



A Study of Selected Acoustic Parameters of Voice in Typically Developing Children



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Introduction

A voice disorder can bring about deep implications to social life, both in children and in adults. Voice disorders in children are relatively frequent, affecting 6 to 23% of the children population [1]. The etiological factors associated with childhood dysphonia require early and precise assessments. In order for these assessments to be reliable it is necessary to establish well defined normality standards among the genders and different age ranges.

Aim and Objectives

This study aims to assess acoustic voice parameters of normally developing male and female children aged between 4 and 12 years in order to provide a representative normative database. The objectives are to assess the following acoustic voice parameters: mean fundamental frequency (Fo), jitter%, shimmer % and noise to harmonic ratio (NHR).

Need for the Study

The range of etiological factors associated with child dysphonia requires precise diagnosis. Because of the differences in anatomy between adults and children, normative data for the adult population should not be used as evaluative standards for the pediatric population [2]. Hence establishing such a type of data base will enable us to compare between normal and disordered voice in order to diagnose it early and to provide intervention and more so in Indian context.

Review of Literature

Hill et al. [3] analyzed the acoustic voice parameters of 335 children with an objective to develop a representative normative acoustic database. Their results revealed that a distinct vocal profile of girls and boys was evident, with key changes at critical periods of development and with significant differences among fundamental frequency between sexes. They concluded that a comprehensive database can be used to help aid future voice therapy.

Methodology

Research design

Survey

Sampling

Random sampling

Materials and tools

Multi-dimensional Voice Profile (MDVP software of VisiPitch - IV (KayPentax Inc.,USA) model 5105, version 3.1.4. and Sony digital voice recorder (TCM - 150).

Subject selection criteria

The participants will comprise of 200 normal school going children in the age range of 4-12 years distributed into four subgroups each subgroup having 50 participants (25 girls and 25 boys) as follows: Group 1-4 to 6 years old; Group 2-6.1 to 8 years old; Group 3-8.1 to 10 years old; Group 4-10.1 to 12 years old.

Exclusion criteria

No history of voice problem as reported by parents, teachers and self perceived.

Procedure

After obtaining written consent of the parents, demonstration of sustained phonation will be given to the participants. Participants will be instructed to make a deep inhalation before sustaining the phonation of the vowel and then will be instructed to sustain phonation of /a/, /i/, /u/ for 5 seconds, keeping a constant pitch and at a loudness level which would be comfortable for him/her. Two trials will be taken and phonation on the second trial will be recorded using Sony digital recorder. The wave files will be transferred to Visipitch-IV as per the instructions in the manual.

The signal will be stored in the computer and pre-processed with the removal of the initial and final unstable portions, standardizing the signals at 3 seconds, thus preventing recording characteristics which influence acoustic parameters. The aforementioned acoustic parameters will be analyzed.

Statistical Analysis

- a) Descriptive statistics (mean and standard deviation) will be presented.
- b) Results will be discussed in terms of gender and age differences.

References

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