

Skuteczność aparatów słuchowych w ocenie audiologicznej i własnej pacjenta – *streszczenie*.

Effectiveness of hearing aids in audiological and patient self-assessment - *summary*.

Intensive technological developments are improving the quality of hearing devices. Despite this, user acceptance and satisfaction with fitted hearing aids varies. The aim of this study is to evaluate the gain of a fitted hearing aid on air conduction in audiological studies and the patient's own opinion. The partial objectives of the study tested the statistical relationship between the subjective effectiveness of the hearing aid as perceived by the patient and demographic factors such as gender, age, education, duration of hearing aid use and family support in accepting the hearing aid. On the basis of audiological tests, the relationship between the subjective assessment of the effectiveness of the prosthesis and selected parameters was tested: degree of hearing loss, Discrimination Score (DS), Comfort Hearing Threshold (MCL), free-field speech discrimination level for sound pressure levels of 45 dB SPL, 55 dB SPL and 65 dB SPL. Perceptions of the hearing aid as perceived by users of these devices were also investigated.

The study group consisted of 78 people (46 women and 32 men). These were people with hearing loss who had been using an air-conduction hearing aid for a minimum of 3 months. There were 14 people (18%) who had been using hearing aids for less than a year, 10 people (13%) who had been using them for 1 to 3 years and 18 people (23%) who had been using them for 4 to 6 years. 36 people (46%) had been using hearing aids for more than 6 years.

The range of audiological tests included: otoscopy, tonal audiometry, speech audiometry and determination of UCL thresholds. Assessment of prosthetic effectiveness included determination of free-field auditory thresholds without and with hearing aids and free-field speech comprehension testing for sound pressure levels: 45 dB SPL, 55 dB SPL and 65 dB SPL without and with hearing aids.

Two questionnaires, the IOI-HA and a self-administered questionnaire, were used to subjectively assess the effectiveness of the hearing loss prosthesis. The standardised questionnaire deals with the evaluation of hearing improvement, the comfort of wearing the hearing aid, the perception of change in hearing, also according to the subject's environment. The questionnaire scores range from 7-35 points. The mean value of the overall IOI-HA score in the study group was 27.36 points.

A self-administered questionnaire was developed to assess participants' perceptions of hearing impairment and to evaluate the effectiveness of hearing aids in difficult listening situations.

In the study group, the average hearing loss was 57 dB HL in the right ear and 56 dB HL in the left ear. The degree of hearing loss was determined on the basis of the tests: 63% of the subjects had moderate hearing loss, 26% severe hearing loss, 5% mild hearing loss and 6% profound hearing loss. Based on speech audiometry, the MCL threshold was determined, which averaged 81 dB SPL in the right ear and 81 dB SPL in the left ear. The average speech discrimination level was 89% in the right ear and 81% in the left ear. Based on these parameters, the discrimination level in the better ear of the BSRR was determined. In the study group, 52 subjects (67%) achieved a BSRR between 90-100%.

The most important listening situations for them were: family gatherings - 49 people (63%), large groups of people - 39 people (50%), watching TV - 26 people (33%), and being in areas with reverberation - 23 people (29%).

The decision to use a hearing prosthesis for 42 people (53%) was an independent decision driven by their need to improve their hearing, for 21 people (26%) it was based on suggestions from their environment. 36 people (46%) experienced anxiety before using a hearing prosthesis and 30 people (38%) experienced psychological discomfort before wearing a hearing aid, 42 people (53%) had concerns about the use of hearing aids themselves.

A significant improvement in hearing in a large group of people was reported by 25 people (32%), and a large improvement in understanding speech in areas with reverberation was indicated by 19 people (24%). Regarding improvement in hearing in relevant listening situations, 48 people (62%) felt that the hearing instrument met their expectations, and 61 people (78%) indicated that the environment saw a big improvement in hearing. 44 people (56%) stated that the hearing aid was very effective during phone calls. In the study group, 34 people (44%) indicated that they experienced tinnitus, and for 23 of them hearing aids were found to be helpful in alleviating this symptom.

Comfort in life after hearing aid use was rated as very good by 44 people (56%) and a significant increase in self-confidence was reported by 25 people (32%).

A statistical relationship was found between the level of discrimination of the better ear determined by BSRR speech audiometry and the overall IOI-HA questionnaire score. The higher the BSRR level, the greater the effectiveness of the hearing loss prosthesis as perceived by the patient. A statistical relationship was also found between the duration of hearing aid use and the overall IOI-HA score. The respondents' rating of hearing aid effectiveness was influenced by the duration of hearing aid use. The highest ratings of hearing aid effectiveness were given by patients using their hearing aid for less than one year. This can be explained by the positive difference in hearing observed by first-time hearing aid users - the improvement in hearing in the first months is more noticeable and more strongly felt.

No statistical relationship was found between the effectiveness of hearing preservation and demographic factors. No statistical relationship was found between the degree of hearing loss and the threshold of comfortable hearing determined by speech audiometry (MCL). There was also no statistical relationship between the discrimination coefficient obtained in free-field speech audiometry at 45 dB SPL, 55 dB SPL, 65 dB SPL and the subject's age, subjective evaluation of the effectiveness of the hearing aid in a large group of people or evaluation of the effectiveness of the hearing aid in a difficult acoustic environment.

Many factors influence the final evaluation of a hearing aid in terms of its benefit. Documenting gain in the free field does not necessarily reflect the patient's satisfaction with the use of the hearing aid and vice versa. The patient's subjective evaluation of the prosthesis requires verification of hearing aid gain in audiological tests. It is reasonable to check the effectiveness of hearing aids audiologically and to assess the patient's own use of the hearing prosthesis.

*A. Kubacka - Oniśny*