EFFICACY OF MUSIC THERAPY IN TREATMENT OF APHASIA IN A PATIENT WITH ALZHEIMER

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Abstract
A person with Alzheimer's disease may suffer from aphasia as a symptom of the disease, accelerating the patient's lack of communication with his environment and therefore increasing social isolation. The present work investigated the music therapy process with a person with Alzheimer's disease and aphasia as a symptom of their dementia, focusing on the 10 sessions that were carried out on language treatment and communication between the music therapist and the patient, addressing the effort towards vocalization of words, reading and comprehension of texts and conversations. A slight evolution was observed in the improvement of the repetition of words, of the intention in the communication and of the participation regarding the results, they indicate an improvement of the patient in the evolution of the aphasia. However, these results were not significant enough to be able to affirm that music therapy is a key element in slowing down aphasia as a symptom of Alzheimer's disease

Keywords: Alzheimer, aphasia, communication, language, Music Therapy.

BACKGROUND

Alzheimer's disease (AD) is a neurodegenerative disorder that presents in its great majority with a prominent cognitive impairment and short-term memory difficulty, although it also presents an impairment in expressive speech and mental agility.

One of the characteristic symptoms is the appearance of problems in language, aphasia, the early stages of the disease are characterized by little participation in conversations and as a consequence the desire of the patient to separate himself from his loved ones or friends.

Numerous studies assess the efficacy of music therapy work with Alzheimer's patients from different perspectives, namely, emotional recognition through music (Drapeau et al., 2009), recognition of emotional prosody (Almerova et al., 2022), memory, (Brotons and Koger, 2000; Bruer et al., 2007; Koger and Brotons, 2000; Prickett, C. A. et al., 1991; Vink et al., 2004), depression and anxiety (Gomez-Gallego and Gómez-García, 2017; Van der Geer et al., 2009), reduction of stress levels (Fukui et al., 2012; Gerdner, L. 2000), even improvement in motor functions (Brown et al., 2012, Moussard et al., 2014). Concerning the evolution of aphasia, some studies have evaluated the influence of music therapy on the improvement of this symptom in older people (King, 2007) and in patients with dementia (Ridder et al., 2015). The results of the study conducted in the United States on the physical increase in primary stages of aphasia with Alzheimer's patients through the practice of strategies in connected speech showed that the evolution of aphasia can be slowed down at the level of

word conservation (Beales et al., 2021). It can be certified that by focusing attention on aphasia due to stroke, a sound environment enriched through music is beneficial for the recovery of these patients, improving functional communication, repetition and naming in these patients (Liu et al., 2022)

This study tried to assess the effectiveness of a music therapy intervention with an Alzheimer's patient to reduce the symptoms of aphasia as an indicator of this disease.

Materials and everything

The patient, aged 72 years, born in Castilla la Mancha, was diagnosed with Alzheimer's disease at 59 years, at the time of the project had a grade III on the Scale of Dependency (BVD) and a degree of total disability of 80%. The symptoms she presented were:

- Difficulty communicating, problems understanding and expressing oneself.
- Difficulty in all activities of daily living (eating, dressing, showering).
- Anxiety and fear, at sunset.
- Few fits of anger and short. After these attacks sadness, depression orn.
- Lack of independence and autonomy.
- Lack of memories of his family, his environment and his past.

The patient had an acid problem on the left side. During the year 2000 he was diagnosed with hearing loss in the right ear and underwent surgery, resulting in irreversible residual deafness. When listening to all the sounds and music for a single or í do they seemed strong and strident, so all music therapy works should have very controlled the volume and sonority of the instruments used.

For the selection of the songs, the music that had been part of the patient's life was started, neither, adolescence and adulthood. To know the patient's musical preferences, a questionnaire was passed to the caregiver beforehand to detail her musical preferences. Two weeks after the start of the music therapy process, the results were already available, and the sessions could be prepared with the appropriate material.

Regarding the materials used, the patient's deafness and sensitivity to loud sounds were taken into account. The ukulele and keyboard at a low volume were selected as harmonic instruments, working with shakers, kalimba and djémbé. A tablet with an internet connection and a Bluetooth speaker, always controlling the volume a lot, observing the patient's responses to the volume so as not to create any discomfort.

Procedure

The music therapy process was carried out for 5 weeks, performing two thirty-minute sessions each week. These sessions were developed always using the same routine, including new music therapy activities while maintaining in each session the same activity to analyze the development and responses to it.

The structure of the sessions was as follows:

- Welcome song including the patient's name, inviting him to sing, hum or carry the rhythm of the song.
- New activity in the session, in each session a new musical activity was worked.
- Work on the same song each session, in each session there was a specific work on a song (the version of the song "Algo se muere en el alma" sung by Los del Río).

The points that were worked on in the song were:

1. The song was presented in writing, the beginning and the central part, trying for the patient to read part of the song and could recognize it.

2. In the event that the patient could not read the lyrics or did not recognize it, the music therapist proceeded to read the song including a little movement in there adding.

3. If the patient continued not to recognize the song, the song was sung with armor-only accompaniment or the audio was included, observing at what moment the patient arrived at the recognition.

4. Once the patient recognized the song, they tried to read parts, vocalizing and understanding the meaning of the words.

At each session, it was observed at what point the patient could recognize the song and hum it. About the new activities included in each session, there were different works:

- Musical improvisation, with a base of chords in the ukulele using different words that will involve different spaces of the oral cavity (KA-TA – RA-MA – PA – SA,... with different vowels).
- Singing of songs with very short, repetitive and simple lyrics, with a previous reading, always observing at what point the music was the support in the ease of reading and recognition.
- Recognition of songs and singers, relating the genes of singers to their written name, trying to read, vocalize these names and sing parts of these songs.

Data collection

The following information-gathering tools were used for this intervention project:

- Development of an ad hoc questionnaire with a five-indicator Likert scale, of which the underlying numerical substrate when communication through language was scarcer was one and more fluent five, the questionnaire had 10 items that the caregiver filled out at the beginning of the sessions, After the 5th session and at the end of all sessions. The items were as follows:

Item 1: Pronounce all words easily

Item 2: Understand everything I say

Item 3: Ask to be repeated what you are being told

Item 4: Pay attention when people talk around you

Item 5: When they speak Catalan around them, pay attention

Item 6: When they speak Spanish around them, pay attention

Item 7: Speak often

Item 8: Everything is understood when you speak

Item 9: Pronounces all consonants with ease

Item 10: Pronounce all vowels with ease

- Observation sheets completed after each session, indicating: the number of sessions, date, duration control in the reading and recognition of songs vocabulary, reproduction of lyrics, words and interest in the activity.

- A Short Aphasia Evaluation Protocol that was performed before starting the process and a second Short Aphasia Evaluation Protocol at the end of the sessions, the two Protocols had the same activities and exercises and were performed by a collegiate professional speech therapist. In these protocols, the following points were evaluated:

- Summary of Spontaneous Language
- Automatic Language
- Comprehension of verbal or orverbal redness
- Name
- Repetition orn
- Verbal Designation
- Written Designation
- Writing

Each session was recorded with prior signed informed consent authorizing the collection of data for the realization of the investigation. Subsequently, all the remarkable observations of the work carried out through these recordings were noted.

Statistical analysis and results

Once the sessions were over, the statistical analysis of the results was carried out. As a first point, we proceeded to compare the results of the three Likert scales performed on the caregiver, the comparison of which was to the or a slight evolution in the pronunciation or n of words and comprehension of the patient's vocabulary. There was also a slight improvement in the patient's vocabulary and attention to conversations with other people. The results of the Likert scale items are presented below:

Figure 1

Pronounces all words easily
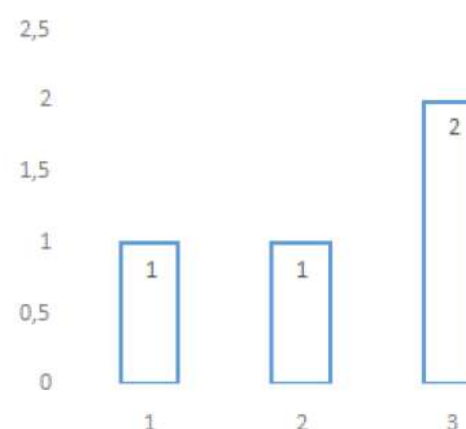
As can be seen in Figure 1, it is observed that at the end of the process, the patient has managed to improve the ease of pronouncing the words that were proposed.

Figure 2

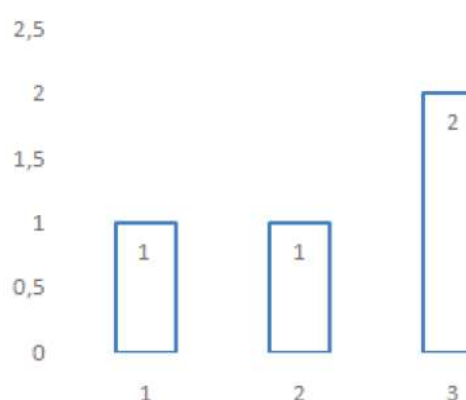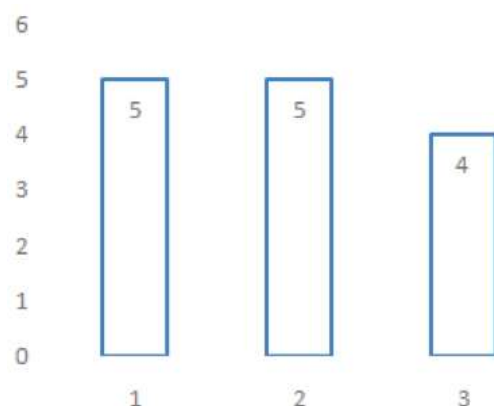*Understands everything that is said to him*

Figure 2 shows that at the end of the process, the patient has managed to improve the ease of understanding words.
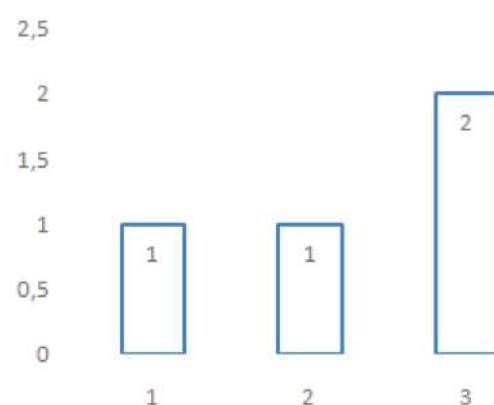
Figure 3

Ask to be told what you are being told

As can be seen in Figure 3, it is observed that the patient has improved in the comprehension of sentences, not needing so many repetitions on the same sentence.
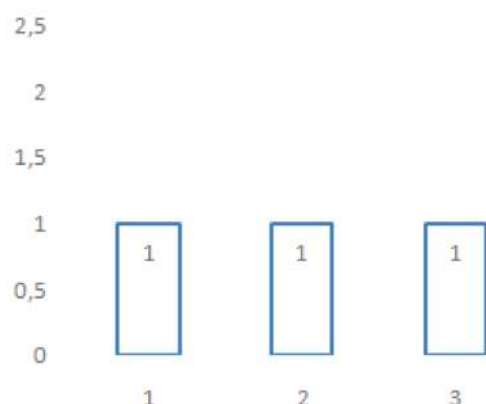
Figure 4.

Pay attention when people talk around you

The data in Figure 4 shows that the patient has improved attention in the conversations that are taking place around him.
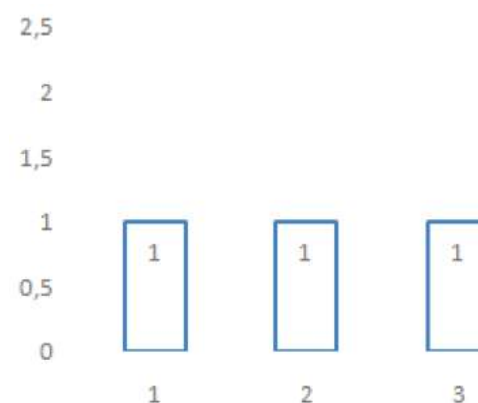
Figure 5

When they speak Catalan he pays attention to everyting

As shown in Figure 5, no changes in the patient's attention are observed when Catalan is spoken around him.
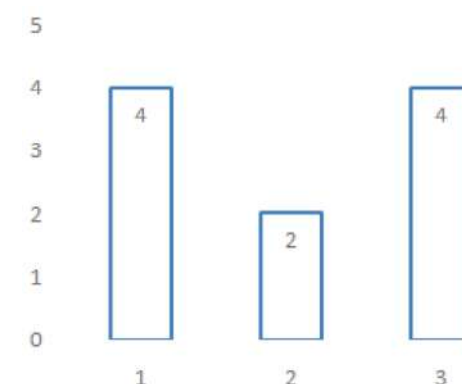
Figure 6

When they speak Spanish around he pays attention to everyting

As can be seen in Figure 6, no changes were observed in the patient's attention when Spanish was spoken around him.
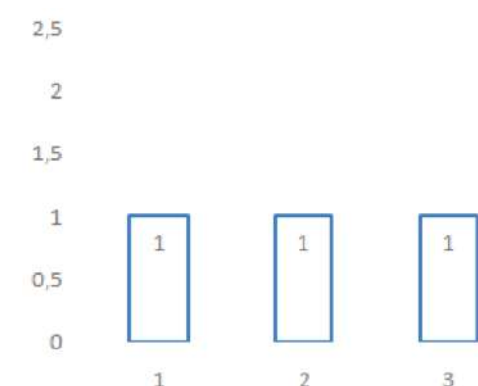
Figure 7

Talk often

As can be seen in Figure 7, no changes were observed in the frequency of the patient's speech, having a significant decrease during the development of the sessions, although he recovers again at the end of these.
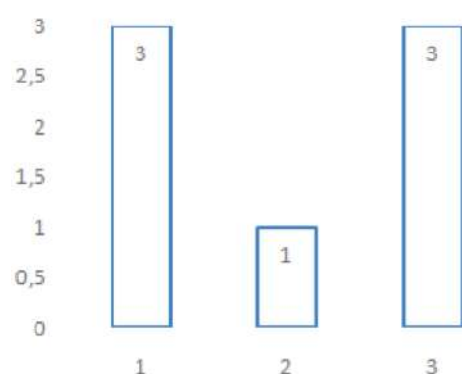
Figure 8

Everything is understood when he speaks

As shown in Figure 8, there were no changes in the caregiver's understanding of the phrases used by the patient to communicate.

Figure 9

Pronounces all consonants easyly

As can be seen in Figure 9, there are no changes in the pronunciation of the consonants pronounced by the patient, having a considerable decrease during the sessions, although recovering at the end of these.
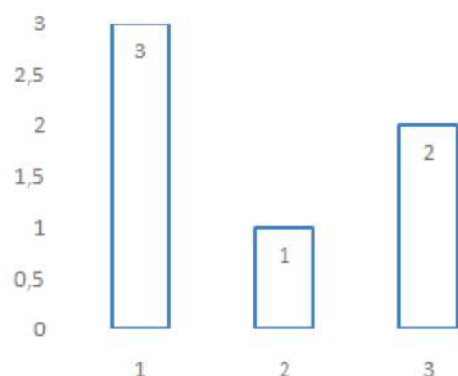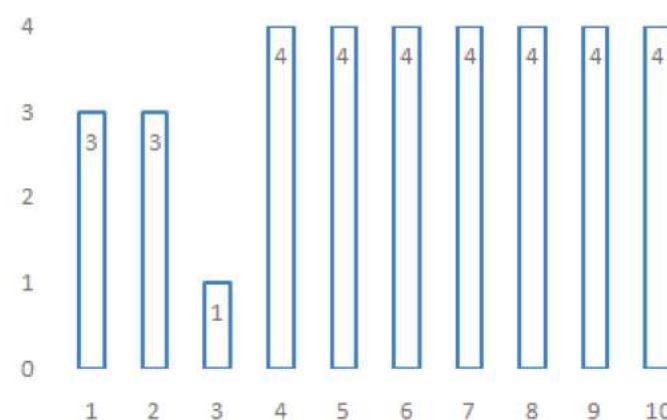
Figure 10

Pronounce all vowels easyly

Figure 10 shows a regression in the pronunciation of the vowels made by the patient.

About the statistical analysis of the observation sheets made at the end of each session, they presented a slight improvement in reading, understanding and vocalization of the words and words worked on in the sessions. The patient showed an increase in interest in reading the songs, at some point, he could recognize the songs that were worked on when listening to the lyrics without the melody, although in most of the sessions he needed the support of the voice sung with or without chords or audio. There was a clear evolution in the patient's interest in pronouncing and vocalizing the words of the songs. The fo-

llowing the graphs show the results obtained through the observation sheets:

Figure 11

Shows interest in reading the songs

As shown in Figure 11, there is a clear improvement in the attention and interest of the patient throughout the sessions. There was a significant drop during the third session.

Figure 12

Read the songs and recognize them
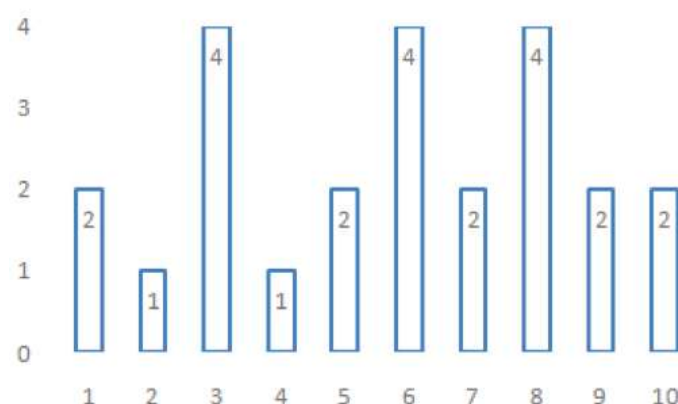
It can be seen in Figure 12 that the patient presents moments in which he can recognize the songs when he can read them, although in most of the sessions, he cannot recognize the songs when reading them.

Figure 13

Recognizes songs when the music therapist sings them

Paying attention to Figure 13, it is observed that in most of the sessions, the patient recognizes the songs at the moment in which the music therapist sings them.
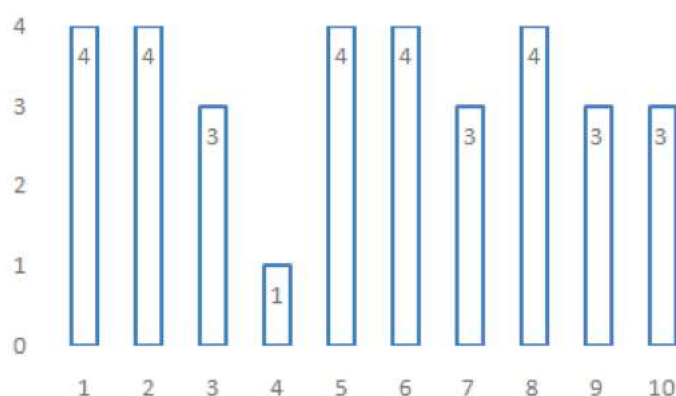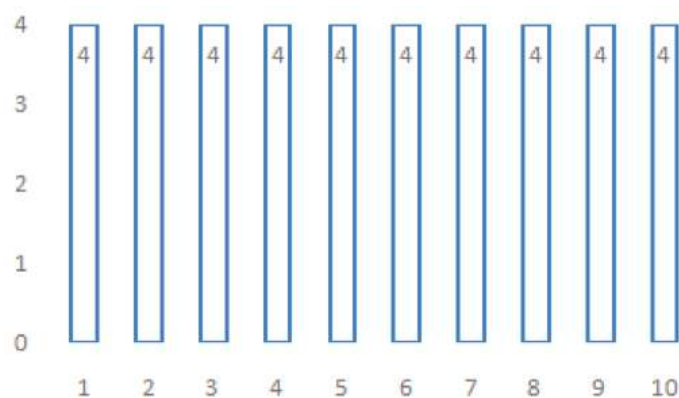
Figure 14

Recognizes songs if you can read and sing them on tim

Figure 14 shows that the patient can recognize the songs in most of the sessions, as long as he can sing them and read some parts.

Figure 15

Recognize songs by listening to them

Looking at Figure 15, it can be seen that the patient can always recognize the songs when listening to them.

Figure 16

Try to move your mouth by imitating the music therapist's movement when singing
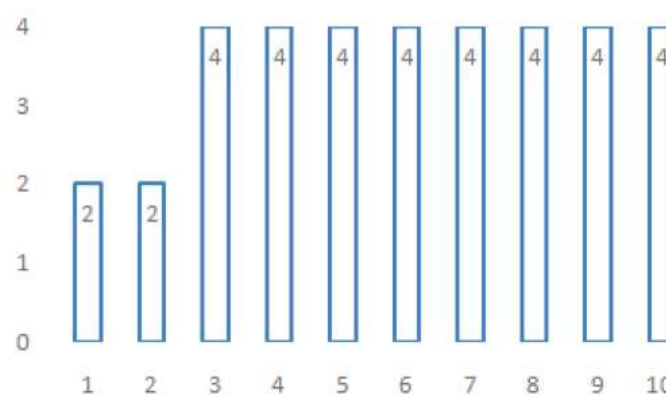
Figure 16 shows that from the third session the patient can try to move his mouth and make sound imitating the melody and words used in the song.

Figure 17
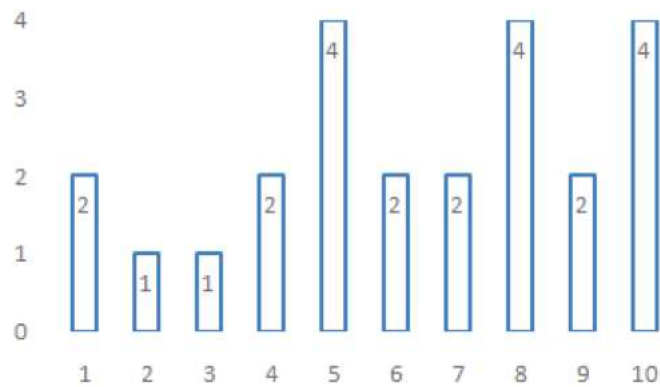
Whistles the songs he hears
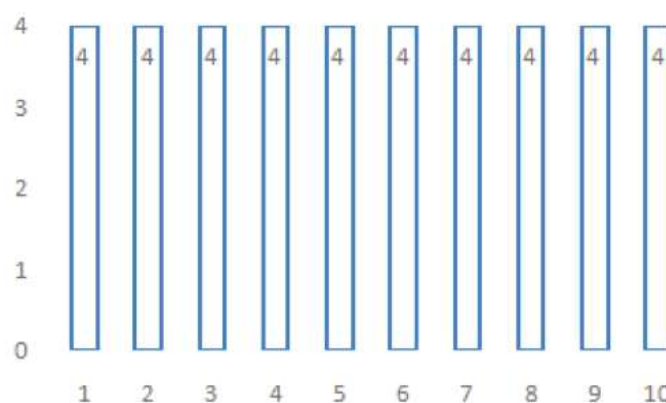
Paying attention to Figure 17 shows that the patient always whistles the songs he hears in the sessions.

Figure 18

Play parts of song lyrics

Figure 18 shows that the patient can play some parts of the songs during almost all sessions.
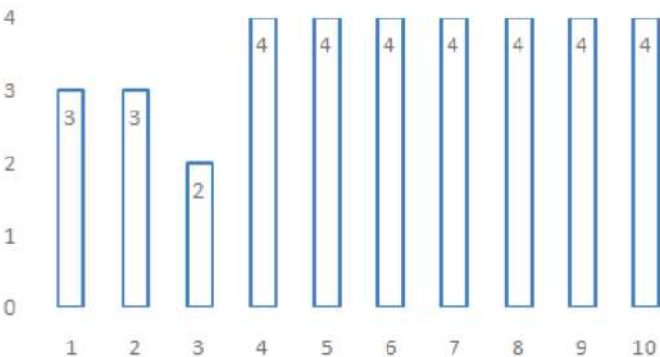
Figure 19

Articulates the sounds proposed by the music therapist

As can be seen in Figure 19, it is observed that from the fifth session, the patient begins to articulate the sounds proposed by the music therapist.

Figure 20

Shows interest in activities

It can be seen in Figure 20 that the patient shows a clear interest in the activities from the fourth session until the end of these.

Then, through a table and a graph, a comparison of the two Short Protocols for the Evaluation of Aphasia is presented.

Analyzing the results of the Short Protocol of Evaluation of Aphasia, it was possible to observe a slight improvement in spontaneous language, the comprehension of verbal or verbal expressions, the repetition of words, words and even phrases and the designation of both verbal and written. There was a slight improvement in the overall score of the Protocol at the end of the sessions.

Although no significant differences were observed in the specific tasks, the improvement in the spontaneous language task

Table 1

Results of the Short Aphasia Assessment Protocol

Antes de las sesiones	Al finalizar las sesiones
Resumen del Lenguaje Espontáneo	
2/20	5/20
Lenguaje Automático	
5/10	3/10
Comprensión de órdenes verbales	
8/10	9/10
Denominación	
7/10	5/10
Repetición	
32/40	34/40
Vocales-sílabas: 23/25	Vocales-sílabas: 21/25
Palabras: 9/10	Palabras: 10/10
Frases: 0/5	Frases: 3/5
Designación Verbal	
6/10	8/10
Designación Escrita	
1/10	2/10
Escritura	
0/10	0/10
PUNTAJE GLOBAL	
61/120	66/120

could be considered relevant and the improvement in the sentence repetition task could be highlighted. Similarly, after the

Figure 21

Chart of comparative results before and at the end of the sessions
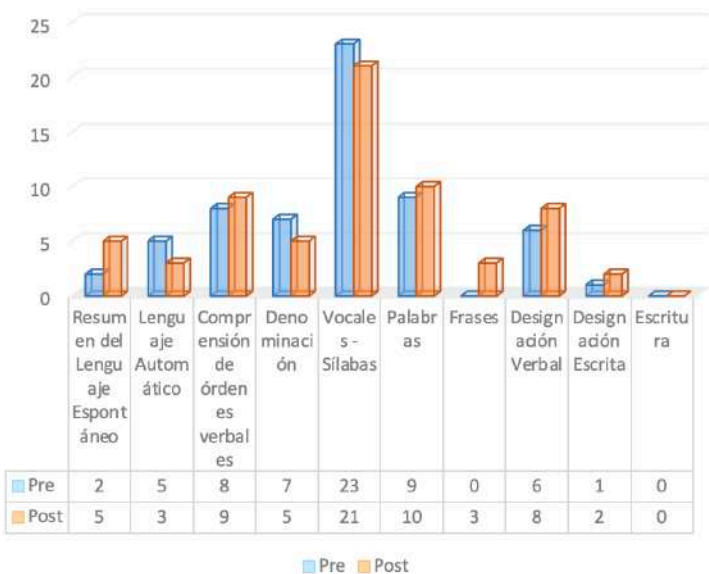
elapsed period there was no worsening of the affliction picture, moreover, in their spontaneous language, there were resources, such as adequate repetitions, which were not so relevant in the first evaluation.

After the quantitative analysis, the qualitative analysis was carried out with the viewing of the videos of the ten sessions and the transcription of all the sessions. From this work, it was observed that the patient was acquiring interest in the sessions, from the fourth session he began to recognize some topics when reading the words of the song or listening to the music therapist read the lyrics of the song. A better interest was observed in the interest of imitating and singing the lyrics of the songs. Although nothing of what he sang was understood, it was observed how the patient reproduced sounds when listening to the song, these sounds followed the line of the song.

Likewise, the same activity was carried out in three different sessions (the second, eighth and ten sessions) improvising on chords with different that the music therapist first presented and tried to get the patient to participate in improvising with these words and the base of chords played on the ukulele. In the first session, the patient did not participate, on the contrary, in the second the patient participated and reproduced many of the words proposed to the music therapist, in the last session the activity was presented again including more silabas With more letters, the patient continued the activity without any problem from the beginning even going so far as to propose some sílaba.

As far as the activity that was repeated in each session, working on the song "Algo se muere en el alma",, in the first sessions the patient did not recognize the song when reading the letter on the paper, although in session 6 it was observed or As the patient tried to read the lyrics and without any help began to whistle the melody. From session 6 onwards, the patient came to recognize the song promptly, although he always needed a little help from the music therapist reading the lyrics, but without the line melodic. Concerning recognition through music, the patient always recognized the song when listening to the first chords of the audio.

DISCUSSION

This intervention project sought to investigate the relationship of music therapy as an element to promote the delay of aphasia as a symptom in Alzheimer's patients, conducting an experimental study with a patient with Alzheimer's disease in an advanced stage and with aphasia as a symptom of this dementia. The study carried out by (Patel. 2005) already addressed the relationship between music and language by highlighting the link between structural patterns of music and brain processing and

the importance of research on the topic addressed in this project.

In the results of (Ridder et al., 2015) it was corroborated that music therapy can promote communicative dialogues in these cases. Making a comparison of the results achieved in the two cases could observe the good evolution or positive response of the two patients treated.

The improvement of word repetition was an important result to note regarding this intervention, in the study carried out by (Beales et al., 2021) also demonstrated a better way the denomination words (nouns, verbs and adjectives), Even more significant better in the naming of the elements of the elements, this study was carried out with more patients, in a longer period and therefore more sessions, demonstrating a broader evolution inpatient outcomes, However, it is important to note the heterogeneity of the cognitive profiles and language skills of the patients who participated in the study.

Concerning the attention in the communication of the patient, a slight improvement was observed, related to this aspect the study carried out by (Keough et al., 2016) confirms this slight evolution with results that marked an increase in participation in social interactions, an increase in conversational responses and an increase in initiation of positive social interactions with others.

CONCLUSIONS

Although it has been possible to observe a slight evolution of the patient in communication, it is not sufficiently marked to corroborate that music therapy is a key element in the control of aphasia as a symptom of Alzheimer's disease, coinciding with the results and conclusions of the study conducted by (Brotons and Koger, 2000).

The work in music therapy has allowed to slightly slow down the evolution of aphasia as a symptom of Alzheimer's disease, even improving, always in a moderate way, the attention to communication and the repetition of phrases. The improvement is always marked by a slight evolution, both in attention and communication, without significant changes that can demonstrate that music therapy is a key tool for the improvement and/or slowing down of aphasia in Alzheimer's patients.

Limitations

Although this study provides beneficial results on the use of music in a patient diagnosed with Alzheimer's disease, this work has some limitations. First, as this is a single case study, it is considered that these results cannot be generalized to a general population group diagnosed with this disease. Also, methodolo-

gically or logically, this study has not had a control case. Secondly, it is important to note the advanced stage of the patient's dementia and aphasia, when carrying out the project in this advanced state the results may be less marked to corroborate the importance of music therapy. Therefore, it should be noted that the results may have been more marked with a patient in a mild state of both dementia and aphasia.

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