



Community-Based Intervention for Hearing Loss: Impact of Hearing Screening Programme in Ondo West Local Government Area

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Authors' contributions

This work was carried out in collaboration among all authors. Author IMA conceptualized the study. Authors AIO, OOT, IMA and JRO collected the data, Investigated the work, visualized the data, searched for resources and did data validation. Authors OOT and AIO did funding acquisition. Author AIO performed the methodology. Authors AIO and OOT supervised the study. Authors IMA and AIO did formal analysis and Project administration, did software analysis, wrote original draft, reviewed and edited the manuscript. All authors read and approved the final manuscript.

Article Information

DOI: <https://doi.org/10.9734/acri/2024/v24i9875>

Open Peer Review History:

This journal follows the Advanced Open Peer Review policy. Identity of the Reviewers, Editor(s) and additional Reviewers, peer review comments, different versions of the manuscript, comments of the editors, etc are available here: <https://www.sdiarticle5.com/review-history/117600>

Original Research Article

Received: 08/04/2024

Accepted: 13/06/2024

Published: 13/09/2024

ABSTRACT

Introduction: The spectrum of hearing loss as a public health condition has continued to increase globally both in its pathological as well as demographic status. Consequently, a vast majority of people especially in Nigeria and other low income countries suffer from one psychological, economic, social and cognitive disadvantage of hearing loss to another.

Aim: The aim of this study was to investigate the impact of hearing screening programmes as a means of Community-based intervention for hearing loss.

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Cite as: M.A, Ikong, Akpalaba I.O., Olarinoye O.T., and James. R. O. 2024. "Community-Based Intervention for Hearing Loss: Impact of Hearing Screening Programme in Ondo West Local Government Area". *Archives of Current Research International* 24 (9):127-34. <https://doi.org/10.9734/acri/2024/v24i9875>.

Methods: Subjects in the study are patients who submitted for a free hearing screening programme within the months of March and May 2022, organized by the department of Ear, Nose and Throat, University of Medical Sciences Teaching Hospital, Ondo State, Nigeria. The hearing screening was carried out by Otorhinolaryngologist, Audiologists and Speech Therapists using, Otoscope, Tuning Forks, HearWHO mobile app, a well-structured questionnaire etc.

Results: Of 356 patients who were screened, 80 presented with hearing related disorders such as hearing loss, tinnitus, canal blockage, polyps, otitis media and otitis externa. Interventions were administered accordingly, on either free or subsidized scale to patients. It was deduced that the majority of these patients would not have presented for hearing screening if it was not a free Community-based programme.

Conclusion: Community-based hearing screening programmes enhance early identification of hearing disorders and commencement of hearing healthcare interventions especially in low income countries.

Keywords: Hearing; screening; loss; intervention.

1. INTRODUCTION

The spectrum of hearing loss as a public health condition has continued to increase globally both in its pathological as well as demographic status. Every year, the World Health Organization reports a proportionate growth in the number of people with hearing related conditions in spite of the advances in medicine to tackle all potential risk factors that could result in hearing loss. Why it is easy to attribute this rise to the global population growth, the implication may not be easily measured across different communities. This implication is worse in economically disadvantaged nations of the world where there is restricted or lesser access to intervention services.

The World Health Organization [1] estimated that over 466 million people, including adults and children have hearing loss and the figure will increase to over 900 million in 2050. Notwithstanding the relatively scarce documentation in the African continent, it is reported that the population of persons with hearing loss is significantly high compared to other continents of the world as 6 out of 1000 live births have hearing loss [2].

Louwetal [3]. WHO [4] estimates further that within the region of Africa more than 136 million (that is more than 20 percent of the global population) people including adults and children have some degree of disabling hearing loss with both financial and healthcare poverty accounting for most of this figure. Ademokoya [5] during the Speech Pathologists and Audiologists Association in Nigeria (SPAAN) Conference, reiterated the WHO's report which states that

8.5million Nigerians are suffering from hearing related conditions. This is a significant figure that is rising steadily.

Hearing loss is a reduction in the hearing sensitivity to environmental sounds depriving the individual from engaging meaningfully in hearing related activities. Hearing loss could occur in one or both ears and it can be congenital or acquired, conductive, mixed or sensorineural. The impact could be mild, moderate, severe or profound. Individuals with the condition suffer from one form of disadvantage to another depending on the severity of the condition, the adequacy, time and nature of intervention service that is administered [6]. Hearing loss is caused by a number of factors and these include, childhood illnesses, environmental and occupational noise, ototoxicity, presbycusis, trauma and genetic abnormalities. Recently, presbycusis (which comes due to increase in life expectancy of most individuals), the use of Ototoxic drugs and noise exposure have become the leading causes of hearing loss in Nigeria and other parts of the world [7,8] and Mayo Clinic, 2021. Unfortunately, more than 65 percent of hearing loss cases in Nigeria are either undiagnosed or untreated and this reflects the general attitudes of Nigerians in seeking medical interventions for public health conditions. Interestingly, untreated hearing loss has a devastating implication on the lives of the individuals [4,9].

Chadlha et al [10] contend that although hearing loss is a hidden and readily unnoticed condition but when left unaddressed, it vastly affects the educational, social, cognitive, financial and occupational life of the individual depending on the severity of the condition, age of onset and

personality of the individual. Gorman et al [11] submitted that aside from the routine challenges of having difficulty in understanding/following conversations, there is also the problem of isolation, career stagnation and decreased life satisfaction. Mathers et al [12] further stressed that untreated hearing loss leads to inability to interpret the speech sounds often resulting in reduced ability to communicate, delay in language acquisition (in the case of children), economic and educational disadvantages, social isolation and stigmatization.

Olatoke et al [13] and Brouillette [14] argued that the impact of hearing loss for both adults and children is immeasurable as it can lead to embarrassment, loneliness, social isolation and stigmatization, prejudice, abuse, psychiatric disturbance, depression, difficulties in relationships with partners and children, restricted career choices, occupational stress and low earnings. In addition, untreated hearing loss creates a huge socioeconomic burden on the individual, loved ones and the general society. Dawes et al [15] and Decker et al [16] noted that the greatest impact of untreated hearing loss is the reduction in the quality of life of the individual. In the study by Ciorba et al [17], it was recorded that more than 30% of the population of persons living with hearing loss, have poor health and are less fulfilled with their lives. This is worst in countries with poor socioeconomic status. Therefore, based on the challenges arising from hearing conditions, it is highly appropriate to seek intervention services.

Smith (2015) stated that intervention is undertaken with the aim of improving human health by preventing diseases, curing or reducing the severity or duration of an existing disease, or restoring the function lost due to the impact of the disease. Intervention services vary. They are well structured programmes aimed at restoring the lost function or ameliorating the severity of one's hearing condition. The common hearing intervention programmes include, medical treatment, hearing screening and evaluation, counseling, provision of hearing aids, assistive listening devices, communication strategies, hearing aid trouble shooting and cochlear implantation [15,4]. All these services put together provide a quality Comprehensive therapeutic modality to overcome the associated challenges of hearing loss. However, one of the most fundamental intervention programmes is the hearing screening programme. ASHA [7] defined hearing screening as ' the systematic

application of a test or inquiry completed to identify individuals who are at risk of hearing disorder or disability. Further assessment from the screening tests therefore, directs towards preventive actions and/or appropriate interventions. Hearing screening is both a preventive as well as a reactive intervention programme which in many cases, sets the direction for the success of the general hearing intervention programmes. Hearing screening is the roadmap to effective hearing healthcare intervention. The nature and severity of hearing problems is most times relatively unknown by people and this can only be revealed by carrying out an investigation with the use of Otoscope, Turning Fork, Hearing Handicap Questionnaire, Audiometer, Tympanometer etc. Interestingly, hearing screening plays a vital role in the treatment of hearing loss by eliminating any uncertainty surrounding one's hearing problem. WHO [4] submitted that given the global demographic trend and the depleting impact of hearing loss, early intervention which begins with a systematic hearing screening programme is the only way to mitigate many of these associated adverse effects of hearing loss among people. Considering that many cases of the disabling hearing condition are treatable, studies have shown that individuals who submit themselves for regular audiological screening stand the chance of obtaining early and better intervention than those whose hearing are not screened [18,9].

WHO [4] reported that more than 50% of individuals with potential hearing problems in the country do not seek intervention, while some delay for a longer time before doing so. More so, the assumption of some persons is that hearing loss is not a life threatening health condition which consequently hinders their swift response to intervention services forgetting its gross impact on the quality of one's life. It is against this backdrop that this study is set to investigate the impact of community-based hearing intervention through a hearing screening programme in Ondo West of Ondo State.

2. METHODOLOGY

2.1 Objective

The main objective of the study was to reveal the significance of a routine and regular hearing screening programme in the prevention and treatment of disabling hearing conditions in our communities. The second objective of the study was also to foster a culture of always

seeking audiological services through hearing screening programmes as a way of promoting healthy living and enjoying a sustained quality of life.

2.2 Participants and Procedures

Subjects were those who submitted themselves for a Free Hearing Screening Programme (FHSP), within the months of March and May 2022, organized by the Department of Ear, Nose and Throat (ENT) of the University of Medical Sciences Teaching Hospital (UNIMEDTH) Ondo Complex, Ondo State, Nigeria. The free screening was to promote inclusive participation of all people regardless of race, religion, educational, economic and cultural differences. So, participants included all categories of people within Ondo West Local Government regardless of age barrier that were successfully screened within this period. Only infants and little children were not screened. This screening was carried out within the University of Medical Science, Ondo community and KAFTAN Television Station community where more sensitization was made concerning hearing and speech disorders and the need for early intervention [19,20]. The Screening team consisted of different professionals; Otolaryngologists, Audiologists,

and Speech therapists, using Oscopes, Headlights, Tuning Forks of different ranges, HearWHO App and a well-structured questionnaire to elicit the responses of participants on areas such as: awareness level and means of information about hearing healthcare services, previous hearing problems, treatment outcome etc. A total of 356 patients/people were screened and 80 patients presented with various hearing related conditions such as hearing loss, tinnitus, canal blockage, polyps, Otitis Media, Otitis Externa, etc. Intervention services were administered accordingly to all participants in line with the global best practices.

3. RESULTS

The Pie Chart below shows that Civil servants (40%) were the most represented group, although this was slightly influenced by the screening locations as the exercise was largely conducted in the university environment. It was followed by students, farmers, businessmen etc.

Artisans were the least represented group (6.46%). The chart also showed how occupational variables predict patients' attitudes toward healthcare intervention services.

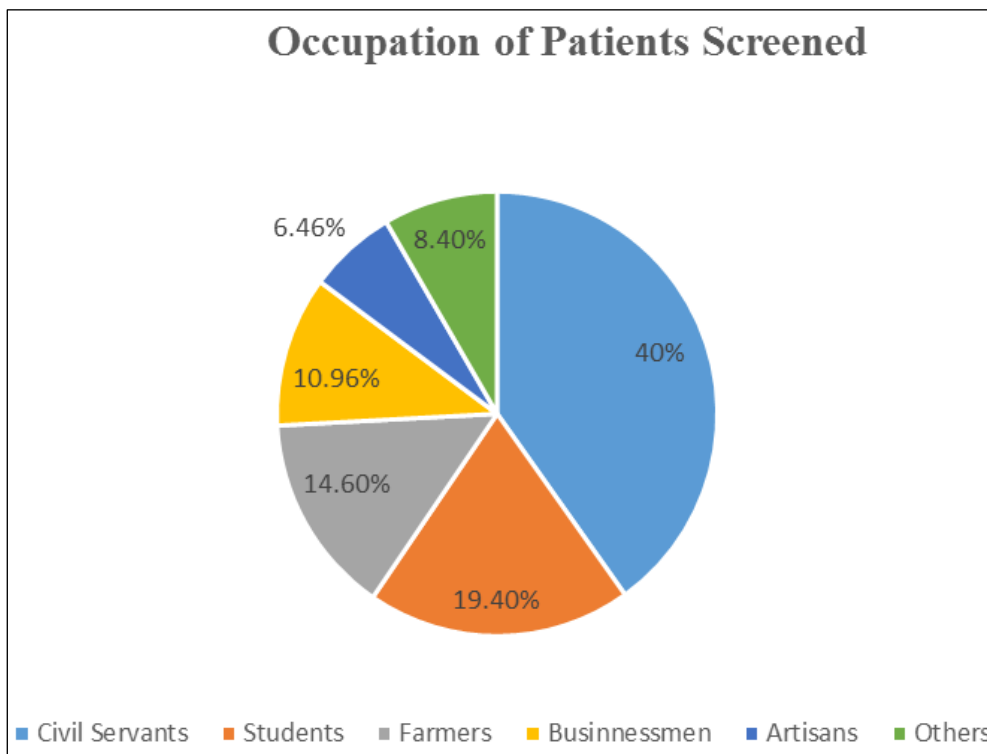


Chart 1. Occupational & gender representation of patients that were screened

Table 1. Distribution of patients' screening results

Sex		HearWHO Score		Otoscopy		Previous Hearing Problem		Previous knowledge of intervention		Length of previous knowledge		
Female	Male	Above Average	Below Average	Intact TM/Canal	Infected/ Abnormal	Blocked/ HL	Yes	No	Yes	No	+2yrs	-2yrs
230	126	102	254	276	21	59	123	233	288	68	181	107

Table 2. Screened pathologies of patients is represented

S/N	Occupation of Patients	Pathology present				Total
		O.M/Externa	HL	Wax/FB	Others	
1	Civil Servant	4	9	13	3	29
2	Students	1	1	3	0	5
3	Businessmen	3	2	4	2	11
4	Artisans	2	7	5	1	15
5	Farmers	3	5	5	1	14
6	Others	1	3	2	0	6
7	Total	14	27	32	7	80
8	Percentage (%) by Pathology	17.5	33.75	40	8.75	100

Table 1 revealed that 65% of females and 35% of their male counterparts in F;M of 1.9:1 took part in the screening, thus showing women's participation in health-related exercises in the country. Also, 123 out of 356 indicated a previous hearing problem. Of the 288 patients that indicated a previous knowledge/awareness of hearing/speech rehabilitation, 107 responded that they had not known about hearing and speech rehabilitation up to two years ago, even when a larger part of these patients are either working in the hospital, university or are students. Majority of the patients who had Hear WHO App scores below average were further referred for confirmatory Pure Tone Audiometric test.

Table 2 above showed the pathologies that were screened in this research. Canal blockage especially wax impaction was the dominant pathology (40%) among many patients, followed by Hearing loss of all degrees (33.7%), Otitis Media and externa (17.5). Others such as tinnitus, polyps, vertigo, otalgia were the least pathologies (8.75%) recorded in this study.

4. DISCUSSION

From demographic and pathologic evidences presented above, the study confirms WHO [4]

report that hearing related difficulties is widespread in the world, and is steadily rising especially in low income countries, though under-reported and under- treated, with more females than males accounting for this figure which is not due to the biological and physiological variables of each gender. Hence, accelerated large-scale efforts must be put in place to curb this alarming rise in hearing related conditions. More so, the Free Screening programme is basic, as it motivates people to check their hearing status, ask questions, and seek information regarding their hearing challenges and available treatment/or rehabilitation options.

Furthermore, from the screening programme, a greater number of the people were identified with hearing loss and other hearing related conditions and this afforded them the opportunity for more access to quality audiologic information and treatment. Conversely a vast majority of these patients would not have known much about the available audiologic rehabilitation services and other vital information on the preventive approaches to hearing loss and its associated consequences. This underlines the importance of community based hearing screening programme in many other communities across the country particularly in the rural communities.

Furthermore, the study correlates previous studies that hearing screening is indispensable, especially free screening, if a culture of prompt response to hearing related problems by seeking audiologic services is to be fostered among people in our communities as it was achieved through this study. Hence, a substantial number of these patients were able to receive treatments/rehabilitation either through free, subsidized or full payment options. Conversely, the majority of these patients that were screened would not have made serious efforts in seeking audiologic services especially those with mild conditions in the midst of scarce resources if screening programmes such as the one conducted in this study was not carried out. Due to low healthcare seeking tendency among people in the country, especially hearing healthcare services, this community-based hearing screening programme provided health education on the causes, effects and preventive strategies for hearing related conditions, available treatment services in the hospital and in the country. This study therefore, reinforces in people the culture of regularly seeking hearing healthcare services. More so, through this programme, people understood the impact of putting objects whether consciously or unconsciously into the ear in an attempt to clean the ears, ways of wax removal, tackling itching and otalgia and many more. From the findings of this study, hearing screening is the surest means of facilitating community-based intervention for hearing loss and other widespread public health conditions in the country. Lastly, a community-based intervention programme such as this facilitates data collection which is a powerful tool for accurate and reliable information on the prevalence of disabling hearing loss in Nigeria and other Africa.

It was discovered that scheduling a community based free hearing screening programme encourages the people to check their hearing status and this serves as a springboard to more awareness, more audiological seeking behaviours and making informed decisions about hearing conditions among the people.

5. CONCLUSION

This study was conducted in the community of Ondo West Local where the University of Medical Sciences is situated. People of different occupations were screened with more females presenting for the screening exercise than males.

Conditions such as otalgia, tinnitus, canal blockage, polyps, otitis media and otitis externa, hearing loss were screened. Patients were significantly rehabilitated and treated based on their conditions using the available resources on free, subsidized and full payment scale. It was however discovered that a significant number of people who presented for the screening programme would ordinarily not have bothered about their hearing conditions in the absence of any community-based programme such as the free hearing screening programme in this study.

6. RECOMMENDATION

Following the findings of this study and other previous studies these recommendations were made:

Hearing screening programmes such as the one conducted in this study should be carried out across all Local government areas and communities all over the country to promote a culture of prompt and regular response to hearing conditions among Nigerians.

Establishment of an audiologic unit or center in all hospitals whether small or big across the country makes audiologic services readily available and closer to the people as this reduces the burden of seeking for services by traveling longer distances than expected.

- Granting hearing healthcare insurance to Nigerians especially the pediatrics and geriatrics will motivate them to frequently seek hearing care services.

DISCLAIMER (ARTIFICIAL INTELLIGENCE)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc) and text-to-image generators have been used during writing or editing of this manuscript.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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