

**PREVALENCE OF HEARING LOSS AMONG CHILDREN WITH
TYPE 1 DIABETES MELLITUS ATTENDING PAEDIATRIC
DIABETIC CLINIC, MULAGO HOSPITAL**

By

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DECLARATION

I Buname Gustave declare that this dissertation is original and it has not been previously submitted in full or part for any academic award in any Institution, College or University.

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DEDICATION

To my dear parents Mr. Emmanuel D.Buname and Mrs. Maria N.Buname

and

My Uncle David .N. Lusegeta. (Late).

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LIST OF ABBREVIATION

ADA	:	American Diabetic Association
CHL	:	Conductive Hearing Loss
DPOAE	:	Distortion products Otoacoustic Emission
dB	:	decibels
dBHL	:	decibels hearing level
DM	:	Diabetes Mellitus
ENT	:	Ear Nose and Throat
PTA	:	Pure Tone Audiometry
PI	:	Principle Investigator
RA	:	Research Assistant
SNHL	:	Sensorineural Hearing loss
T1DM	:	Type 1 Diabetes Mellitus
T2DM	:	Type 2 Diabetes Mellitus
WHO	:	World Health Organisation

OPERATIONAL DEFINITIONS

Children: for this study a child was considered to be 18 years and below.

Conductive Hearing loss: - This is when sound is not normally conducted through the outer and middle ear due to either congenital or acquired abnormalities in the outer or middle ear.

Configuration: refers to the pattern of hearing loss across frequencies (tones), hearing loss that only affects the high frequencies would be described as a high-frequency loss, the hearing loss that affects low frequencies are low frequency loss. Some hearing loss configurations are flat, indicating the same amount of hearing loss for low and high frequencies.

Degree: degree of hearing loss refers to the severity of the loss. This can be mild, moderate, severe or profound.

Disabling hearing impairment: - is a permanent unaided hearing threshold level for the better ear of 41dB or greater in adults or permanent unaided hearing threshold level for the better ear of 31 db or greater for children below 15 years

Hearing loss: - is defined as the difference from the normal ability to detect sound relative to its established standards. For this study any value greater than 25 dBHL.

Mixed Hearing Loss: - This is a combination of both conductive and Sensorineural Hearing Loss.

Pure tone Average: average in decibels of the threshold for pure tone at 500, 1000 and 2000 Hz.

Sensorineural Hearing Loss: - This is hearing loss whose cause is insensitivity of the inner ear (the cochlea) or impairment of the function of the auditory nervous system.

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ABSTRACT

Introduction

Hearing loss is one form of disability experienced by children with type 1 Diabetes Mellitus (T1DM). As one of the complications, it has been reported more commonly in diabetic children than in non diabetic children. Uganda has an estimated 900 children under the age of 14 years with diabetes. In the developing world, the information about natural history and complications of T1DM in children is scanty. Hearing loss is distressing to children and their caretakers. It may interfere with their communication and school performance which has far reaching social and economic implications.

Objectives

The main objective of this study was to determine the prevalence of hearing loss among children with Type 1 Diabetes Mellitus attending Paediatric Diabetic clinic Mulago Hospital.

Methods

This was a descriptive cross sectional study on 86 T1DM children between 4years and 18years attending paediatric diabetic clinic Mulago Hospital between the months of November 2013 to April 2014. Consecutive sampling procedure was used to reach each participant under ethical considerations until the sample size was reached. An audiological assessment was carried out to determine degrees and configuration of hearing loss among the study population. This was done using an Audiometer of the KAPLEX KLD 21 type. The data was cleaned, coded and entered in the computer in the view section of EPI Info version 3, which was exported to Stata version 12 for data analysis.

Results

A total of 86 children were recruited. The mean age of these children was 13 years while the range was 4-18 years. The prevalence of hearing loss among children with T1DM was found to be 26.7%. Of the 23 children with hearing loss, 22 (96%) had mild sensorineural hearing loss and 1(4%) had severe sensorineural hearing loss. Majority of the patient had greater losses at high frequencies.

Conclusion

- The prevalence of hearing loss among T1DM children attending diabetic clinic was found to be 26.7%.
- The hearing loss was sensorineural, binaural and mainly mild in degree. Majority (96%) of the patients had mild SNHL and only one had severe SNHL.
- The hearing loss occurred across all the frequencies. Majority of the patients had bigger losses in high frequencies. Only two patients had low frequency loss.