

A comparative efficacy of two different hearing aids in patients with hearing loss- - An Original Research

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ABSTRACT:

Background:Hearing loss not only causes a deficiency in a person's capacity to perceive sounds, but it also brings about psychosocial compromises. The present study was conducted to compare efficacy of two different hearing aids in patients with hearing loss.

Materials & Methods: 72 patients with hearing loss were divided into 2 groups. Each group had 36 patients. Group I comprised of channels ranged from 1 to 16. 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. Total individual subjective satisfaction (TISS) scores were also recorded.

Results: The group I had 17 males and 109 females and group II had 20 males and 16 females. The mean TISS score at 1 month, 6 months and 12 months in group I was 50, 55 and 63 and in group II was 60, 68 and 75 respectively ($P < 0.05$). The difference was significant ($P < 0.05$).

Conclusion: Devices with good technologic features such as more channels, a lower minimum frequency, and a higher maximum frequency result in better hearing.

Key words: Hearing, Sound, Device

INTRODUCTION

Hearing loss not only causes a deficiency in a person's capacity to perceive sounds, but it also brings about psychosocial compromises. 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.¹

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.² 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.³ 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.⁴

The use of hearing aids is low compared with the prevalence of hearing impairment. According to studies, 12% of those who could benefit from hearing aids do not use theirs, only 58% of regular users report satisfaction, and hearing-related problems remain in 62% of these patients. People who seek help can take part in hearing aid rehabilitation programs in several ways.⁵ A patient-centered approach that involves a patient's active participation has been found to improve clinical dispensing, fitting, and counselling practices with the goal of increasing the benefits of and satisfaction with the use of hearing aids.⁶ The present study was conducted to compare efficacy of two different hearing aids in patients with hearing loss.

MATERIALS & METHODS

The present study comprised of 72 patients with hearing loss. All were enrolled with their written consent.

Data regarding their age, name and gender was recorded. They were divided into 2 groups. Each group had 36 patients. 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. All were made to wear device for 3 years. The International Outcome Inventory for Hearing Aids, Turkish edition (IOI-HA-TR) was used to evaluate satisfaction levels and total individual subjective satisfaction (TISS) scores were also recorded. Results were tabulated for statistics analysis. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 72		
Groups	Group I	Group II
M:F	17:19	20:16

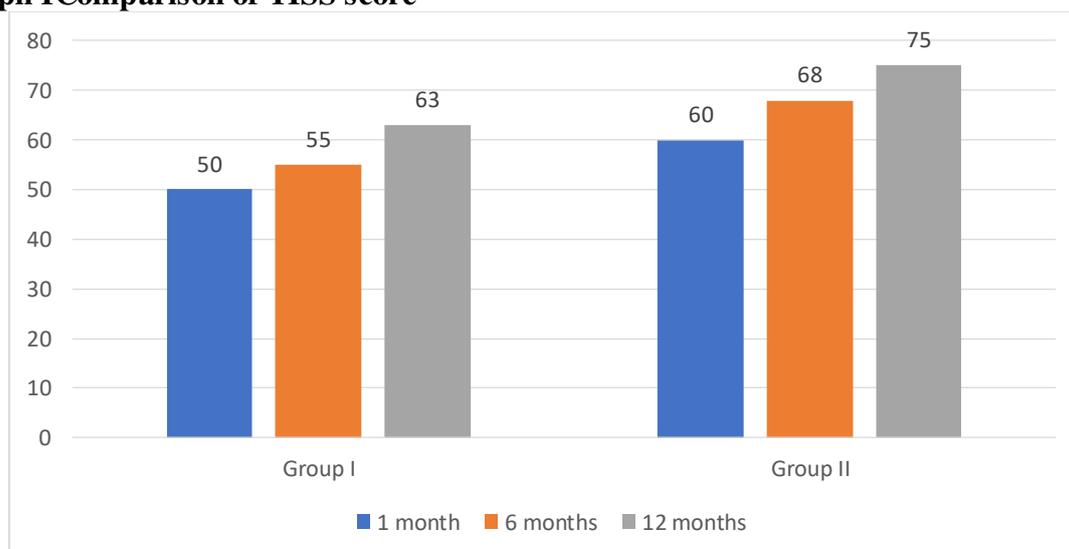
Table I shows that group I had 17 males and 19 females and group II had 20 males and 16 females.

Table II Comparison of TISS score

Groups	1 month	6 months	12 months	P value
Group I	50	55	63	0.02
Group II	60	68	75	0.04
P value	0.05	0.04	0.01	

Table II, graph I shows that mean TISS score at 1 month, 6 months and 12 months in group I was 50, 55 and 63 and in group II was 60, 68 and 75 respectively ($P < 0.05$). The difference was significant ($P < 0.05$).

Graph I Comparison of TISS score



DISCUSSION

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. 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.⁷ 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.⁸ Novaes et al⁹ 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.

In present study, group I had 17 males and 109 females and group II had 20 males and 16 females. Ulusoy et al¹⁰ retrospectively investigated patient satisfaction with different types of hearing aids in 107 patients—60 males and 47 females, aged 8 to 84 years (mean: 53.8)—with unilateral or bilateral hearing loss, each of whom used two different hearing devices for at least 3 years per device. The International Outcome Inventory for Hearing Aids, Turkish edition (IOI-HA-TR) was used to evaluate satisfaction levels. They divided 16 different hearing devices into two types: device 1 and device 2; on average, device 2 had more channels, a lower minimum frequency, and a higher maximum frequency. They found that the IOI-HA-TR scores and TISS scores were higher and usage time was greater during device 2 use, and that there was a positive correlation between IOI-HA-TR and TISS scores. A total of 69 patients (64.5%) used device 2 for more than 8 hours per day, while 38 patients (35.5%) used it for 4 to 8 hours per day during the final 2 weeks of the trial. In contrast, 40 patients (37.4%) used device 1 for more than 8 hours, 50 (46.7%) used it for 4 to 8 hours, and the remaining 17 (15.9%) used it for less than 4 hours; the difference in the duration of use of the two devices was statistically significant ($p < 0.001$). Younger patients and patients with more education were more satisfied with their devices than were older patients and those who were not as well educated. They concluded that devices with good technologic features such as more channels, a lower minimum frequency, and a higher maximum frequency result in better hearing.

We found that mean TISS score at 1 month, 6 months and 12 months in group I was 50, 55 and 63 and in group II was 60, 68 and 75 respectively ($P < 0.05$). Aurélio et al¹¹ 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 al¹² examined the effects of consistent hearing aid (HA) use on outcomes in children with mild hearing loss (HL). Method: Five- or 7-year-old children with mild HL were separated into 3 groups on the basis of patterns of daily HA use. Using analyses of variance, we compared outcomes between groups on speech and language tests and a speech perception in noise task. Regression models were used to investigate the influence of cumulative auditory experience (audibility, early intervention, HA use) on outcomes. 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. After controlling for the variance in age at confirmation of HL, level of audibility, and enrollment in early intervention, only amount of daily HA use was a significant predictor of grammar and vocabulary.

CONCLUSION

Authors found that devices with good technologic features such as more channels, a lower minimum frequency, and a higher maximum frequency result in better hearing.

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