

ORIGINAL RESEARCH

Different hearing aids in patients with hearing loss- A clinical study

Dr. Prabhat Srivastava¹, Dr. Pragati Saxena²

¹Assistant Professor, Department of ENT and Head, Neck Surgery, United Institute of Medical Sciences, Rawatpur, Jhalwa, Prayagraj, Uttar Pradesh, India;

²Senior resident, Department of Anesthesiology, Moti Lal Nehru Medical College, Prayagraj, Uttar Pradesh, India

Correspondence:

Dr. Prabhat Srivastava

Assistant Professor, Department of ENT and Head, Neck Surgery, United Institute of Medical Sciences, Rawatpur, Jhalwa, Prayagraj, Uttar Pradesh, India

ABSTRACT:

Background: Hearing loss (HL) can be defined as complete or partial loss of the ability to hear and understand information, which limits or restricts an individual's ability to perform hearing-related activities. The present study assessed efficacy of two different hearing aids in patients with hearing loss.

Materials & Methods: 94 patients with hearing loss of both genders were divided into 2 groups of 47 each. Group I comprised of channels ranged from 1 to 16. Group II had the number of channels ranged from 2 to 16. Patient satisfaction levels was recorded using the international outcome inventory for hearing aids, Turkish edition (IOI-HA-TR). Total individual subjective satisfaction (TISS) scores were also recorded.

Results: Group I had 27 males and 20 females and group II had 29 males and 18 females. The mean TISS score at 1 month in group I was 48 and in group II was 62, at 6 months was 53 and in group II was 68 and at 12 months in group I was 60 and 74 in group II. The difference was significant ($P < 0.05$).

Conclusion: There was better hearing with devices with good technologic features such as more channels and a lower minimum frequency.

Key words: Hearing, newborn hearing screening, children

INTRODUCTION

Hearing loss (HL) can be defined as complete or partial loss of the ability to hear and understand information, which limits or restricts an individual's ability to perform hearing-related activities.¹ The hearing handicap also affects non-auditory skills; such individuals are less able to perform normal everyday activities, which affects their relationships with family, work, and society. To alleviate this stigma and enable an increased quality of life, doctors and professionals recommend the use of a hearing aid (HA) for hearing-impaired individual.²

With the advent of universal newborn hearing screening (NHS) programs, it is now possible to identify hearing loss (HL) at birth and provide early intervention for children with mild HL.³ At the same time, these children are more likely to be missed on the NHS because the screen is not sensitive enough to detect HL in this range on a consistent basis without an unacceptable decrease in specificity.⁴ Even if children with mild HL are identified by the NHS, they may not have their HL confirmed in a timely fashion or qualify for early intervention. Furthermore, there is ambiguity regarding appropriate clinical interventions for children with mild HL, particularly involving the need for audiological management.⁵ The benefits to hearing aids (HA) users are related to improved communication in daily life,

which reduces disability and handicap. Improved hearing ability, however, extends far beyond hearing and communication benefits; satisfaction is a more accurate measure of positive results because it encompasses a constellation of dynamic factors and is dependent on user perception and attitudes in many areas, including those unrelated to HA performance.⁶ The present study assessed efficacy of two different hearing aids in patients with hearing loss.

MATERIALS & METHODS

The present study comprised of 94 patients with hearing loss of both genders. All were informed and their written consent was obtained.

Data such as name, age and gender was recorded. They were divided into 2 groups of 47 each. Group I comprised of channels ranged from 1 to 16. The minimum frequency ranged from 100 to 240 Hz and the maximum frequency from 4,000 to 7,100 Hz. Group II had the number of channels ranged from 2 to 16. The minimum frequency ranged from 100 to 160 Hz and the maximum from 5,800 to 7,600 Hz. Patient satisfaction levels was recorded using the international outcome inventory for hearing aids, Turkish edition (IOI-HA-TR). Total individual subjective satisfaction (TISS) scores were also recorded. Results were analysed statistically

RESULTS

Table I Distribution of patients

Gender	Group I	Group II
Male	27	29
Female	20	18

Table I, graph I shows that group I had 27 males and 20 females and group II had 29 males and 18 females.

Graph I Distribution of patients

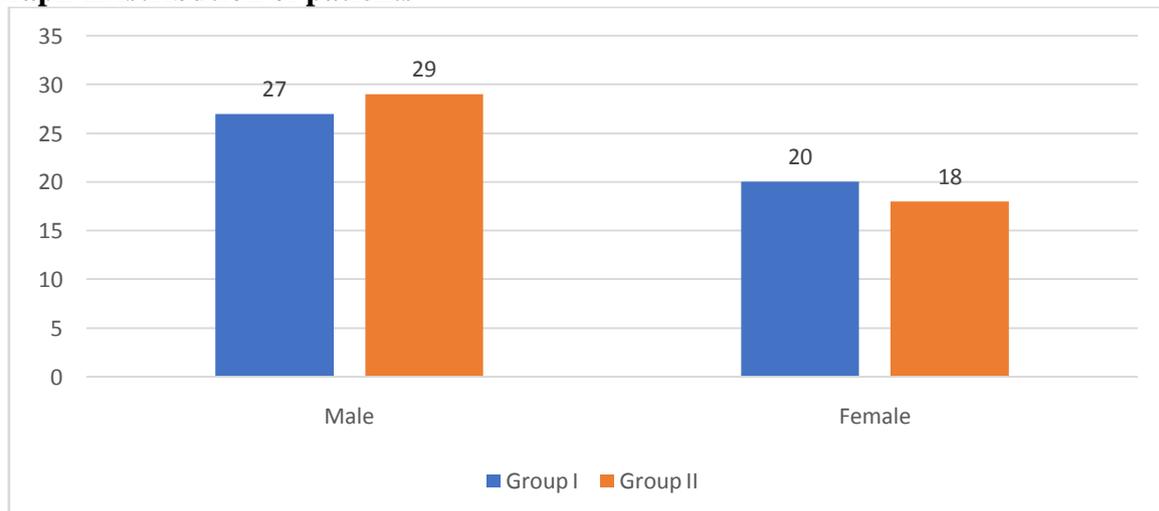
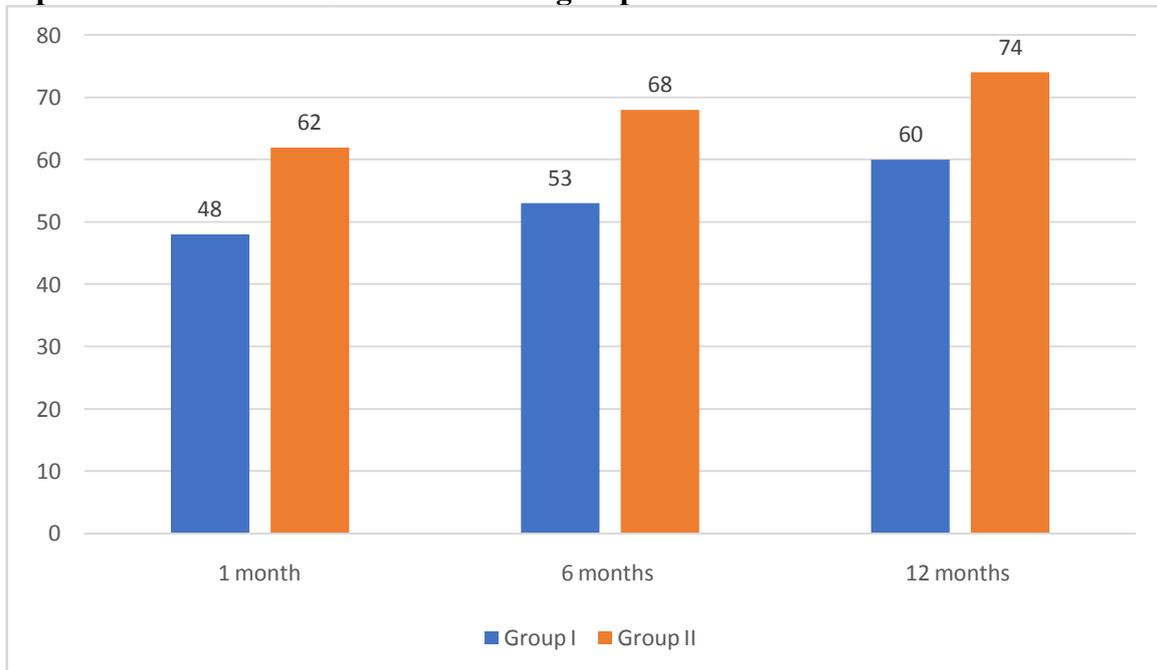


Table II Assessment of TISS score in both groups

Groups	Group I	Group II	P value
1 month	48	62	0.05
6 months	53	68	0.03
12 months	60	74	0.01
P value	0.01	0.05	

Table II, graph II shows that mean TISS score at 1 month in group I was 48 and in group II was 62, at 6 months was 53 and in group II was 68 and at 12 months in group I was 60 and 74 in group II. The difference was significant ($P < 0.05$).

Graph I Assessment of TISS score in both groups



DISCUSSION

Hearing loss not only causes a deficiency in a person's capacity to perceive sounds, but it also brings about psychosocial compromises.⁷ These compromises can prevent people from enjoying a healthy social life and playing an active role in society, which greatly impacts their quality of life.^{8,9} HA selection should be based on audiological factors (degree and configuration of HL) and physical factors (anatomical characteristics of the pinna and external auditory canal, user's manual dexterity, and medical contraindications for occlusion of the external auditory canal).¹⁰ HA users have identified several variables important to the adaptation process, such as comfort, the mold or fit, hearing ability in quiet environments, conversability in noisy environments, sound quality, technical support, and ease of HA cleaning, operation, and insertion.¹¹ The present study assessed efficacy of two different hearing aids in patients with hearing loss.

We found that group I had 27 males and 20 females and group II had 29 males and 18 females. Mondelli et al¹² characterized the degree of satisfaction among adult and elderly hearing aid (HA) users who were treated by a public hearing health service and the relationship between satisfaction and the variables of gender, age, degree of HL, and type of HA. The clinical and experimental study included the administration of the Satisfaction with Amplification in Daily Life (SADL) questionnaire to 110 patients who had used HAs for more than 3 months and were 18 years of age or older. Test patients were sex-balanced (48% were women) and had a mean age of 67 years. A relatively high incidence of sensorineural moderate HL was detected in the study patients (66%) and device B was the most commonly used HA type (48%). No significant differences were evident between HA satisfaction and sex. The importance placed on services/costs and personal image varied between age groups. Correlation was evident at all levels between user satisfaction and amplification. Decreased satisfaction was observed in individuals with severe and/or profound HL. The type of HA used yielded statistically significant differences in the positive effects referring.

We observed that mean TISS score at 1 month in group I was 48 and in group II was 62, at 6 months was 53 and in group II was 68 and at 12 months in group I was 60 and 74 in group II. Novaes et al¹³ reported that in children diagnosed with hearing loss during the first 3 years of life, family involvement, the quality of parental participation in the intervention program, and expectations about the future are important considerations in their child's ability to cope with their loss. These factors can aid therapists and researchers in the assessment of the effectiveness of interventions for infants with hearing loss. The present study was conducted to compare efficacy of two different hearing aids in patients with hearing loss. Aurélio et al¹⁴ found no relationship between age and satisfaction with hearing aid use. This is not in agreement with the findings of a study by Korkmaz et al, who concluded that there was a negative correlation between age and satisfaction; in other words, younger patients were happier.

Walker et al¹⁵ examined the effects of consistent hearing aid (HA) use on outcomes in children with mild hearing loss (HL) in 5 or 7-year-old children with mild HL were separated into 3 groups on the basis of patterns of daily HA use. Full-time HA users demonstrated significantly higher scores on vocabulary and grammar measures compared with nonusers. There were no significant differences between the 3 groups on articulation or speech perception measures.

CONCLUSION

Authors found that there was better hearing with devices with good technologic features such as more channels and a lower minimum frequency.

REFERENCES

1. Counter P. Implantable hearing aids. *Proc Inst Mech Eng H* 2008;222(6):837-52.
2. Jerger J, Jerger S. Measuring of hearing in adults. In: Paparella MM, Shumrick DA, eds. *Otolaryngology*. 2nd ed. Philadelphia: W.B. Saunders; 1980:1226.
3. Lessa AH, Costa MJ, Becker KT, Voucher AV. Satisfação de usuários de próteses auditivas, com perda auditiva de graus severo e profundo. *Arq Int Otorrinolaringol* 2010;14(3):338-45.
4. Kırkım G, Şerbetçioğlu MB, Mutlu B. Assessment of patient satisfaction for hearing aids using the Turkish version of International Outcome Inventory for Hearing Aids [in Turkish]. *KBB ve BBC Dergisi* 2008;16(3):101-7.
5. Korkmaz MH, Bayır Ö, Er S, et al. Satisfaction and compliance of adult patients using hearing aid and evaluation of factors affecting them. *Eur Arch Otorhinolaryngol* 2016;273(11):3723-32.
6. Knudsen LV, Nielsen C, Kramer SE, et al. Client labor: Adults with hearing impairment describing their participation in their hearing help-seeking and rehabilitation. *J Am Acad Audiol* 2013;24(3):192- 204.
7. Kochkin S. MarkeTrack III: Higher hearing aid sales don't signal better market penetration. *Hear J* 1992;45(7):47-54.
8. Kim HH, Barrs DM. Hearing aids: A review of what's new. *Otolaryngol Head Neck Surg* 2006;134(6):1043-50.
9. Mcleod B, Upfold L, Broadbent C. An investigation of the applicability of the inventory, satisfaction with amplification in daily life, at 2 weeks post hearing aid fitting. *Ear Hear*. 2001;22(4):3427.
10. Kam ACS. Hearing-aid outcomes in Chinese adults: Clinical application and psychometric properties of the Chinese version of the Satisfaction with Amplification in Daily Life questionnaire. *Int J of Audiol*. 2012;51:450-5.

11. Ulusoy S, Muluk NB, San T, Cingi C. Evaluation of patient satisfaction with different hearing aids: A study of 107 patients. *Ear, Nose & Throat Journal*. 2017 Jan;96(1):E22-8.
12. Mondelli MF, Rocha AV, Honório HM. Degree of satisfaction among hearing aid users. *International Archives of Otorhinolaryngology*. 2013 Jan;17(01):051-6.
13. Novaes BC, Versolato-Cavanaugh MC, Figueiredo Rde S, Mendes Bde C. Determinants of communication skills development in children with hearing impairment. *J Soc Bras Fonoaudiol* 2012;24(4):335-41.
14. Aurélio FS, Silva SP, Rodrigues LB, et al. Satisfaction of patients fit with a hearing aid in a high complexity clinic. *Braz J Otorhinolaryngol* 2012;78(5):69-77.
15. Walker EA, Holte L, McCreery RW, Spratford M, Page T, Moeller MP. The influence of hearing aid use on outcomes of children with mild hearing loss. *Journal of Speech, Language, and Hearing Research*. 2015 Oct;58(5):1611-25.