ABSTRACT

Statement of problem: One among the rehabilitative options to alleviate the hearing problem is the hearing aid. Though having same type, degree and configuration of hearing loss, only some individuals benefit from a hearing aid, while others reject the hearing aids. To know the extent of changes provided from amplification device in clinical group, the aided response was studied at different levels of the auditory pathway.

Method: Hundred participants, 60 with sensorineural hearing impairment and 40 with normal hearing in the age range from 15 to 65 years, were included. The participants from each group were divided into four sub-groups, based on age. Each participant of clinical group was classified into good and poor hearing aid performers. The study was conducted in three phases. Phase 1 was utilized for participant selection criteria. In Phase 2, the probe tube microphone measurement was carried out to record the hearing aid output at the ear canal of participants from clinical group. In Phase 3, electrophysiological responses were obtained from auditory brainstem and cortical levels at 65 dB SPL for /da/ and /si/ speech stimulus from the participants of clinical (unaided and aided) and normal hearing groups.

Results: The hearing aid preserved the spectral parameters at the ear canal. However, there was a minimal alteration in temporal parameter. Each response obtained, especially from older adults, at different levels of auditory pathway was relatively less precisely represented in clinical group than in the normal hearing group. Further, the
responses at each level were compared between good and poor hearing aid performers. The responses at each level were relatively well represented in good hearing aid performers than in poor hearing aid performers.

**Conclusion:** Though the hearing aid alleviates the hearing problem to an extent, minimal alteration after being processed through the hearing aid and altered physiological mechanism due to hearing loss were noted in the representation of the speech stimuli at each level of auditory pathway in the clinical group. Further, the speech stimuli were represented better at brainstem and cortical levels, in good hearing aid performers.