Chapter-5

Summary & Conclusion
SUMMARY AND CONCLUSION

The aim of the current study was to explore and compare the brain stem timing changes in younger, middle aged and older aged adults using the electrophysiological measure, SEABR. Further, the study aimed at establishing its clinical utility by measuring SEABR in the first time hearing aid users. SEABR is thought to be generated from the brain stem level in response to an acoustically complex stimulus such as CV syllable /da/ . The participants were recruited in all the 3 normal hearing groups as well as in hearing aid user groups. It was hypothesized that temporal processing would be altered in humans as the age advanced and that eventful changes in the timing of the complex signals could be explicitly recorded by using SEABR. The results supported the hypothesis and provided an array of explanations on how each component of the speech signal is represented in the brain stem. The study also sheds light into the possible reasons for the decline in the altered representation of complex acoustic image in the brain stem with advance in age. It further expands its clinical utility by providing information on how the impaired auditory system represents the highly time varying signals in the brain stem when the signals are processed through hearing aids.

In toto, the current study provides a window in understanding the complex neural encoding of speech sounds in humans and clinically, useful information on the process of hearing aid section and fitting. It also gives insight to the hearing aid manufactures considering up gradation of Digital Signal Processing strategies for the benefit of the hearing impaired. The study opens up large array of research in SEABR and its clinical utility in hearing aid users and cochlear implantees. SEABR, hence provides a wealth of information.
on how the highly time varying signals are encoded in the brain stem and help in unravelling the complex temporal processing mechanism in humans and providing insight into the timing measures in clinical practice assessment and rehabilitation.

**Limitations**

Even though the current study has provided information on the temporal processing in various age groups, it has certain limitations, such as

1. Ear specific SEABR was not recorded.
2. Hearing aid user groups were not specifically categorized.

**Future directions**

The SEABR research can provide a reliable source of information on unravelling the complex temporal processing in humans. The hearing aid use and its clinical applications can take up the findings from the study to future research by focusing on the following areas;

1. Comparing the SEABR with and without Hearing aids in adults and elderly with hearing loss
2. Studying the ear specific influence on SEABR on younger, middle aged and older adults.
3. Monitoring the aural rehabilitation by recording SEABR measures.
4. Recording SEABR using advanced signal processing algorithm with hearing aids
5. Initiating research of SEABR recording in cochlear implant users.