology clinic users tended to be mainly mature adults. There were few children seen at the MBH, and this lack of provision to children was due to the lack of specialized pediatric audiology training and personnel, and the lack of specific equipment for early diagnosis of hearing losses in babies, toddlers, and young children. Both weaknesses need to be addressed.

New, digital, programmable, behind the ear (BTE) hearing aids (Phonak® and Siemens®), suitable for moderate to severe/profound levels of hearing loss had recently become available through the CBC MBH ENT department. This department started producing ear molds and could provide batteries for some hearing aids. These hearing aids and batteries were provided by the Sound Seekers, delivered from sources in Zambia. The average price for a new hearing aid through this service was 200,000 CFA (400 USD), although it was indicated that this was just a reference point for costs. Most hearing aids fitted in MBH were given for free, and some paid up to 200 USD, s a comparison to prices in the private open market (described earlier in this paper). There were reports that in Bamenda hearing aids could be found sold by private vendors for 2,000 USD per unit.

Little information related to the repair of hearing aids was available from informants. MBH had two audiology technicians trained in Zambia and this training equipped them with some skills in repairing hearing aids. However, for complicated maintenance, hearing aids were sent to partners in Zambia. Generally, Zambian sources refurbish and donate hearing aids to MBH. Cochlear implants (CI) were not available through the public health system. The first CI in the country was done in 2019.

There was no strategy at the NWR or national level for the availability and accessibility of medical products and health technologies related to EHC. Very few products were available in the country, and these tended to be very expensive with little opportunities for maintenance.

4.2.5 HEALTH INFORMATION SYSTEM AND ONGOING RESEARCH

The Regional Delegation of Public Health, through its department in charge of health information, collected some data related to hearing care, which it reported to the national ministry. There did not appear to be a clear strategy in place for the inclusion of ear and hearing in the health information systems or in ministry-initiated research. EHC health information was not readily available, and it was evident that it was low priority in health, social services, and education systems. The few hospitals that offered hearing care had tried to do so in outreach programs to sensitize the population on hearing care and to identify people with such conditions. However, these outreach programs had limited reach and impact, and appeared to not be well documented, leading to loss of institutional memory. Individuals might believe that nothing or little has been done, and then duplicate efforts.

There were no government-led agencies or institutes, other research groups, or researchers conducting research in the field of EHC information in the NWR. There was an occasional research study that included ear and hearing as part of public health research, but no specific research group or health information system that collected this information was available. For example, Zummond and colleagues (2019) reported that they were not able to conduct interviews with persons with hearing impairments on their access to health services because these individuals were not able to use sign language. More so, it we found out that there was no formal planning and monitoring in the NWR of EHC strategies by the Ministry of Public Health, or by the Ministry of Social Affairs. In a few private organizations, some individuals were attempting to monitor what was happening at a national level.

Oyono, Pascoe and Singh (2018) noted that while the prevalence of hearing impairment in Cameroon remains unknown, it is important for research on hearing impairments to be conducted to improve the childhood speech and language development. Dr. Lebeko, Dr. Wonkam, and others are engaged in research on hearing impairments in Cameroon. However, it was noted that there was no researcher or research group currently doing sustained research on EHC strategies in the NWR. Earlier in 2016, Mactaggart et al (2016), used The WHO Ear and Hearing Disorders Examination Protocol (WHO,1999) in Fundong in the NWR to assess hearing impairments. They were able to use the Oto-Acoustic Emissions (OAE) Tests, Pure Tone Audiometry, and Otoscopy examinations done by an ENT nurse to identify prevailing impairments. Unfortunately, this initiative was not continued in this division, or any of the 6 other divisions of the region.

5 KEY RECOMMENDATIONS AND WAYS FORWARD

This section is a summary of EHC in the NWR, based on the information obtained during our study. We have included suggested recommendations and targets which could be achieved in the next 5 years.

The study found out that there was no existence of an ear and hearing care strategy for the region. It is therefore recommended that the Delegations of the Ministry of Public Health, the Ministry of Social Affairs, the Ministries for Education, and other ministries set up an EHC group mandated to develop a 5-year strategic plan for EHC in the NWR. This group would include governmental and non-governmental stakeholders, and representation from the deaf and hearing-impaired communities.

For residents in the NWR, EHC services were not affordable and no health financing was available. EHC was not noted to fall in the mainstream health priorities in the hospitals. The few efforts to provide EHC in the NWR were mostly by international NGOs that fund hearing care. Lack of financing for hearing care had impacted care negatively and was consequently leading to more hearing disabilities. There is therefore need for more advocacy to focus on the importance of hearing care to be considered as a mainstream health priority in the hospitals and health systems. This advocacy could lead to more funds for EHC services. The inclusion of EHC in plans for universal health coverage in Cameroon (see Nde et al, 2019) is vital.

In terms of leadership and governance, there was no organized EHC body or other leadership organization for EHC in the NWR. There was no government-led committee or appointed coordinator for EHC. From this perspective, The Ministry of Public Health and the Ministry of Social Affairs should come together to provide strategic direction and leadership on EHC in the NWR. Development of an EHC Platform (a collaborative, inter-organizational group) to plan and coordinate EHC services, and to develop professional leadership opportunities would open avenues for both public and private stakeholders to engage in EHC.

5.1 Service Delivery And Stakeholder Participation

There is need for much better information about the causes and prevalence of hearing impairments in the NWR which could then be used to plan and develop appropriate services. Every hospital and health center should have a clear process for assessing hearing impairment in people of all ages.

The guidelines developed in 2013 (NWR Best Practices Group, 2013) for screening and assessment of children should be updated and implemented across the NWR. Additional guidelines and practice protocols should be developed and implemented for public, non-profit and for-profit EHC organizations. Above all, there is need for government policy to include EHC to the national health system as a priority in health care delivery.

There has been little to no opportunity for stakeholders to participate in planning, implementation, or evaluation of EHC services. While there were a few stakeholders who were committed to EHC, this is insufficient to drive forward the policy development and implementation process. There is need for comprehensive planning of EHC services and interventions with the involvement of stakeholders from the beginning of the processes rather than during implementation.

5.2 Health Workforce

The study concluded that there was a severe shortage of all levels of human resources required for EHC services in the NWR and in the country. The study thus recommends that every hospital should have at least one staff member who is trained in working with people who are hearing impaired or deaf, and who is fluent in sign language, to be able to engage in interpretation and appropriate communication when needed. Sign language interpreters should be available at the level of the hospitals to assist clients with hearing impairments.

5.3 Capacity For Education And Training

There was very limited to no training available at the current time. Educational facilities for development of human resources for EHC were not available in the NWR or in the country. The crisis is compounding the situation (many schools have been closed for four years), making education at all levels extremely difficult. Apart from the ongoing conflict situation, there was little to no capacity for the development of education and training, as there were no trained faculty members available or schools that could develop appropriate EHC training programs.

In conjunction with the development of a 5 year and longer strategic plan, stakeholders should support the training and education of a range of EHC professionals outside of Cameroon to enable this cadre to then develop training programs in the NWR. The University of Bamenda could consider how EHC education is incorporated into its health, education, business, and other programs. All education institutions for health professionals in the NWR should incorporate ear and hearing care in their programs.

5.4 HEALTH FINANCING AND TECHNOLOGY

The study shows that there is no EHC technology available on a consistent basis in the NWR and that there is an acute shortage in heath financing for ear and hearing care. We therefore recommend that better processes to acquire, maintain, and evaluate hearing care technologies need to be developed and implemented by all stakeholder organizations.

The development of synergistic processes to facilitate the acquisition of technologies from other parts of Cameroon and from abroad would allow more people in the NWR to obtain needed services. For example, health services and associations could organize regular clinics in Bamenda and sponsor EHC specialists to provide and check on hearing aids, or could organize and provide trips to major centres for groups, if there was coordination and sharing of the administrative load.

Telehealth and teleaudiology services are becoming more feasible (e.g. Govender and Mars, 2017) and should be used in the NWR. There is further need in health financing for more advocacy to focus on the importance of hearing care to be considered as a mainstream health priority in the hospitals. This recognition could lead to more funds for EHC services to address this priority.

There is a need for the creation of an association for persons with hearing impairment so that they can lead advocacy in this domain.

5.5 RESEARCH AND HEALTH INFORMATION

It was observed that information on EHC is not readily available, and it appeared that it is low priority in health, social services, and education systems with no government-led agencies or institutes, other research groups, or researchers conducting research in the field of EHC information in the NWR. We therefore recommend that Information on hearing care should be disseminated in various formats and outlets accessible to decision makers in ministries and relevant organizations, to the general population, and to people with disabilities and hearing loss.

Publicly available information on hearing care activities such as screening programs should be available online and in other formats such as brochures, radio spots and on social media. There is need for more research to be carried out in EHC to uncover and understand the situation from an empirical perspective and to provide evidence for improvement in practices.

6 CONCLUSION

This paper set out to present a situational analysis of ear and hearing care services in the Northwest Region of Cameroon. The World Health Organization Ear and Hearing Care Situational Analysis Tool (2015) for data collection and analysis was used to collect data from a cross section of respondents including providers and beneficiaries of services. A thematic analysis of the information collected through interviews and focus group discussions as well as systematic analysis of literature shows that there is acute limitation in stakeholder involvement and participation in EHC, very limited service delivery, no consistent strategy to identify and address components and gaps for EHC,. There is no clear strategy, limited accessibility to medical products/ health technology, and no training avenues available for professionals. This information is relevant to policy makers, administrators, those initiating projects related to EHC, and researchers interested in this domain. Based on these findings, the authors recommend that there is an urgent need for the design of a 5 year strategic plan to address the gaps identified, with involvement of all stakeholders including a strong representation from the deaf and hearing-impaired communities.

ACKNOWLEDGEMENTS

We are grateful for a Planning & Dissemination Grant from the Canadian Institutes of Health Research (CIHR) which allowed us to carry out this study, and to the Cameroon Baptist Convention Health Services for providing logistic support.

We also acknowledge the assistance of Che Manasseh and Emmanuel Anjonga in data collection and analysis and Melissa Marasigan, Kumka Adela, Courtney Bell, and a group of persons with hearing impairment in Bamenda for their reviews and contributions in gathering information used in this report.

DECLARATION OF INTEREST STATEMENT

The authors declare they have no conflict of interest.

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APPENDICES: SUMMARIES OF INFORMATION COLLECTED

APPENDIX 1 DATA COLLECTION METHODS

The situation analysis tool questionnaire has the following sections that were used to organize information collected in this project.

SECTION 1: GENERAL COUNTRY INFORMATION:

Population distribution and profile.

Sociopolitical profile.

Health status indicators.

Hearing loss prevalence.

Health care strategy.

SECTION 2: ASSESSMENT OF HEALTH SYSTEM CAPACITY

Leadership and governance: information on national committee and existing plans and programmes for ear and hearing care.

Service Delivery: information on provision of direct and integrated ear and hearing care along the continuum of care.

Health workforce: health care providers (direct and indirect) for ear and hearing care, at all levels of the health care system.

Medical products and health technology: information on diagnostic tests, equipment, hearing and other devices and medicines.

Health information and research: mechanism for recording and reporting health related information.

Health financing: seek information on financing of ear and hearing care services and health insurance.

SECTION 3: STAKEHOLDER ANALYSIS:

Potential stakeholders in ear and hearing care and other possible partners.

APPENDIX 2: DEMOGRAPHICS AND EPIDEMIOLOGICAL INFORMATION ABOUT THE NORTH WEST REGION

The North West Region had a population of about 2 million people; this number is changing due to the current crisis and the thousands of people who have left. It has 7 Divisions and 34 Subdivisions. There are seven principal towns, each of them is the divisional headquarter: Bamenda, Fundong, Kumbo, Mbengwi, Ndop, Nkambe and Wum.

The largest city, Bamenda, was estimated to have a population of 800,000.

There are 120 Traditional Rulers in the Region (NW Governor's Office website, 2019). http://www.northwest-cameroon.com/home-86-inner-0.html.

Sex distribution in the NWR (%) is not known. For Cameroon as a whole, there are slightly more males than females until the older ages - by 55+ more females than males (CIA Factbook).

Table 1. Most common causes of hearing impairment in NWR

Cause	Prevalence	Impact	Source of Information
Chronic otitis media			
Impacted ear wax			Ferrite et al
Low birthweight			Ferrite et al
Meningitis			
Mumps, measles			
Noise-induced hearing loss			
Ototoxicity			
Perinatal factors			
Presbycusis			
Rubella		Significant relationship between rubella IgG seropositivity and hearing impairment in unvaccinated children	Jivraj et al, 2014
Trauma			

This list is from the WHO 2015 Ear and hearing care: Situation analysis tool.

APPENDIX 3: OVERVIEW OF ORGANIZATIONS PROVIDING EAR AND HEARING CARE IN THE NORTH WEST REGION OF CAMEROON (PUBLIC, NON-GOVERNMENTAL, PRIVATE)

List of known organizations providing services, either by name or at least by category and size; general idea of what services they provide and to how many people

Table 2. Organizations providing Ear and Hearing Care in the NWR of Cameroon as of 2019

Organization	EHC Services Provided
Government	
Regional Delegation of Public Health	Collects information on available services for EHC. Provides some oversight, government control of services
Regional Delegation of Social Affairs	Works generally with persons with disabilities including with hearing impairment to provide psychosocial care.
Hospitals and health care	
Regional Hospital Bamenda	Ear consultation (general) and ENT Unit
Mbingo Baptist Hospital	Specialized ENT Services
Banso Baptist Hospital	Specialized ENT services
Catholic Hospital	
Catholic Hospital	
Community based programs and community based rehabilitation	
SEEPD (Socio Economic Empowerment of Persons with Disabilities) Program	As part of the Community Based Rehabilitation services of the Socio Economic Empowerment of Persons with Disabilities program, includes people with hearing impairments,.
Government operated Education and Schools	
Batibo Council School for the Deaf	Provides primary education for children with hearing impairments
Government Bilingual High School Bamenda	Provides secondary education for students with hearing impairments
Privately operated Education and Schools	
SENTTI	Training primary school teachers to teach children with all disabilities including hearing impairment
CBC Inclusive School and Sign Language Center	Provides primary education for children with hearing impairment, and Training opportunities for community members in Sign Language.
Morning Star School, Akum	Provides primary and secondary education for students with hearing impairment
Baptist Comprehensive High School Nkwen	Provides secondary education for students with hearing impairment
Baptist Comprehensive High School Njinikejem – Belo	Provides secondary education for students with hearing impairment
NDIFOTRONICs closed	Provided secondary education for students with hearing impairment

APPENDIX 4: EHC PERSONNEL AND SERVICES AVAILABLE IN THE NWR AT PRIMARY, SECONDARY, TERTIARY LEVELS

Table 3. EHC Personnel and Services in North West Region as of 2019

Type of EHC Personnel	Primary	Secondary	Tertiary	Other parts of Cameroon	Comments
General physicians training in EHC	No				Student physicians have training in diagnosis and medical management of acute ear infections, and in diagnosis and medical management of chronic ear infections They do not have training in formal hearing tests or treatments for hearing loss.
ENT physician specialists	0	4	0		1 at the Regional hospital, 1 in Baptist hospitals; 2 in Catholic Hospitals
ENT Nurses		3			3 ENT nurses in Catholic Hospital
Audiologists	0	1	0	0	Mbingo Baptist Hospital
Speech therapists or audio-verbal therapists	0	0	0	0	Perhaps one in Yaoundé
Sign-language interpreters	0 who are formally trained	0	0	unknown	Approx. 12 Sign Language practitioners in the NW region
Obstetricians with training in EHC	Not known	Not known	Not known	Not known	Not possible to obtain this information
Pediatricians with training in EHC	Not known	Not known	Not known	Not known	Not possible to obtain this information
Hearing aid technicians or ear mould technicians	0	4	0	Not known	One non-governmental organization
Nurses and community workers with EHC training	Not known	Not known	Not known	Not known	Community Health workers can raise health awareness, provide medical management of ear infections, and make referrals. They do not provide ear drops or do hearing tests.
EHC Outreach services	Yes, through private organizations	No	No	No national EHC outreach programs taking place in the NWR	Community Sign language programs available through private organizations
Services available	Health awareness Information, education and communication Hearing assessment Treatment of acute otitis media Removal of foreign bodies from ear Removal of ear wax	Health awareness Information, education and communication Hearing assessment Treatment of acute otitis media Removal of foreign bodies from ear Removal of ear wax Ear examination through otoscopy Hearing aid fitting Educational support for children with hearing loss	None	In Yaoundé, Douala, other cities; information not easily available to the public	
Referral or coordination system	No	No – informal only	No – informal only	No – informal only	