

THE POTENTIAL OF MUSIC THERAPY IN MEDICINE – THE USE OF MUSIC IN THE PREVENTION AND THERAPY OF OBESITY

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ABSTRACT

Music has accompanied humanity throughout its evolution and can be considered a characteristic of the human species that emerged with the acquisition of self-awareness. There are different theories regarding the appearance of music in human life, as well as its functions. What is unanimously accepted at this time is the fact that music does not only have an entertainment function but also a therapeutic function. Studies in recent years have confirmed that music can be used in therapy with a multitude of benefits. In favor of these statements is the fact that music has been used in the history of humanity both in moments of joy and sadness or distress, with different purposes. Therefore, other motivations for its use in different situations, excluding its entertainment function, cannot be disputed. Lullabies, funeral laments, healing rituals or incantations, songs of mobilization for battle, are examples of situations in which music was used outside its entertainment role. This study aims to highlight another type of potential of music, namely that of a therapeutic tool in medicine. We conducted a review of the articles with the mentioned theme by querying the PubMed database, using as key search terms music therapy - obesity - food. We identified a number of 71 articles from which we eliminated 54 articles, which did not fit the research theme. We processed the data obtained using the Microsoft Excel program. The results highlighted that the potential of music as a therapeutic tool is insufficiently used, there are data that could open new avenues of research on the use of music in medicine and regarding the strict use of music in obesity therapy and nutritional management especially in children, the results are very good. In conclusion, we can say that music can be a useful therapeutic tool, almost without adverse reactions, cheap and easy to use in modifying undesirable nutritional behavior patterns, as well as in obesity therapy with reference to certain cognitive-behavioral skills.

Key words:

Music therapy, obesity, food.

INTRODUCTION

In the last two decades, clinicians have discovered and understood the potential of music in the therapy of various medical conditions. Thus, studies on the use of music in the medical field have become more numerous in the specialized literature. In the category of medical conditions, metabolic disorders are extremely numerous and difficult to treat because the psychology of eating behavior that underlies these conditions is dominant. However, the number of medical pieces of researches on this topic is still very low. [1]

The purpose of the present study is to highlight the potential of music as a therapeutic tool in medicine and at the same time to draw the attention of the medical world to the advantages of using such a therapy method.[2] Analyzing the definition of music therapy, we find that the purpose of using music in therapy is to "reach (solve) problems regarding physical, emotional, mental, social and cognitive needs" [3] In both medicine and psychotherapy, the bond between patient and healthcare provider is represented by the therapeutic relationship. Studies have shown that the use of music as a "complementary" element of the therapeutic relationship allows accessing the patient's emotions and memories. Regarding obesity, the Eastern Group Psychotherapy Society estimated in 2018 that by 2020, the number of over nourished children will exceed that of undernourished children. Food addiction and eating disorders that lead to obesity are a major cause for concern. We can say that from a strictly medical point of view we are facing a real "epidemic" of obesity, especially in children and young adults, and given the life expectancy of these population categories and the long-term implications of this pathology, the use of additional therapeutic means is necessary. In a recently published article "it is estimated that more than half of adults (3.8 billion) and a third of children and adolescents (746 million) will be overweight and obese by 2050" [4]

Obesity is a complex medical condition, but its psychological underpinnings cannot be disputed and involve a constellation of factors, including genetic and epigenetic factors, transgenerational and individual factors, cultural patterns, economic factors and personal beliefs. There is increasing talk about food addiction and equally about less invasive ways to manage this phenomenon. In this context, music therapy could contribute substantially to cognitive-behavioral therapy of obesity, a fact confirmed by studies published in the specialized literature.[5] With reference to the means of obesity therapy, modern medicine recognizes that the success of pharmacological therapies is not possible without the component of "medical psychology" which involves the creation and strengthening of the therapeutic relationship, empathy and awareness of the concepts of health and illness.[6]

Material and method

The present study can be considered a systematic review of the medical literature that deals with the subject of using music as a therapeutic tool in patients with obesity, highlighting the benefits of its use. We used the following triad of terms as key search terms: music therapy - obesity - food, querying the PubMed database. We identified a number of 71 articles. After eliminating articles that dealt with related topics, a number of 17 articles remained that we used as study material. We processed the data obtained using the Microsoft Excel application. Since the study falls into the category of prospective systematic reviews, without intervention (diagnostic or therapeutic), it does not require the application of the PRISMA criteria valid only for intervention meta-analyses.

Results

Table 1

Average	2.125
STDEV	1.88
Median	1

We calculated the standard deviation for the sample of articles studied STDEV 1.88, the sample mean 2.125 and the median 1 (table 1)

Table 2

Year	No of articles
2015	1
2016	1
2017	1
2019	1
2020	1
2022	2
2023	4
2024	6

Table 2 shows the distribution by year of studies on obesity and the role of music in its therapy. It can be seen that interest in this topic increased during the period 2022-2024. The ratio of the periods 2015-2020:2022-2024 is 5:12, i.e. 1:2.4. In other words, in three years (2022-2024) 2.4 times more studies were published than in 5 years (2015-2020) with the mention that in 2018 and 2021 we did not identify any articles on the studied topic.

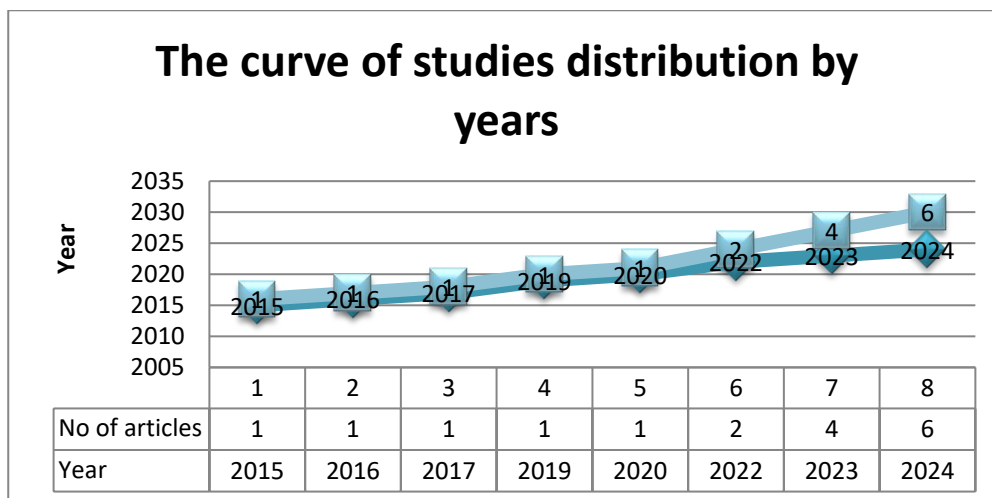


Fig. 1 Distribution of studies about music and obesity by years

In Figure 1 we observe the ascending curve of the distribution of studies on the use of music in obesity therapy, identified in the PubMed database during the period 2015-2024.

Table 3

Point	No of articles	Rank	Percent
8	6	1	100.00%
7	4	2	85.70%
6	2	3	71.40%
1	1	4	0.00%
2	1	4	0.00%
3	1	4	0.00%
4	1	4	0.00%
5	1	4	0.00%

Regarding the hierarchy of the distribution of studies by year according to the number of studies published each year, it is observed that the largest number of studies was published in 2024, namely 6 articles (100%), followed by 2023 with a number of 4 identified articles (85.70%). (Table 3) In 3rd place are the articles of the year 2022, with a number of 2 (71.40%). In the other years of the studied period 2015, 2016, 2017, 2019 and 2020, an equal number of studies were published, namely, one study per year. It can be noted that in the years 2018 and 2021 no study was identified. A bibliographic study published in 2021 [7] brings to the attention of doctors and psychologists “emerging trends in music therapy publications” from 2000 to 2019. “The results show that the number of annual publications in music therapy research has increased

significantly in the last two decades, and the overall trend of publications has increased from 28 publications in 2000 to 111 publications in 2019.” This number demonstrates the upward trend of studies on music therapy, even if in our study, due to the strict definition of the music therapy-medical pathology link, the number of articles is substantially lower.

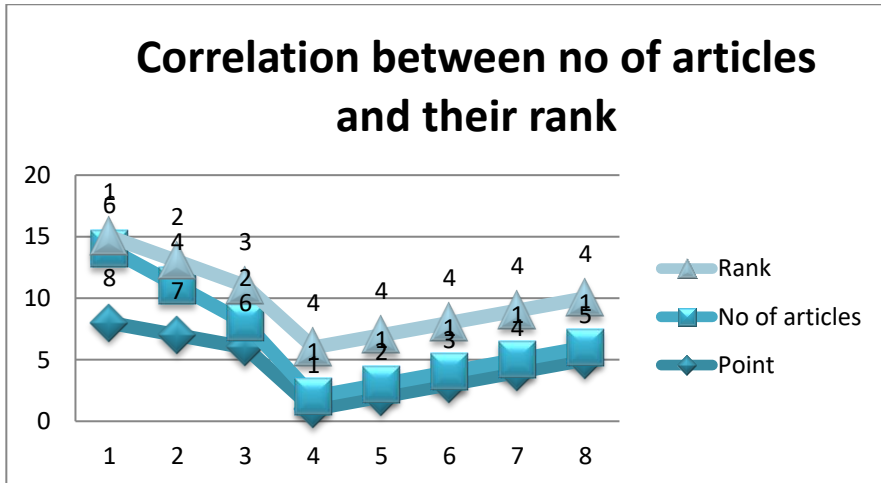


Fig 2 Correlation between no of articles and their rank

Encompassing the 10 years analyzed, the last year, namely 2024, is in first place with 6 (35.29%) articles published on the mentioned topic, 2nd place is occupied by the number of articles published in 2023, 4 articles (23.52%) and the third place is occupied by 2022 with a number of articles 2 (11.76%). In 4th place, with equal number of published articles 1 (5.88), all the other years of the analyzed period can be positioned, except for the years 2018 and 2021 in which we did not identify any article (0%). (Fig 2)

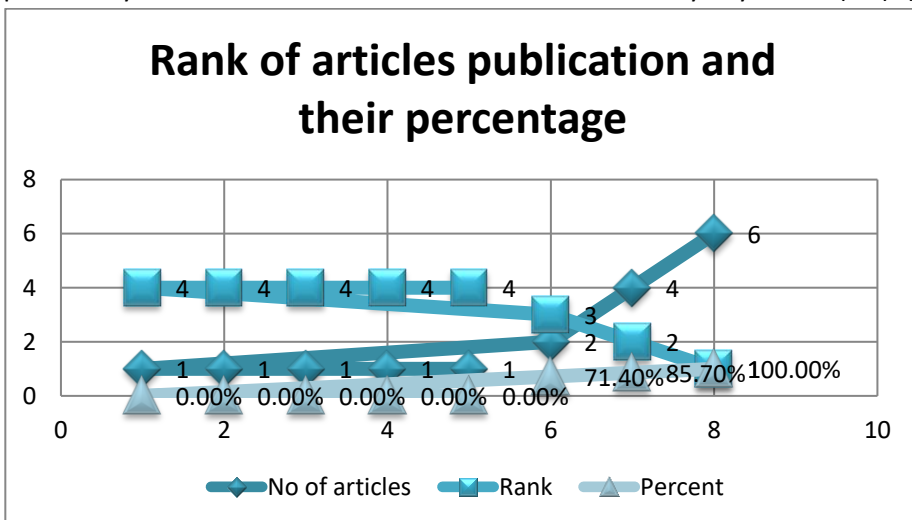


Fig 3 Rank of articles about music and obesity

In figure 3 we can see the correlation between the rank of published articles, their percentage and the absolute number of articles. We observe the ascending line in the period 2022-2024 and the plateau in the period 2015-2020.

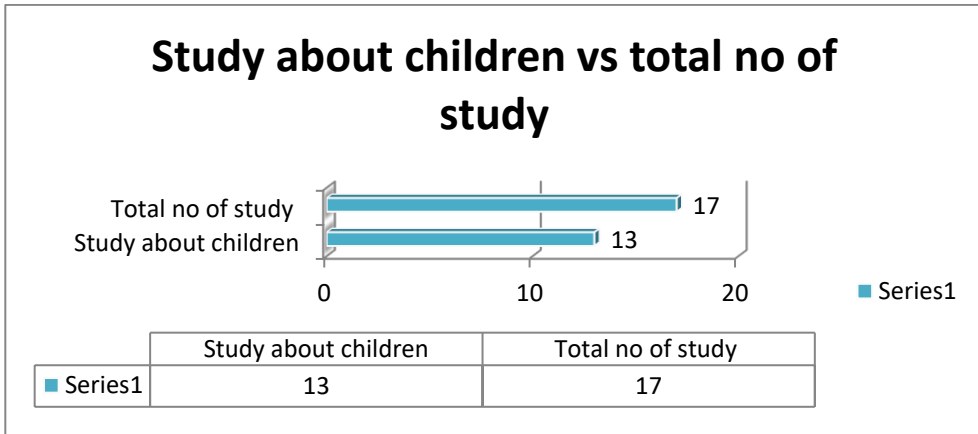


Fig 4 Representation of number of study about children vs total no of study

Analyzing the total number of studies 17, we observed that a number of 13 published articles (76.47%) referred to children. The ratio of children: adult studies regarding the use of music in obesity therapy is in favor of children. Regarding the ratio of studies about children compared to the total number of studies, it can be observed that the interest was greater in the case of children. (Fig. 4)

Analyzing the previously mentioned bibliographic study, we noted that most of the studies identified by it referred to "older adults" and to general health and well-being. By comparison, in the present study, particularizing the analysis on the music therapy - obesity binomial, we discovered that the researchers' attention was mainly focused on the pediatric population.

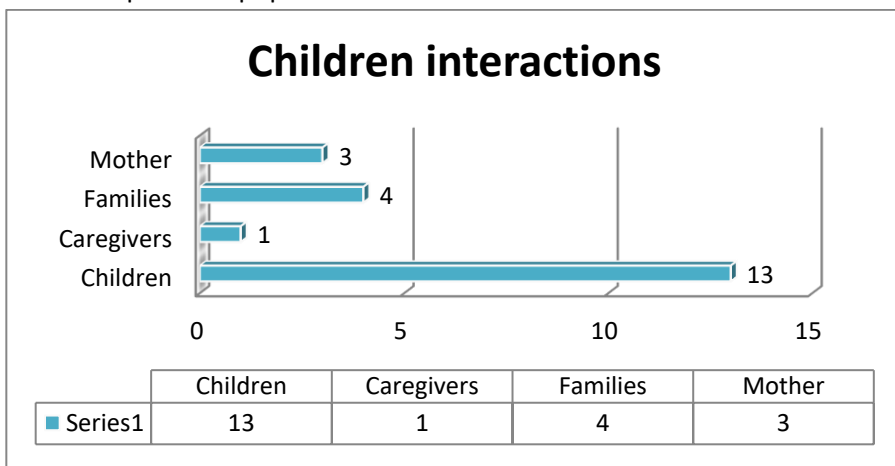


Fig 5 Representation of children interactions with other persons in music interventions context

The analysis of the identified articles highlighted that music therapy is applied to children in 13 articles, by caregivers (generically) in one article, in the family in 4 articles and involves the mother-child relationship in 3 of the studies analyzed. (Fig. 5) The specialized literature emphasizes the importance of using music as an auxiliary tool in the case of children [8] and especially in the care of children with health problems. Numerous studies refer to mental pathology [9] and neoplastic [10] Especially during the pandemic and post-pandemic period, studies that address music therapy in children also bring into discussion the perspectives of caregivers. [11;12;13]

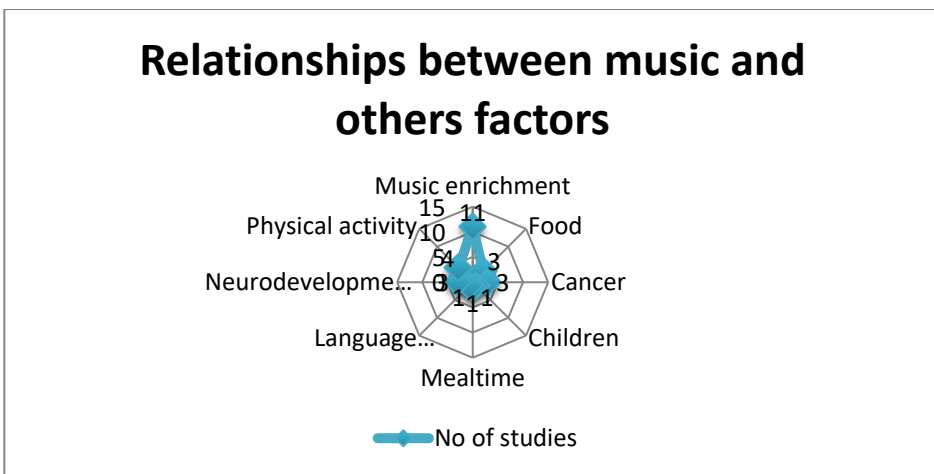


Fig 6 Relationship between music and others factors

Among the 17 identified studies which address the subject of using music as a complementary, non-pharmacological modality for obesity therapy (Fig.6) the interaction of music with a range of factors is discussed, including physical activity (which it improves), the act of nutrition and eating habits (nutritional behaviors) [14;15;16] improving musical knowledge, factors related to neuropsychic development and language development in children. It also influences pain perception and behaviors in cancer patients. [17];

Table 4

Interactions	No of studies
Music	17
Language interactions	1
Vocal interventions	1

Regarding intervention in neuropsychic and behavioral development in children, we found that out of the 17 studies, an equal number of studies, namely, one study (5.88%), approached interaction through spoken language and another (5.88%) through music intervention in children. (Table 4)

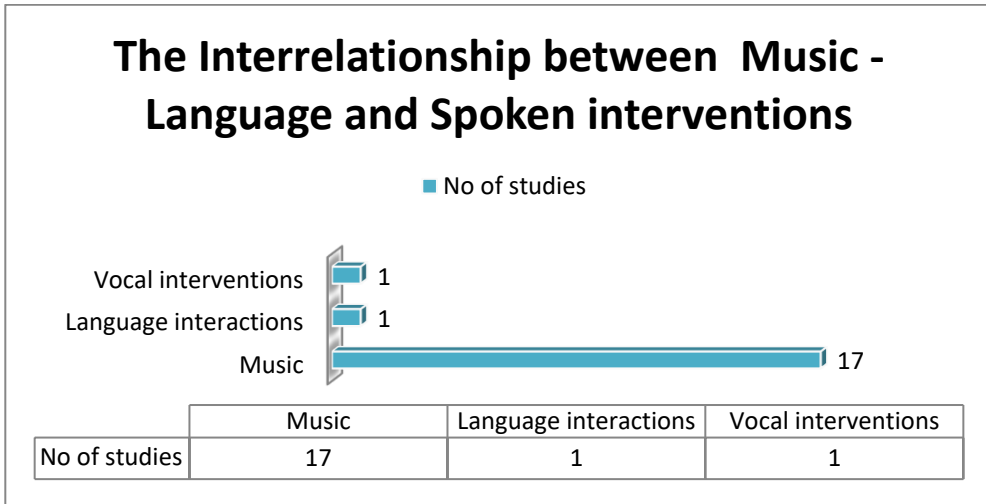


Fig 7 *The interrelationship between music-language and spoken interventions*

Figure 7 graphically represents the relationship (through the identified studies) between vocal and musical interventions on neuropsychic development and growth (including weight) of children. There are numerous studies in the literature that highlight this aspect regarding music therapy. [19]

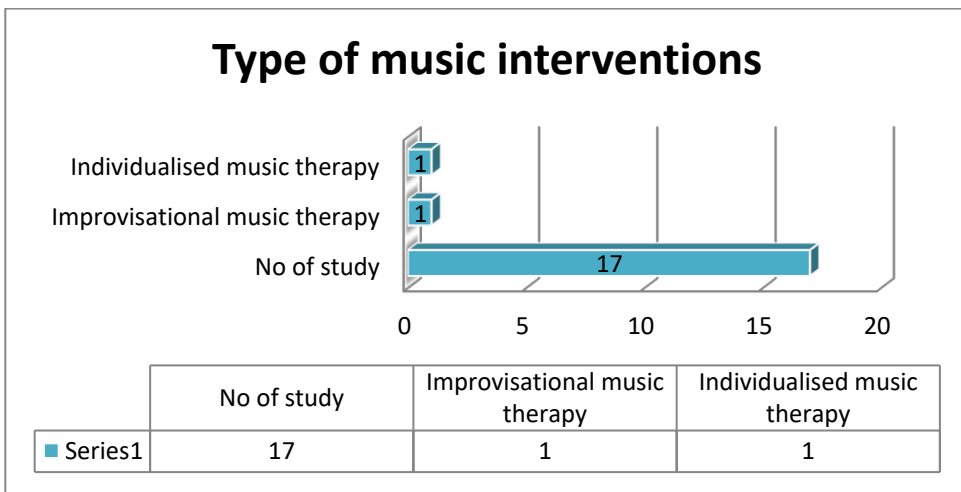


Fig 8 *Types of music interventions*

With reference to the musical genre and/or type of musical intervention, we found that in the period 2015-2024, the results of only one study on musical improvisation and another on individualized intervention in obesity therapy were published. (Fig. 8)

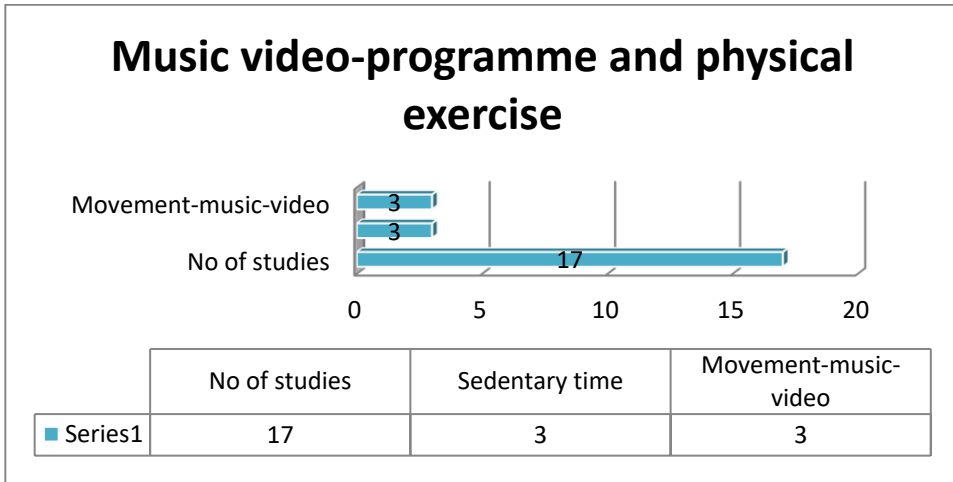


Fig 9 Music video-programme and physical exercise

We found that 3 (17.64%) of the 17 studies establish a link between music and sedentary lifestyle and another 3 studies (17.64%) establish a connection between music used as an effective intervention in the prevention and therapy of obesity and video programs that simultaneously offer physical exercise and music. (Fig.9) There are studies that explain the mode of action of music associated with physical exercise, functioning as a mood regulator. [20]

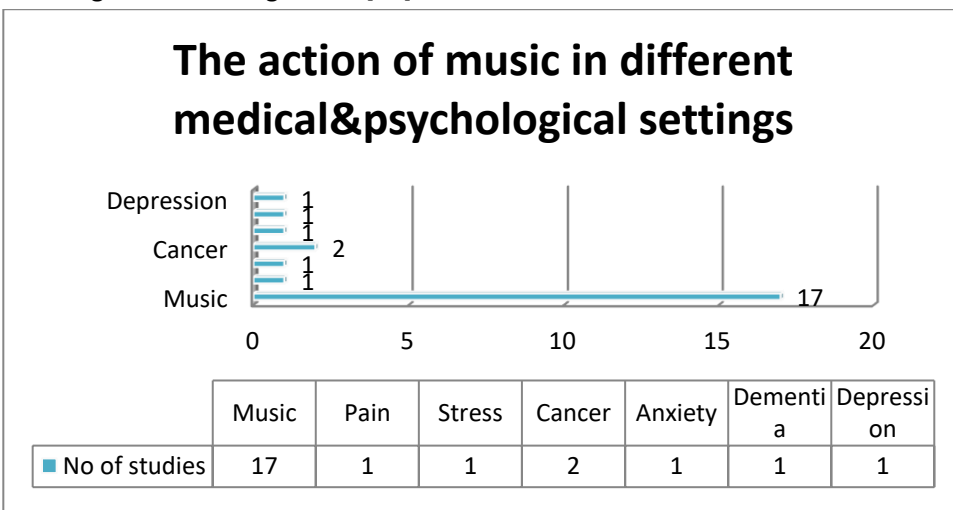


Fig 10 The action of music in different medical and psychological settings

The analysis of the influence of music on different emotional states or medical conditions can be seen in Figure 10. Thus, from the 17 studies, regarding related conditions, we identified a series of emotions, psychiatric conditions as well as the most frequent presenting symptom in medical services, namely pain, related to the use of music. The largest number of studies referring to the effectiveness of musical interventions is related to cancer, 2 studies (11.76%), followed by intervention on pain, stress, anxiety, depression and dementia, one study for each (5.88%). The specialized literature provides data on these topics of interest. [21]

Discussions

Obesity is a complex medical condition and for this reason its treatment involves complex methods. The medical consequences of obesity are accompanied by psychological damage to the individual with repercussions on self-esteem or body image problems. Studies show that a certain cognitive constellation is associated with greater weight. Isolation and bullying more frequently occur in this category of people [22] can lead to anxiety and depression and the benefits of music used for therapeutic purposes are proven [23] Therefore, a bidirectional approach to obesity therapy with a medical and a psychological component is necessary. [24]

Studies have shown that psychological therapy using the musical vector is effective in the treatment of obesity. Continuing along the line of logical deductions and clinical-psychological similarities, we recall that on the one hand, there are studies that support the addictive nature of “food” as a cause of obesity [25], on the other hand, studies on music therapy provide evidence to support its effectiveness in addiction therapy.[7] Consequently, we can consider, taking into account the above, that music therapy can be an effective method in the treatment of obesity. Recent studies provide data on the benefits of music therapy as an adjunct in metabolic lifestyle treatment. [27;28]

Even from the perspective of an indirect action in the therapy of metabolic diseases, music therapy proves its effectiveness according to numerous recently published studies. Relatedly, anxiety and depression, which are frequently associated with obesity, respond to music therapy. [29] The present analysis also highlighted the fact that there are results of using music therapy with reference to the modifiable factor of sedentary lifestyle and optimizing lifestyle. Also, among the identified studies are those that link anxiety, depression or the effects of stress and the positive results of using music in these situations. Music is a mediator of neuropsychic and behavioral development in children and can intervene in the correction of undesirable eating habits that lead to obesity. This aspect is closely related to the somatic and neuropsychic development of children. [30]

We observed that, of the small number of studies identified, 76.47% refer to children. There could be two explanations: either the use of music as a complementary therapy in the treatment of obesity is more frequent in children, or the interest is greater when it comes to the problem of obesity in children. Another aspect in the case of obesity therapy in children is the limitation of the use of medication, the need to establish more modest dietary restrictions so that the diet covers the quantitative and qualitative nutritional needs during the growth period, as well as the greater possibilities of establishing psychological therapies at this age, with reference to the acceptability and integration of music into the arsenal of psychological therapy methods.[31] We also found that interest in the benefits of using music in obesity therapy increased between 2022 and 2024. We also identified connections between the use of music therapy and neurodevelopment and factors such as language. There is evidence of the possibility of rehabilitation through music therapeutic intervention in aphasia and other language disorders.[32] In this regard, the development of neurosciences makes an important contribution, especially by explaining the intimate mechanisms of the processes that occur at the cerebral level when using music[33] in therapy but also in terms of food addiction.[35;36] It is important to emphasize that in terms of the specifics of music therapy (type of music, how it is used), the identified studies refer only to musical improvisation and individualized “administration” of music. Studies show that the way the therapeutic relationship functions in the context of using music as a form of therapy can determine the patient’s commitment to the therapy process. [37] Considering the major psychological component in the etiology and especially in the therapy of obesity, the component that aims at the commitment of the obese patient in the therapy constitutes a determining factor of its success in the immediate, medium and long term.

Limitations of the study

They were determined by the small number of articles identified.

Conclusions

The specialized literature seems to show a growing interest in the use of music as a means of therapy in recent years. Considering the small number of published studies compared to its great therapeutic potential but also considering the limited possibilities to sometimes draw pertinent conclusions regarding its effects, more in-depth research and the realization of a larger number of studies using music as a complementary means of therapy, as well as the expansion of research in various clinical fields, are necessary. The importance of this study is to provide an overview of the interest of researchers regarding the use of music in obesity therapy as an “epidemic”

phenomenon with important implications in burdening health systems. In addition, it provides important information about the importance and necessity of evidence-based research that provides indisputable results regarding this type of therapy. The importance of involving music therapy in the arsenal of instruments with a positive impact in lifestyle medicine or in improving child-caregiver relationships is also emphasized. It is necessary to continue studies to obtain new data that confirm the findings of studies conducted so far, opening new research paths for capitalizing on the therapeutic potential of music. In this sense, the contribution of neurosciences seems promising, explaining the physiological phenomena that underlie the effects of music on neuroplasticity and opening new perspectives in establishing the links between the clinical role of music and somatic and/or psychological pathology. The conclusions of the studies referring to the multifactoriality of the actions of music in therapy emphasize that although the results are promising, pertinent conclusions cannot yet be formulated in all medical settings, there being both positive and neutral effects. This study is a prospective, analytical one, without offering intervention methods. Its role is to summarize some applications of music in therapy and to draw attention to its potential as a complementary therapy method in medicine, supporting the opinion that future studies are necessary to fructify current knowledge and strengthen the interdisciplinary collaboration between the musical field and neurosciences with benefits in improving the quality of life and in medical therapy.

Conflicts of interest

There are no conflicts of interest (the research was conducted in the absence of any commercial or financial relationships that could be interpreted as a potential conflict of interest).

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