

Article

Evaluation of the improvement of the quality of life and daily life activity in obese patients: A Systematic Review

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Abstract. *Background:* Obesity is recognized as one of the major public health concerns in the world. Being overweight restricts participation in everyday life occupations, as it entails difficulties in planning time spans required for movements according to task demands. The aim of the study was to evaluate the effectiveness of occupational therapy in improving life standards and everyday life in general, as well as lifestyle and leisure in individuals by obesity through a systematic review.

Method: The research was carried out on Medline, Cinahl and OTseeker. It includes all articles where the treatment was performed by the occupational therapist, individually or in a team, on patients, both adults and children with obesity and / or overweight.

Results: This review includes a selection of five studies. It is interesting to note how the occupational therapy can play an active role on four specific aspects: improving quality of life, improving performance areas and occupational satisfaction, promoting physical, mental and social health, adopting a healthier life style.

Conclusions: Even though there is a limited amount of evidences, it has been demonstrated how occupational therapy can substantially contribute to reduce the impact of obesity on all aspects of daily life activities.

Keywords: obesity; occupational therapy; occupational performance; quality of life; activity of daily life.

INTRODUCTION

According to the World Health Organization, Obesity is defined as a medical condition characterized by an abnormal or excessive fat accumulation that can compromise health (1). It is measured statistically using the Body Mass Index, a simple index that is determined by a person's weight in kilograms divided by the square of height in meters (kg / m²). This is a phenomenon that is spreading like wild fire all over the Planet, and although the charts seem to vary considerably from Country to Country, in 2016 obesity has affected up to 650 million adults and 41 million children all over the world, being almost three times more common since 1975 (figure 1) (1).

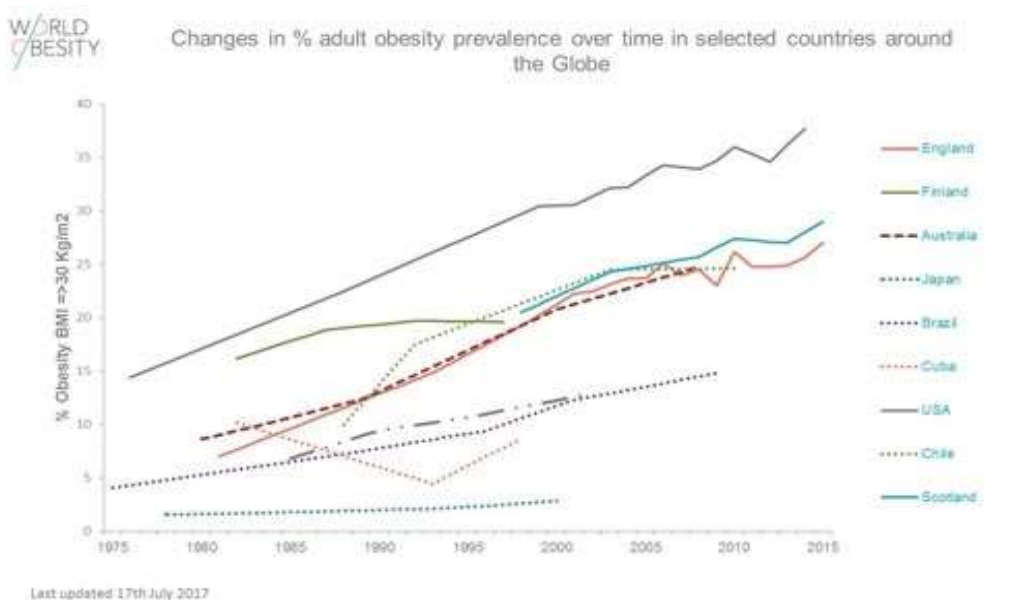


Figure 1. International Overview of Obesity

Obesity causes about 2.8 million deaths per year, placing itself at the fourth place in terms of social costs to communities worldwide, after cigarette smoke, wars and terrorism (2). America holds the first place for the largest number of adults and children with obesity, followed by Europe, some parts of Africa and Asia, where percentages have increased considerably in the last few years.

The World Health Organization emphasizes that this phenomenon can be prevented. (1) Prevention is crucial since the excess of weight is considered as a risk factor for a whole range of non-communicable diseases, such as cardiovascular disease (especially stroke and heart diseases), diabetes, musculoskeletal disorders (particularly osteoarthritis) and some types of cancer (breast, liver, kidney, colon) (3).

From causes analysis, it has been demonstrated how being overweight and being obese are the result of two different mechanisms that can complement each other: the intake of an excessive amount of calories well beyond body requirements, and a decrease in energy consumption due to physical inactivity. Other contributing factors are the weight of parents and socio-economic status (1)

Indeed, any modification in the dietary pattern and in physical activity regimen are often the result of changes related to the place where we live, work and play (4) and the lack of suitable policies on subjects such as health, agriculture, transportation, city planning, the environment, food processing and education (1).

The consequences of obesity are not only physical, but rather large, common and potentially serious are also the psychological implications, due to the discrimination that affects these individuals all around. The resulting depression, anxiety and low self-esteem can affect an individual's quality of life, mental health, education and employment prospects (5).

A further confirmation of the scale of this phenomenon comes from the many awareness-raising days that are being promoted every year, as the world's most recent, on October 11, 2017.

The purpose of this review was to evaluate the effectiveness of occupational therapy in improving the quality of life and everyday life activities, as well as lifestyle and leisure in individuals affected by obesity, both children and adults, through a systematic review.

MATERIAL AND METHODS

Criteria for the choice of sample studies

Types of studies

Within this review, were considered only those studies where an intervention has occurred and its effectiveness has been demonstrated. Therefore, were investigated cohort studies, case reports, case series, outcome research, qualitative studies and the gold standard of experimental studies.

Types of Participants

The studies taken into consideration are focused on obese and / or overweight people, both adults and children. As a matter of fact, only patients already affected by this disease, regardless of the degree of obesity or the duration of the diagnosis, have been taken into consideration. Those affected by obesity in conjunction with other diseases were also examined, but the treatment should be focused exclusively on the discussion topic of the review.

Types of interventions

The interventions of the examined studies include rehabilitation treatments performed by occupational therapists, either individually or in multidisciplinary teams. All studies focused solely on occupational therapy and no other treatments were considered.

Types of outcomes

The primary outcome of the study is to evaluate the effectiveness of occupational therapy treatments on the improvement of the quality of life and daily life activities among people, both adults and children, affected by obesity. The secondary outcome is to determine how much the same occupational therapy treatment can have a positive impact on lifestyle and leisure as well.

Research Methods for Identification of Studies

The review was conducted following PRISMA guidelines. The research strategy envisaged the consultation of three databases: Pubmed, Cinahl and Otseeker within a lapse of time from May 1st to June 27th 2017. The three databases were investigated using the following search terms, combined with the Boolean operator AND: obesity; occupational therapy; rehabilitation; childhood obesity; pediatric obesity; occupations; occupational performance; quality of life; activity of daily life.

Research of other resources

All data collection within this review is acquired from renowned and certified sites, such as Eurostat- European Commission (<http://ec.europa.eu/eurostat>) and World Obesity Federation (WOF) (<https://www.worldobesity.org/>).

DATA COLLECTION AND ANALYSIS

Selection of studies

The research strategy for conducting this systematic review has led to the analysis of the abstract of the encompassed studies in order to identify the relevant ones and exclude those that did not meet the following inclusion criteria: (a) studies published in peer reviewed

scientific journals; (b) studies on Medline databases, Cinahl, OTseeker; (c) studies in Italian, English, Spanish and Portuguese; (d) studies on application of occupational therapy on patients, both adults and children, with obesity and / or overweight; (e) studies in which the treatment was performed by the occupational therapist, either individually or in team.

Systematic reviews and all those studies that did not meet these requirements were excluded. Criteria such as the age of participants or the years of publication do not constitute a discriminating factor within the research strategy. All titles and abstracts have been read and, later, full texts reading and various texts analysis took place. During this process, all articles that were not pertinent to the review's objective were excluded.

Data extraction

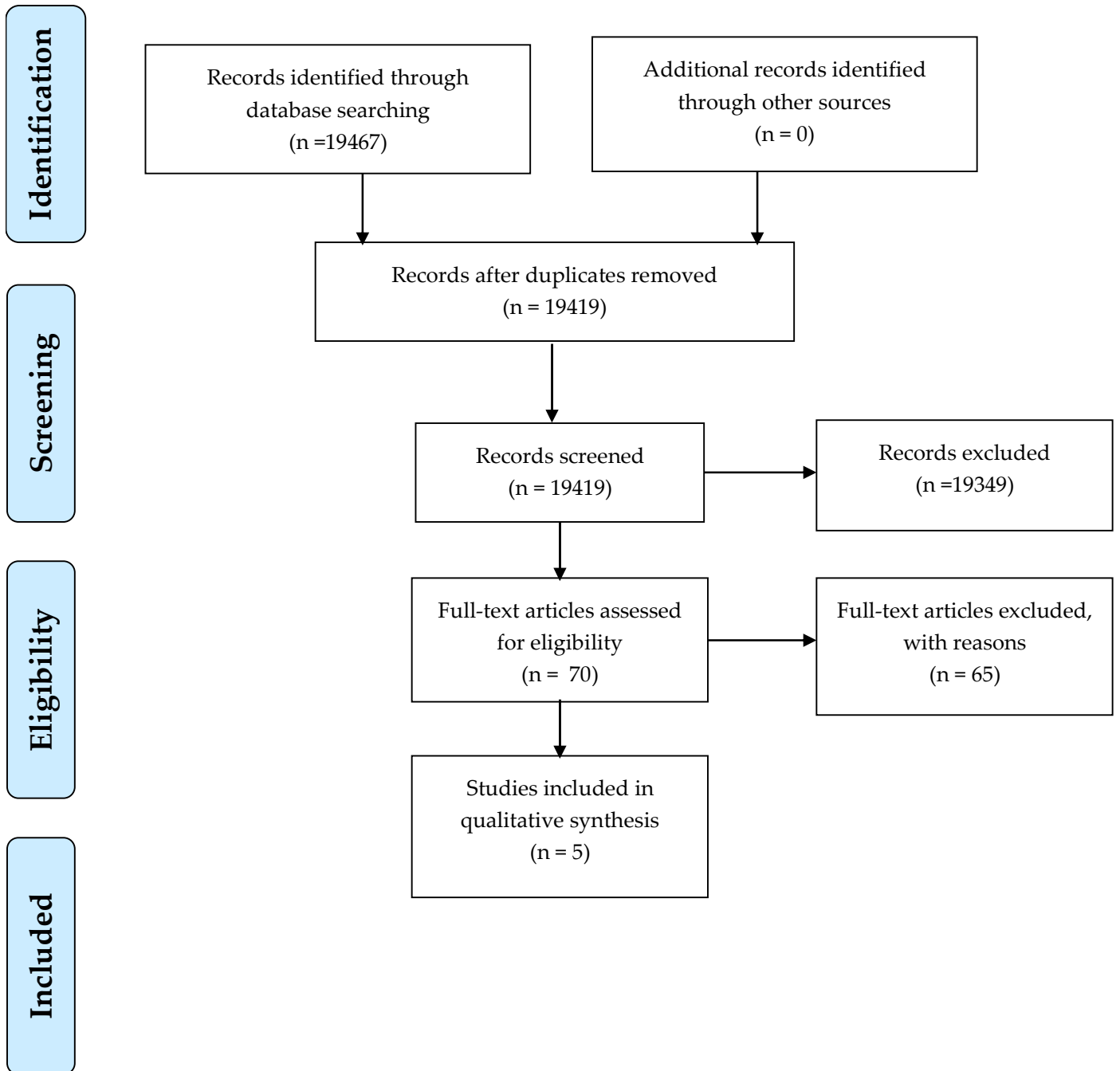
The data extraction table has been structured according to the following model: Bibliographic reference (first author, periodical and year of publication); Objective of the study; Type of study; Sample Size; Participants' characteristics (sex, age, comorbidity and, if expected, income and occupation); Estimated results; Conclusion by the author;

RESULTS

Studies Description

The research strategy identified a total of 15.528 results for Pubmed, 3.882 for Cinahl, 57 for OTseeker. The flow chart in **Figure 2** illustrates the research process.

Figure 2 Flow-chart



Excluded studies

The skimming process resulted in the non admission of 19.349 articles based on the exclusion criteria. 48 articles were dismissed because they appeared as duplicates by comparing the results obtained from different databases. A total of 70 articles were evaluated for eligibility.

Out of these, 65 articles were excluded, as 3 of them were systematic reviews, 6 were not found on national territory, 49 did not evaluate the effectiveness of the application of occupational therapy, and 7 were treatments on healthy patients and / or at risk of obesity.

Included Studies

Five studies, with a total of 282 participants, met the criteria for this review. Three studies come from America (one from Brazil and two from the USA), one from Europe (Sweden) and one from Oceania (New Zealand).

One study deals with a purely family intervention (parents of obese children), three studies describe interventions on obese and / or overweight children (of which 2 focus only on children and one centers on children and parents together) and a study is based on overweight elderly people, inactive and physically limited (**Table1**).

Table 1 Data extraction

References	Objectives	Study Type	Participants' characteristics	Results	Conclusions
Michael A. Pizzi et al. (6), 2015, New Zealand Journal of Occupational Therapy	Describe the role of occupational therapy in addressing social, physical, mental, learning and health challenges of two overweight sisters.	Case Report	N = 2 overweight sisters. M. has comorbidity problems with movements and sight. J. also presents perceptual processing problems.	Bigger involvement of parents in the daily life of each girl. Girls' ability to make healthy choices in food. Increasing participation in physical activity and increasing physically active games.	Employment has a significant role in the lives of obese and overweight children. Family approach is essential as obesity challenges both individuals and families. Allowing active and positive participation in favourite occupations will enable a better quality of life.
Marilene Calderaro Munguba (7), 2008, Occupational Therapy International	Evaluate an occupational therapy program aimed at dietary education for obese children, using two interactive games.	Interdisciplinary study, using quantitative and qualitative methods.	N= 200 children. Age: 8 and 10 y.o. 95 boys 105 girls.	Children have developed learning strategies during the game and have shown increased knowledge of the concepts taught. Despite the initial preference for the video game, the board game have been more effective in learning concepts associated with food.	Further research is needed to emphasize the autonomy of children in learning nutritional concepts through games, as the study demonstrates that occupational therapists using recreational aids can be effective in a nutritional education program.
Julie D. Kugel (8), 2017, The Open Journal of Occupational Therapy	Provide an overview on the employment of young girls and the challenges and barriers that could limit engagement in daily activities for health promotion.	Pilot study with a qualitative phenomenological design.	N = 5 girls, 1 of Asiatic origin and 4 of European origin. Age: 11 and 12 y.o.	Decreasing amount of time spent in sedentary activities during the week. Greater ability to make healthy choices for themselves. Stress reduction.	Occupational therapy can and must address the needs of young people through holistic and customer-centered practice.
Kristina Orban (9), 2014, The American Journal of Occupational Therapy.	Explore factors related to the change in the amount of time that parents spend with their children in 3 occupational areas and change in BMI index within the children.	Explorative and quasi-experimental study.	N = 40 parents of 22 obese children. Parents: More females than males. Average BMI = 28. Mostly married, graduated from highschool, with two children and a job. Children: more girls than boys. Age: 4 and 6 y.o.	Increased time spent by parents with their children by 91 minutes per day during the treatment, particularly in physically active occupations. No statistically significant change in BMI index for children, but a clinically relevant decrease in BMI z-score was observed between the start and end of the intervention.	The study shows that parental involvement can be increased without asking children to take part in the treatment and focusing on family activities shared at home may make changes in the lifestyle of parents.
David Haber (10), 2000, Family & Community Health.	Examine the impact of a class focusing on the healthy behaviors of the elderly.	Experimental study	N=35 elderly people. Average age =71 y.o., more females than males, the majority of the European origin, graduated and currently retired. Comorbidity with arthritis and high blood pressure	In the short term, significant improvement in adopting new health behaviors and incorporating them into daily routines. Long-term difficulties in maintaining this result due to physical and motivational barriers.	Stricter follow-up studies are needed to verify the generalizability of healthy behavioral changes performed by the elderly and how to support them.

Summary of the main results

In the Pizzi study et al. (6) the occupational therapist intervened by educating school teachers about the consequences of obesity on school performance, especially on learning and participating, by shifting their attention to the compensatory behaviors an obese child can take when being laughed at by its peers. The practitioner has also developed well-adapted and carefully planned activities, aiming to incorporate a healthy lifestyle into the academic arts. The second part of the intervention focused on providing counseling to the children's parents, urging their commitment to conduct shared occupations with their daughters. The results of the study show that the intervention has overall improved the quality of life of girls. Specifically, it has allowed the development of healthier habits and a change in routine, as well as a greater understanding of new concepts. Girls in their spare time undertook outdoor sports activities, such as horseback riding and skating, and have shown increased participation in group activities within the school environment. In the end, there was a greater employability adjustment by parents and a larger integration of a healthier lifestyle in family routines.

In the Munguba study et al. (7) an Occupational Therapy Program aimed towards dietary education. It was developed in a multidisciplinary team working on over 200 obese children and it was carried out through the use of a video game and a board game based on the food pyramid. Occupational therapists, during the intervention, facilitated the acquisition of food concepts through four levels of help: 1) providing specific instructions; 2) demonstrating the learning mechanism; 3) they offered learning strategies; 4) they did the job together with the child. Professionals have also analyzed preferences, considerations and attitudes generated by the two categories of games, as well as motivations and strategies put in place in order to learn. The study has led to an increased knowledge of food concepts. Most children preferred playing with the video game rather than with the board game, but at the end of the treatment, the board game was proven to be more effective in helping to learn food concepts compared to the video game.

In the Kugel study et al. (8) was described an intervention performed on a sample of five overweight girls. Each participant evaluated independently their difficulties on employment performances and their satisfaction with it. For the fulfillment of the treatment, the occupational therapist pushed the participants to take part in expressive activities (drawing, collage) and to watch videos that prompted a discussion on their idea of a "beautiful body". In addition, he provided instructions in order to encourage their participation in relaxing activities (yoga), physical activities (Taekwondo) as well as gardening experiences (cultivating vegetable jars). At the end of each session, the practitioner encouraged them to prepare healthy snacks (smoothies) and talking on how to integrate these occupations into their daily routines.

The program has shown that participants have gained a greater understanding of how to persuade their families to adopt healthier lifestyles. Stress reduction has helped girls eat less and use less time for sedentary activities. A greater acceptance of their image and a bigger involvement in social relationships through group activities contributed to a general improvement in employment performances.

In the Orban study et al. (9) an intervention was carried out exclusively on the parents of 22 children with obesity, focusing on employment. During the year, parents were encouraged to focus on employment engagement and think about their daily employment patterns through the use of journals on which they had to report when, where and with whom they had taken part in occupations during the day. The aim was to identify the areas where a change was needed.

At the end of the treatment, no significant change was observed in the BMI index of their children, however a clinically relevant decrease in the score range between the beginning and the end was found. Furthermore, parents increased the time laps spent in physically active occupations with their children.

In the Haber study et al. (10) occupational therapy and physiotherapy students built a program for the promotion of healthy behaviors carried out on 35 overweight elderly, inactive or physically limited. Occupational therapy students held personal discussions in small groups on exercises and topics related to stress management and nutrition discussed during the lessons. Elderly people were provided with strategies for social support and memory enhancement, as well as environmental control techniques in order to stimulate physical activity at home, such as placing the sneakers in front of the door or putting the elastic band for muscular enhancement on the table in front of the television. Occupational therapy students helped older people set realistic and measurable goals and list the benefits of suggested health activities, repeating them to themselves. In addition, strategies have been planned in order to integrate new health behaviors into existing habits (for example, take a quick walk or meditate before dinner). The treatment has led to a significant improvement in adopting new health behaviors and integrating them into short-term daily routine, but eight months later most adults were no longer exercising regularly because of physical limits (physical pain) and motivational barriers (lack of social support and continuous orientation by the student).

DISCUSSIONS

Through a deep analysis of the studies included, clinical evaluation turned out to be the a key tool in the hands of occupational therapists in order to identify the positive features and functional limits of the participants. This allowed a thoughtful planning and implementation of customer-centered treatments that have had a positive impact on the quality of life, the occupational performance, leisure and lifestyle habits of each patient.

The goal of the occupational therapist differs from the traditional focus on dietary restriction and physical activity, it aims, indeed, at developing all those skills that help the patient to influence the management of his weight.

Obesity affects biomechanical processes as well as cognitive processes, particularly cerebellar functioning (11), which is necessary to plan adaptive movements and thus to perform roles during productivity and leisure. A study included in the review raised this issue with regard to the school setting; weight implies difficulties in structuring the time needed for movements based on task requirements and thus hinder the fulfillment of occupational needs. All of this, leads to spending more time in sedentary activities and therefore to self-isolation (6). The occupational therapist, teaming up with the school systems and parents, is able to work on the formation of children's

movement during significant occupations based on occupational performance roles (student, child) by providing additional physical activity opportunities. The favored occupation for such purposes is the game. As it has been demonstrated, this type of treatment contributes to an improvement in the occupational performances of children.

Therefore, the occupational therapist never promotes occupations in out of context situations, setting himself apart from other professionals (12).

Another issue raised is that children and adults often stereotype obese people as lazy, ugly or less intelligent, leading them to experience social exclusion, discrimination, self-esteem issues, lack of confidence in their own body image and depression (13).

Occupational therapists can work significantly in these areas. As a matter of fact, there is a paper published in 2012 by AOTA, which categorizes the effects of obesity based on the areas of occupational performance, in order to address the psychosocial needs of obese or overweight children (14).

For this aim, the author of one of the first included study emphasized the importance of participating in extracurricular activities. This facilitates occupational therapy professionals to help children and young people developing and participating in structured recreational interests after school hours (8).

By encouraging the participation in healthy and entertaining occupations, the occupational therapist can create a comfortable environment that promotes social interaction and group cooperation, as well as endorsing the participation in relaxing activities aimed to reduce stress. This way, significant results on patients' mental and social health can be achieved along with a substantial increase in leisure activities' participation.

Providing counseling to teachers can increase their awareness of weight-related prejudices that may lead to compensatory behaviors by minors. Precisely, researches show that a disruptive attitude not only from peers, but also from the same professionals and / or students, leads to a less therapeutic approach to patients, as the expectations for recovery are reduced. Such behavior can reinforce the negative self-assessment of the patient (15).

These inclinations may also be accentuated by the lack of experience in relation to the provision of weight management. A non-included study reported the results of a cross-sectional survey of 51 occupational therapists, most of whom have shown that they do not consider obesity as a field of application of their profession and therefore has shown a lack of experience in that area. The author concludes by encouraging access to education in this field through university programs, postgraduate professional training and jobs, as occupational therapists can play a role in managing weight and obesity within the health care team (16).

One of the main focus of the treatment of occupational therapists is the increase in participation in physically active occupations, which can be promoted through interventions made on patients (children), children and parents together, but also only on parents. A study included in the review (9) shows that parental involvement with children can be increased without requiring them to attend intervention sessions. By supporting parents in analyzing how they spend their time and engaging them in shared occupations with their children, a lifestyle change and a positive result on children's BMI can be achieved.

Opposite to many other studies, in this review, it is equally important to note that the socio-economic status of parents does not prove to be an indicator of obesity for children (17). On the

other hand, parents' self-perception of their health, mothers' sense of control on their daily lives, and the occupational value perceived by their fathers, along with their education, had proved to be an important indicator for a positive change in their children' BMI. These results are coherent with those of other previous studies (18) when parents are involved, especially fathers, they turn out to be essential partners in effective obesity treatment programs. Fathers' collaboration in co-occupation with their children could be of vital importance and it is encouraged also by the State, as it happens in Sweden, the country where the intervention was held. They promote paid parental leave, allowing parents of children up to eight years old to spend more time together.

To support the importance of participation in physically active occupations, there is another study whose results do not show any differences in the enjoyment of physical activity among obese and non-obese children. The author concludes by stating that the level of motivation involved for participation in physical activity is similar regardless of body weight and that occupational therapists must take it into account (19).

Games have been proven to be an effective mean for promoting a greater knowledge of food concepts, pointing out the cultural change that is currently happening. Truth is that children nowadays have more access to video games and hence to sedentary activities (7). Interactive activities promote children's learning and encourage self-efficacy in maintaining a healthy lifestyle (20). In addition, the occupational therapist can work with parents and patients in order to identify and develop habits associated with buying and preparing food focusing on developing of a healthier lifestyle.

The therapist, in addition, has the skills to collaborate with the patients in order to integrate healthy behaviors into their daily routine (10).

Several articles highlight the possibility of conquering other areas of intervention where the occupational therapist can make a significant contribution, particularly towards adults affected by pathological obesity. Within the databases used for research purposes there are no efficacy studies at the moment, but only a few suggestions.

In a study not included in this dissertation work, a series of interviews were conducted on patients with morbid obesity in order to identify strategies to increase satisfaction in the patient's occupational performance and to reduce the time spent on self-care activities. The author concludes by saying that obesity has limited 75% of participants in daily occupations, which can be compared to other chronic diseases (e.g., Arthritis) and ends with a series of employment treatment tips such as the use of auxiliary devices, home alterations and energy conservation techniques for compensatory training in ADL and IADL, which can be applied to increase occupational performance (21).

All areas of intervention in which the occupational therapist can act in the field considered in the study are also reported in the most recent position paper published by AOTA (22).

In another study not included, authors emphasize the role of the occupational therapist for the suggestion of useful strategies to overcome social anxiety, make regular meals, and get more involvement in leisure time among adults with pathological obesity (23).

A different kind of treatment on adult patients was the one in which an occupational therapy experience was used to increase the participants' perception of their body, to improve their body image, daily activities, social relationships and overcoming anxiety through recreational, cognitive, physical and productive activities. The author concludes by saying that this therapeutic process has contributed to improving interpersonal relationships and the daily routines of patients (24).

An additional unexplored field is the one that outlines the possibility of intervention by the occupational therapist in order to support change in urban communities, where environmental influences place children at a high risk of obesity. A non-included study points out that children who grow in low income communities have fewer opportunities to play outdoors or follow a healthy lifestyle, as these areas are lacking in grocery stores, fresh products, sports facilities, and parks. Moreover, the crime that spreads in these neighborhoods can hinder an active lifestyle. The author concludes by saying that the occupational therapist has the tools to introduce children to advocacy opportunities, actively engaging them in researching what are the factors that obstruct *occupational justice*, so that they can support the elimination of physical and social barriers that limit the opportunity to achieve a healthy lifestyle. The author concludes by suggesting Photovoice as a useful activity for such purposes (25).

In this review, the occupational therapists work with people already obese and / or overweight, but it is good to note how many authors emphasize multi-level intervention even on healthy or at risk of obesity population (26).

Another non-included study (27) reports a survey on 264 preschool children in Taiwan. The author concludes by pointing out that most participants did not spend enough time in physically active occupations.

This result is supported by a further study (19) that has shown that a sedentary lifestyle is associated with a higher risk of childhood obesity.

In the end, were found the guidelines for the physical activity of children divided by country. It is important that occupational therapists take into account the planning of interventions (28).

STUDY LIMITATIONS

One of the most important limitations we faced during the building of this review, was the low number of efficacy studies found in literature on this subject. In particular, the absence of the Randomized Controlled Trial (RCT), which was not possible to carry for various reasons, including the ethical one, is the most important. Another big limitation was the size of the sample, as most treatments were conducted on small communities with specific demographics therefore limiting the possibility of generalizing results to other populations. In addition, the lack of post-intervention follow-up and medium / long-term follow-up, as well as the use of unstructured interviews in place of standardized scales, have been other important limitations. At last, the high variety of participants from different ethnic groups, education, income, sex and age has made it difficult to make interventions that take into account the needs and expectations of all.

CONCLUSIONS

The present study was conducted by health professionals of the Sapienza University of Rome and ROMA (Rehabilitation & Outcome Measures Assessment Association). (31-41) The research group has conducted many studies on rehabilitation in Italy. In conclusion, we can say that the occupational therapist, acting individually or in a team, has the skills to promote holistic health, in accordance with the WHO's definition of 1948, "*a state of complete physical well-being, mental and social, and not just absence of illness and infirmity.* "

He can play an active role in the field of rehabilitation in the following areas:

- a) Improving the quality of life.
- b) Improvement in performance areas and occupational satisfaction.
- c) Promoting physical, mental and social health.
- d) Adopting a healthier lifestyle.

The strategies used to implement the interventions are:

- a) Clinical evaluation.
- b) Teachers' counseling.
- c) Parental counseling.
- d) Increased participation in adapted and physically active occupations.
- e) Involvement in promotional activities for healthy eating choices.

It is, therefore, established that obesity limits the ability of an individual to participate in everyday life occupations. The reduced ability to engage in meaningful occupations leads to experiencing what many authors call *occupational deprivation*, which translates into Disability.

Disability results, according to the International Classification of Functioning, Disability and Health (ICF), in the condition of those experiencing the reduced ability to successfully participate in daily life activities (29).

Thus, the presence of occupational therapists in the rehabilitation team significantly contributes to improving the quality of life of patients in all areas of their daily work, but could also result in potential economic benefits, such as the annual cost savings of medical and absence for sickness from work due to the consequences of obesity (30).

Occupational therapy is considered to be an increasingly valuable component in public health at international level in order to reverse the trends of the phenomenon that it is spreading fast, even though there is a lack of report of efficacy treatment in this field and a number of limitations have been identified in the analyzed studies.

The role that the occupational therapist could play in an effective and significant way in a field that is experiencing a substantial increase such as obesity, makes us believe that new perspectives will be available in the future.

Conflict of interest: The authors declares that there is no conflict of interest regarding the publication of this paper.

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