

Electroglottograph in Normal Children and Adults

Bhattacharya D.

Student, A.I.I.S.H., Mysore.

The study of vibratory movements of vocal folds has drawn a lot of interest in researchers recently. Several methods have been developed with the object of visualizing the movements of the vocal folds. One of them is electroglottography (EGG) or electrolaryngography. EGG has many advantages over other techniques, mainly because, it is a non-invasive technique and permits quantification of the vocal fold vibration.

As there was no data available on Indian population, on children, adolescent and adult the present study was aimed at analyzing Lx waveforms and collecting data on Indian population.

As there was no data available on Indian population. On children, adolescent and adult the present study was aimed at analyzing Lx waveforms and collecting data on Indian population.

290 normal subjects (145 males and 145 females) in the age range of 7 to 22 years were studied using electro-laryngograph (Kay Electrics Corporation) and PC/XT with speech interfacing unit (Wipro and Voice and Speech system). The following parameters were obtained during the production of /a/, /I/ and /u/ keeping pitch and intensity constant.

1) The Total period (TP), 2) The Open quotient (OQ) 3) The Speed quotient (SQ), 4) The Speed Index (SI), 5) The 'S' Ratio ('S'R), 6) The Jitter ratio (JR) and 7) The Shimmer ratio (SR).

The data obtained was subjected to statistical analysis to find out the mean, standard deviation, range and significance of difference, across the age groups for all parameters.

The following conclusions were drawn based on the results :

1. There is an increase in TP with age both in males and females.
2. Children show significant difference with adolescent and adult age groups in terms of TP. The mean values are less in children and higher in adolescents and adult age groups for both in males and females.
3. Adolescent age groups also show significant difference with adult age groups in terms of TP for all the three vowels.
4. Only in adolescent and adult age groups a significant difference between males and females is seen and the mean values of TP for males are higher compared to that of females.
5. There is a gradual decrease in OQ as the age increases both in males and females.
6. In case of males, children show significant difference with adolescent and adult age groups and the mean value of OQ is highest in children followed by adolescent and adult age groups.
7. In case of females, children do not show any significant difference with adolescent and adult age groups in terms of OQ.

8. In case of males, adolescent age groups show significant difference with adult age groups in terms of OQ. Where as in case of females, adolescent age groups do not show any significant difference with adult age groups.
9. There is a significant difference between males and females interms of OQ only in adolescent and adult age groups. The mean values of OQ are higher for females compared to that of males.
10. In males, children show significant difference with adolescent and adult age groups in terms of SQ. The mean value of SQ is highest in children followed by adolescent and adults. Where as in case of females, children do not show any significant difference in terms of SQ when compared with other age groups.
11. Adolescent age groups do not show any significant difference with adult age groups in terms of SQ both in males and females.
12. In general, a significant difference between males and females in terms of SQ is observed, and the mean SQ value among females are higher than that of males.
13. Children do not show any significant difference when compared with adolescent and adult age groups in terms of SI both in males and females.
14. Adolescent age groups do not show any significant difference with adult age groups in terms of SI in case males and females.
15. In general none of the age group show significant difference between males and females.
16. In general, children do not show any significant difference with adolescent and adult age groups in terms of 'S'R.
17. Adolescent age groups also do not show any significant difference with adult age group in terms of 'S'R.
18. In general, no significant difference is observed between males and females of children, adolescent and adult age groups.
19. In males, children show significant difference with adult age groups but not with adolescent in terms of JR, and the values are higher in children compared to adults. Where as in females, children show significant difference with adolescent and adult age groups and the mean values are more in children followed by adolescents and adults.
20. Adolescent age groups show significant difference with adult age group both in males and females.
21. In general, a significant difference is observed between males and females in terms of JR and the mean value of JR is higher in females.
22. Children show significant difference with adolescent and adults in terms of SR and the mean values are greater in children followed by adolescent and adults both in males and females.
23. Adolescent groups also show significant difference with adults in terms of SR.
24. No significant difference is observed between males and females in terms of SR in any of the age groups.

Thus these parameters were useful in describing the vibratory patterns of vocal folds in normals and it is hoped that these will be useful in describing the abnormal vibratory patterns of vocal folds.