

The quality of life in patients undergoing acoustic rehabilitation: a pilot study

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Abstract

Hearing loss can cause both auditory and extra-auditory problems in adult patients, worsening their quality of life on both emotional and social level. The following study shows the acoustic rehabilitation effectiveness in improving the quality of life of hypoacusis patients. The continuous use of hearing aids and a specific adaptation suggested by the specialist lead to an improvement in mental health component summary score (MCS-12) right after a month. This improvement is felt and confirmed by the patients themselves, through the questionnaire SF-12. On the other hand there is no improvement in physical component summary score (PCS-12). Hearing aids are efficacious in determining improvements in mental health in the short term in patients with hearing loss.

Keywords: Hearing loss, quality of life, hearing aids, acoustic rehabilitation, SF-12

1. Introduction

Patients who suffer from Hearing loss, not only have important acoustic limitations, but show also effects like increase of stress, anxiety disorders and they end up getting away from social life, creating tensions within the family too [1, 2]. Those who approach to audio-prosthetic treatment can benefit from an acoustic improvement, more or less satisfactory, depending on the kind and level of hearing loss, on the aid used and, above all, on the work done by the specialist in choosing and adapting hearing aids. The study presented below aims at verifying the improvement in the quality of life, obtained with the use of hearing aids, by monitoring the change of mental health component summary score Mental Composite Score (MCS-12), a parameter, which represents the emotional and psychological improvement in the patient, and in the Physical Composite Score (PCS-12), which highlights aspects, related to the health in general [3].

2. Materials and Method

The study involved the participation of patients undergoing acoustic rehabilitation in the acoustic centers Udisens in some provinces of Lazio Region. All patients have been fitted with a prosthesis across a 6-month time span. Acoustic adaptation differed from the use of air and bone conduction hearing aid, depending on the kind of hearing loss: Sensorineural or Transmission hearing loss. 2 out of 49 patients have been fitted with bone conduction spectacle hearing aid; 10 out of 49 with in the ear aid (ITE) and 37 out of 49 with behind the ear aid (BTE). In parallel with acoustic rehabilitation, patients were asked to complete the questionnaire SF-12, in order to define the differences in the results between the period before and after the acoustic rehabilitation. Three time intervals in which to present the questionnaire were defined: T0 at the delivery of the hearing aid, T1 after a month and T2 after 3 months. As a result, the study takes the form of a cohort study. The statistical analysis, carried out on the basis of the results obtained, is a descriptive one. This one has determined

the values of means, median and standard deviation in the sample. With such a small sample, we mainly took into account the median values. It was also possible to define frequency tables, by age and gender, and values of minimum and maximum. The quantitative variables have been described with box-plot and histograms. A generalized linear regression model with and without confounding variables of age and gender was conducted. The statistical significance was set at $p < 0.05$. The analysis was carried out using of the statistical package SPSS for Windows – Release 21.0.

3. Results

The final sample consisted of 49 patients, including 19 women and 30 men, with a median age of 71.45 years, from the provinces of Rome, Latina and Frosinone (Lazio Region).

The results are obtained through acoustic adaptation, done in a meticulous and optimal way, according to the needs of the patients. The 12 questions included in the questionnaire SF-12 have been essential for obtaining statistical values, comparable to the mental health component summary MCS-12 and physical component summary PCS-12, which describes patient’s perception of general health.

In Figure 1 it can be observed the results obtained for the values of MCS-12 e PCS-12. It may be observed that the MCS score improve significantly from T0 to T2 ($p < 0.001$). In numerical terms, we start from the initial value of 42.6, to reach the value of 47.04 in the phase T1.

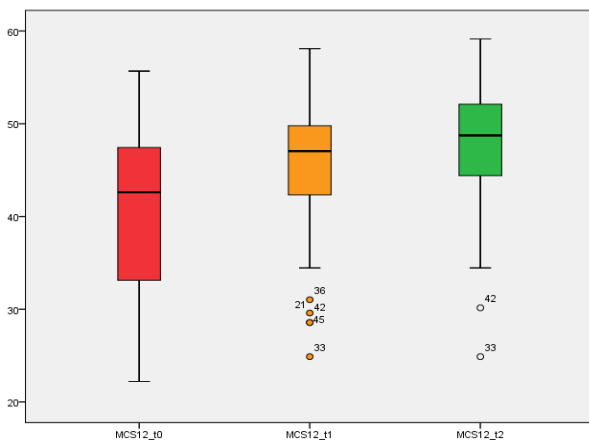


Figure 1. MCS-12 in the phases T0,T1,T2.

After two months the median value still grows, reaching 48.74 in the phase T2. This trend is present also considering different gender (Figure 2).

On the other hand, the PCS do not significantly change over time and by gender (Figures 3 and 4). In the phase T0, the PCS-12 assumes a median value of 45.49 and then it settles on the value of 45.12 in the second phase

of test. Finally, in the phase T3 we can see a value of 45.41 that doesn’t change, compared to the initial phases.

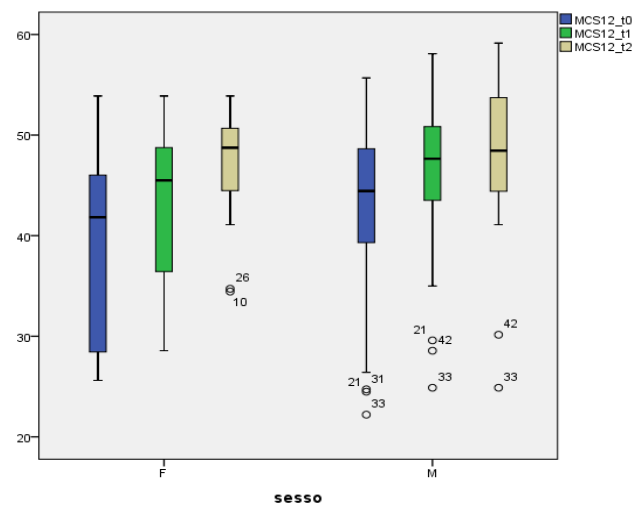


Figure 2. MCS-12 in the 3 phases, according to gender.

4. Discussion

The results of this pilot study indicate an improvement of the MSC score occurred in 3 months of follow-up, while the PCS score remains substantially unchanged. Another point that could be highlighted is that these trends are similar for both sexes.

However, given the small amount of patients involved in this analysis, the results must be considered with care.

Nevertheless, this issue is very important for future investigations. It’s well know that the severity of hearing loss is associated with reduced quality of life in older adults. This severity is significantly associated with decreased function in both the MCS and PCS scores derived from the SF-36 [2]. There is also evidence that in adolescence the mental health of deaf individuals with cochlear implants is comparable to that of normal hearing peers [5].

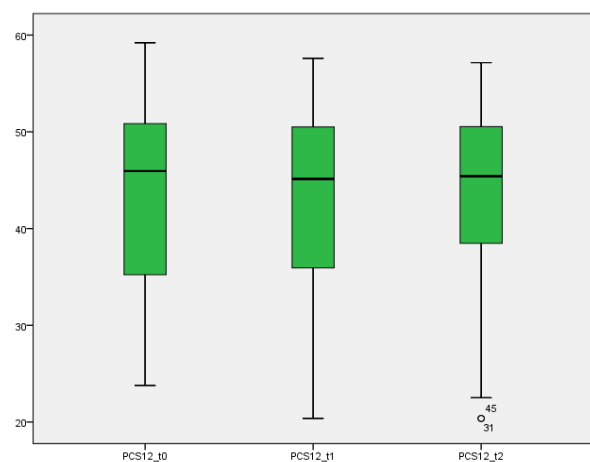


Figure 3. PCS-12 in the phases T0,T1,T2.

Boi et al [1] demonstrated that the elderly without cognitive decline and no substantial functional deficits should be encouraged to use hearing aids to improve their quality of life, in order to improve depressive symptoms, general health and social interactivity [1]. Mulrow and coll [4] found long-term benefits of hearing aids in elderly individuals with hearing loss in terms of social and emotional, communication and depression benefits.

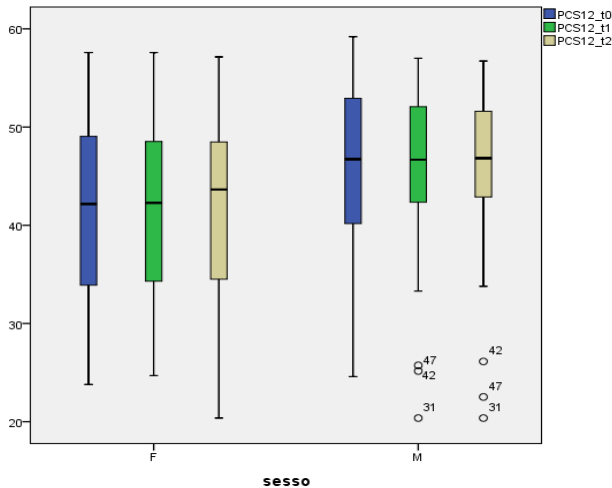


Figure 4. PCS-12 according to gender.

Moreover, considering the adult population, Hua et al [6] demonstrated that hearing-impaired employees have relatively good Health-related quality of life in relation to the normative population, but significantly lower physical functioning.

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5. Conclusions

The results of the analysis allow us to make some important considerations and give us suggestions for a future work, which aims at expanding the study to an increasing number of participants. If we analyze these data, the health-related quality of life gets better, with regard to emotional and mental health index. One month after the beginning of the acoustic rehabilitation, it seems that patients feel the most noticeable improvement in the MCS-12 values. This improvement can also be seen in the next two months, but the increase is small. So this can be a significant factor in the work of the specialist in acoustic rehabilitation, that could attest the change in the quality of life, right after a month from the beginning of the acoustic rehabilitation. We must take into account that numerical data obtained during the first stage of the study, in relation to the median, are below the national median of MCS-12 values, which are 47 in female and 51 in male [3]. Thanks to the work done, the patients can reach a qualitative level close to the one of the national median, in the 3 months of rehabilitation, being the category excessively damaged by hearing loss. The outlooks of this research encourage to identify a fourth control phase one year later, in order to monitor further improvements over time.

There are no improvements in terms of perception of general health and in fact, the median remains on a value of about 45. The fourth graph shows that in general men perceive their health better than women. But in both cases there are no differences in the three time intervals.

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