Acoustic Analysis of Vowels in Kashmiri

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The present study aimed at the acoustic analysis of 29 vowels in Kashmiri language.

Five male and four female subjects in the age range of 18-25 years were studied. The subjects were asked to read the target word with a carrier phrase. The following parameters were obtained by analyzing the target vowel.

a. Fomant frequencies (F1, F2, F3 and F4)

b. Formant intensities (L1, L2, L3 and L4)

c. Bandwidths (BW1, BW2, BW3 and BW4)

d. Vowel duration (VD).

The results of the study indicated that:

1. The formant frequencies of nasal vowels are lower than oral vowels. Formant frequencies of females were higher than males.
2. Bandwidths of the vowels are large for the nasal vowels than for oral vowels.
3. There is no significant difference between vowel duration for nasal vowels and oral vowels. However, long vowels had longer duration than short vowels.

Thus the null hypothesis are rejected. As the data analysis shows that :-

a. There is a significant difference in the formant frequencies between oral and nasal vowels.

b. There is a significant difference in the formant frequencies of males and females.

c. There is no significant difference in vowel duration between nasal and oral vowels.

d. There is a significant difference between long and short vowels.

e. There is a significant difference in the bandwidths between oral and nasal vowels.

f. There is no significant difference in the formant frequencies between oral and nasal vowels in terms of formant intensities.

Implication of the study :

The study provides information regarding the formant frequencies, energy levels, band widths and vowel duration of all the vowels in Kashmiri.

The study provides information regarding the difference in formant frequencies, energy levels, band widths and vowel duration between males and females.

This being the first study in Kashmiri language has opened scope for further studies in acoustic characteristics of sounds in this language.

Limitations of the study :

1. Only 5 males and 4 females were considered for the study.

2. The age group has been limited to 18-25 years.

3 Intra subject and inter group variations were not studied, as it is known that the physical dimensions of the oral cavity result in change in the acoustical parameters.

Recommendation :

The present study may be extended by

a. Selecting subjects of different age ranges.

b.Using the speech material in which the phonetic environment of the target vowel is constant. Also the voiced environment of the vowel may be avoided.

c. Controlling the intra subject and inter group variability.