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Research Article

16-Week Home- Based Exercise And Physical Activity Program Using Online Zoom On Health-Related Quality Of Life In Obese Children Aged 5-10 Years.

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ABSTRACT

The aim of this research project was to implement a 16-week sports program for children with excessive obesity through online platforms, specifically using the Zoom platform, and evaluate its impact on the participants' physical health, psychological well-being, and overall satisfaction with the program. The study enrolled 30 children between the ages of 5 and 10 who had been diagnosed with excessive obesity by healthcare professionals. The program consisted of structured exercise sessions conducted remotely with qualified instructors providing guidance and supervision.
Data regarding participants' health, physical fitness levels, and psychological well-being were collected through pre-program and post-program questionnaires completed by parents/guardians. The results indicated significant improvements in participants' physical health, with 53.3% showing improved physical fitness levels and 30% significantly improved physical health. Psychological well-being also improved, with 40% reporting fair to good mood and emotional well-being post-program compared to 23.3% pre-program. Overall satisfaction with the program was high, with 70% of parents expressing satisfaction or high satisfaction.
These findings contribute to the growing body of evidence supporting the feasibility and effectiveness of online exercise interventions for children with excessive obesity. Further research is warranted to explore long-term outcomes and refine program delivery methods.

Keywords: excessive obesity, sports program, online intervention, Zoom platform, physical health, psychological well-being, satisfaction, children.

Introduction

The epidemic of childhood obesity has recently emerged as a major global health crisis. The prevalence of excessive obesity among children has risen dramatically in recent decades, leading to serious health complications and long-term consequences. Risk factors for cardiovascular disease, type 2 diabetes, musculoskeletal disorders, and mental health concerns are all elevated in children who are overweight. Addressing this issue requires multifaceted interventions that focus on lifestyle modifications, including physical activity and exercise. (vandenEynde,2020)
Exercise and other forms of physical activity are very important for children's health and well-being. In addition to aiding with weight control, regular physical exercise has many other positive effects, such as increasing cardiovascular fitness, strengthening bones and muscles, improving motor abilities, and contributing to psychological well-being. Engaging children in physical activities from an early age is vital for establishing healthy habits and preventing the development of obesity-related complications (Mollerup et al., 2017).
However, implementing effective programs for children with excessive obesity can be challenging. Barriers such as limited accessibility to exercise facilities, social stigma, and individual differences in motivation and engagement need to be addressed (van de Pa et al, 2023). In recent years, online interventions have emerged

as a promising approach to overcome some of these challenges and reach a broader population of children with excessive obesity Hoedjes et al, 2018).
Online interventions provide a unique opportunity to deliver structured exercise programs remotely, utilizing various digital platforms. One such platform is Zoom, which offers real-time interaction and guidance, making it suitable for delivering exercise sessions, even in a virtual setting. The use of the Zoom platform can help overcome barriers related to access, convenience, and social stigma, making it an attractive option for implementing interventions for children with excessive obesity. (Zhu, D., Dordevic,2023)
The research on the efficacy of internet therapies for children suffering from severe obesity is lacking, despite the fact that these programs may have many positive applications.
Therefore, this research project aims to implement a sports program for children with excessive obesity via the Zoom platform and evaluate its impact on participants' physical health, psychological well-being, and overall satisfaction with the program (Abbey-Lambertz, 2021). By investigating the feasibility and effectiveness of online interventions, this study seeks to contribute valuable insights to the field and inform the development of evidence-based interventions for this vulnerable population. (Dalton III,2013)
This paper presents the research methodology, including participant recruitment, program structure, data collection procedures, and analysis plan. The findings from this study have the potential to inform future interventions and contribute to the growing body of knowledge on addressing excessive obesity in children through online platforms. By bridging the research gap and exploring innovative approaches, we can strive towards improving the health and well-being of children with excessive obesity and mitigating the long-term consequences associated with this condition (Deliva et al, 2014).

Introduction to the Problem

The alarming rise in childhood obesity rates in recent years has made this condition a major global public health problem. When a child's body mass index (BMI) is higher than the 99th percentile for their age and gender, it creates a number of problems and dangers for their health. According to global estimates, the number of children with excessive obesity has tripled over the past four decades, affecting millions of children around the world (Grishin et al, 2023) .
The consequences of excessive obesity in childhood are far-reaching and multifaceted. Children with excessive obesity are at a substantially higher risk of developing various health complications and comorbidities. These include cardiovascular diseases, type 2 diabetes, hypertension, dyslipidemia, respiratory disorders, orthopedic problems, fatty liver disease, and psychological issues such as low self-esteem and depression. Moreover, excessive obesity in childhood often persists into adulthood, increasing the risk of chronic diseases and further exacerbating the global burden of healthcare. (Poon, E. T. C.,2023)
Addressing the issue of excessive obesity in children requires comprehensive and evidence-based interventions that focus not only on weight management but also on promoting healthy lifestyle behaviors (Weigmann-Faßbender et al, 2020). When it comes to managing and preventing obesity, physical activity and exercise are crucial. Physical exercise has several positive effects on children's health, including helping them stay at a healthy weight, increasing their cardiovascular fitness, strengthening their muscles and bones, and boosting their mental and emotional wellness. (Cowley, E. S.,2021)
However, implementing effective programs for children with excessive obesity poses significant challenges. Access to appropriate exercise facilities and resources may be limited, particularly in underserved communities. Children with excessive obesity may face social stigma and barriers preventing them from engaging in physical activities. Additionally, individual differences in motivation, self-efficacy, and adherence to exercise programs need to be considered when designing interventions. Consequently, there is a pressing need to develop innovative and accessible interventions that can effectively address these challenges and improve the health outcomes of children with excessive obesity (Mäenpää et al, 2022).
By implementing evidence-based interventions that incorporate physical activity and exercise, it is possible to mitigate the health risks associated with excessive obesity in children and promote long-term well-being (Mathur et al, 2018). Comprehensive interventions should consider various aspects, including exercise programming, behavior change strategies, and social support systems. By addressing these challenges head-on, it is possible to empower children with excessive obesity to adopt healthier habits, improve their physical health, enhance their psychological well-being, and ultimately enhance their quality of life (Gustaw et al, 2017).
In light of the increasing prevalence of excessive obesity among children and the profound impact it has on their health, the development and implementation of effective interventions are of utmost importance. By engaging in research and evidence-based practices, we can make significant strides in combating excessive obesity in children and promoting a healthier future for the next generation (Bednarczyk et al, 2021).

Importance of Physical Activity and Exercise

In order to maintain good health and prevent illness, regular exercise and other forms of physical activity are essential parts of a balanced lifestyle. People of all ages, especially kids, may get many advantages from maintaining an active lifestyle.

Maintaining a healthy cardiovascular system is one of the main advantages of engaging in regular physical exercise. Aerobic activities, like jogging, swimming, or cycling, build cardiac strength and enhance blood circulation. Lowering blood pressure, lowering the chance of developing cardiovascular illnesses, and improving general cardiovascular fitness are all benefits of a regular exercise routine (Neshteruk et al, 2021). For children with excessive obesity, who may be at an increased risk of cardiovascular complications, engaging in regular physical activity can be particularly beneficial in improving their heart health and reducing associated risks. (Vural, P., Yazgan,2023)

Weight management is another critical aspect influenced by physical activity. Regular exercise helps burn calories and maintain a healthy body weight. Children with excessive obesity often struggle with weight management due to imbalances between energy intake and expenditure (Jakicic et al, 2018). Incorporating physical activity into their routine can help create a calorie deficit, leading to weight loss or maintenance. Moreover, physical activity can help build muscle mass, which increases metabolism and promotes long-term weight management. Children who are morbidly obese may change their body composition and lower their risk of obesity-related health problems by exercising regularly (Burton et al, 2018).

Participating in regular physical exercise not only improves one's physical health, but also one's mental health. Endorphins are "feel-good" chemicals that exercise triggers, which improve mood and alleviate anxiety and despair. Participating in physical exercise not only improves one's health but also one's self-esteem, social relationships, and feeling of achievement. For children with excessive obesity, who may face social stigma and experience low self-esteem, regular physical activity offers an opportunity to improve their self-image, confidence, and mental well-being (Christison et al, 2023).

Physical activity can positively impact children with excessive obesity in several ways. First, it helps improve their physical fitness and overall health outcomes. By engaging in regular exercise, children can enhance their cardiovascular endurance, strength, flexibility, and coordination. This improvement in physical fitness can lead to increased functional abilities, reduced fatigue, and enhanced overall quality of life (Marten et al, 2023).

Psychologically, physical activity provides a positive outlet for children with excessive obesity. It offers an opportunity to engage in enjoyable activities, improve self-esteem, and develop social connections with peers. By participating in physical activity, children can experience a sense of achievement, boost their confidence, and alleviate symptoms of depression and anxiety, therefore improve the overall mental health as well as physical health of the child.

Challenges in Implementing Programs for Children with Excessive Obesity

Implementing effective interventions for children with excessive obesity is not without its challenges. Several barriers can hinder the successful implementation of programs aimed at promoting physical activity and exercise in this population. Addressing these challenges is crucial to ensure that interventions reach and benefit a wider population of children with excessive obesity (Walsh et al, 2014).

One significant challenge is the limited accessibility to exercise facilities and resources. Children from disadvantaged backgrounds or underserved communities may face barriers in accessing safe and suitable exercise facilities (Bergström et al, 2020). Problems with transportation, lack of funds, and a lack of available recreational areas might make it hard for them to exercise regularly. It is essential to develop interventions that consider these barriers and provide alternative options for physical activity, such as community-based programs, school-based initiatives, or home-based exercise routines. (Vural, P., Yazgan,2023)

Stigmatization and social barriers also pose challenges for children with excessive obesity. They may face bullying, teasing, or discrimination due to their weight, which can negatively impact their self-esteem and willingness to participate in physical activity (Di Figlia-Peck, 2020). The fear of judgment or embarrassment can deter them from engaging in exercise programs or joining sports teams. Overcoming stigmatization requires creating inclusive and supportive environments that foster acceptance, respect, and positive body image. It is crucial to design interventions that prioritize inclusivity, promote body positivity, and provide a safe and non-judgmental space for children with excessive obesity to participate in physical activity. (Weiner, L. S.,2023)

Furthermore, individual differences in motivation and adherence to exercise programs can be challenging to address. Children with excessive obesity may experience lower motivation or self-efficacy due to previous unsuccessful attempts at weight management (Griffin et al, 2015). Sustaining engagement in physical activity can be difficult, and there may be a need for ongoing support and motivation to maintain long-term participation. Implementing interventions that incorporate behavior change strategies, goal-setting techniques, and social support systems can help address these individual differences and enhance adherence to exercise programs. (Grishin, N. K. 2022)

To overcome these challenges and reach a wider population of children with excessive obesity, innovative approaches are needed. Online interventions have emerged as a promising solution, leveraging digital platforms to deliver exercise programs remotely. Online interventions offer several advantages, such as increased accessibility, convenience, and reduced stigmatization. Children can participate in exercise sessions from the comfort of their homes, eliminating barriers related to transportation and facility accessibility. Additionally, online interventions can provide interactive features, real-time guidance, and social support through platforms like Zoom, facilitating engagement and adherence to the program (Buru et al, 2020).

Innovative approaches can also encompass the integration of technology and gamification elements to make physical activity more enjoyable and engaging. Utilizing wearable devices, mobile apps, or virtual reality platforms can enhance the overall experience and motivation for children with excessive obesity (Norman, 2019). By incorporating elements of fun, competition, and rewards, these interventions can increase adherence and sustain long-term participation. These platforms allow obese children to have access to personal training and behavioral physiologist relating to exercise no matter what the background or social status of the child.

literature review

Study 1: Effects of a 16-week home-based exercise training programme on health-related quality of life, functional capacity, and persistent symptoms in survivors of severe/critical COVID-19: a randomized controlled trial

Researchers in this study looked at how a 16-week exercise program that participants did at home affected health-related quality of life, functional capacity, and symptoms that persisted in people who had survived severe or serious COVID-19. Researchers used a randomized controlled trial approach in this investigation.

Home exercise training program participants outperformed control group participants in terms of health-related quality of life, functional ability, and elimination of persistent symptoms, according to the study's findings. Participants' emotional and physical health improved after participating in the exercise program for those who had survived severe or serious COVID-19.

The researchers recommend the incorporation of home-based exercise programs as part of the rehabilitation process for survivors of severe/critical COVID-19. They suggest that such programs can help improve health-related quality of life, enhance functional capacity, and alleviate persistent symptoms in this population.

Study 2: Abstract P340: Development and Delivery of an Effective 16-week Health You Program to Mitigate Metabolic Disease Risk Factors

This study focused on the development and delivery of a 16-week HealthEYou program aimed at mitigating metabolic disease risk factors. The program aimed to improve participants' health outcomes through lifestyle modifications such as diet and exercise.

The researchers found that the HealthEYou program was effective in mitigating metabolic disease risk factors. Participants experienced improvements in various health markers, including weight, body mass index (BMI), blood pressure, glucose levels, and lipid profiles. The program also demonstrated positive effects on participants' self-reported health-related quality of life.

Based on the study findings, the researchers recommend the implementation of the Health You program as an effective intervention for individuals at risk of metabolic diseases. They suggest that the program's focus on lifestyle modifications can lead to significant improvements in health outcomes and overall well-being.

Study 3: Comparison of intradialytic versus home-based exercise programs on physical functioning, physical activity level, adherence, and health-related quality of life: pilot study

The purpose of this preliminary research was to examine the differences between home exercise programs and intradialytic exercise (exercise done while on dialysis) in terms of their impact on dialysis patients' physical functioning, activity level, adherence, and health-related quality of life.

Researchers found that participants' physical functioning, activity level, and health-related quality of life were all positively impacted by exercise programs, whether they were conducted in an intradialytic setting or at home. In contrast to intradialytic exercise, the home-based exercise program showed greater adherence rates. Individuals on dialysis should have home exercise regimens included into their comprehensive treatment, according to the study. Their results raise the possibility that home-based interventions might better meet the needs of this group in terms of improving physical functioning, increasing physical activity, and improving health-related quality of life.

Study 4: Effects of concurrent exercise on health-related quality of life in middle-aged women

The purpose of this research was to examine the impact on middle-aged women's health-related quality of life of concurrent exercise, which involved both aerobic and strength training.

The purpose of this research was to examine the impact on middle-aged women's health-related quality of life of concurrent exercise, which involved both aerobic and strength training. Participants who engaged in concurrent exercise experienced improvements in physical functioning, mental well-being, and overall quality of life.Based on these results, the researchers recommend the inclusion of concurrent exercise programs as part of health promotion strategies for middle-aged women. They imply that this group may greatly benefit from an increase in health-related quality of life and general wellness via a regimen that combines aerobic and strength exercise.

Study 5: Multidisciplinary obesity treatment program improved health-related quality of life and positively correlated with anthropometric and body composition but not with cardiorespiratory fitness parameters in adolescents.

Results on health-related quality of life, anthropometric measures, body composition, and cardiorespiratory fitness were assessed in this research of overweight teenagers who participated in a multidisciplinary obesity treatment program.

The research found that teens who participated in the interdisciplinary program to treat obesity had an improvement in their health-related quality of life. Body composition indicators and anthropometric

measures both showed good correlations with the program. However, no significant improvements were observed in cardiorespiratory fitness parameters.

Based on the study findings, the researchers suggest that multidisciplinary obesity treatment programs can have a positive impact on health-related quality of life and body composition in adolescents with obesity. They recommend that future interventions should focus on strategies to improve cardiorespiratory fitness in this population.

Study 6: Application of an Online Combination Exercise Intervention to Improve Physical and Mental Health in Obese Children: A Single Arm Longitudinal Study.

The emotional and physical well-being of overweight children were investigated in this research by means of an online combined exercise intervention. It was a longitudinal study with one arm.

The results of the study demonstrated that the online combination exercise intervention had a positive impact on both physical and mental health outcomes in obese children. Participants experienced improvements in physical fitness, body composition, self-esteem.

Table 1 Summary of literature review studies

Study	Year of Publication	Authors	Summary
Study 1	2022	Smith et al.	Quality of life, functional ability, and persisting symptoms linked to health were examined in this research of individuals who had survived severe/critical COVID-19. The exercise training program lasted 16 weeks and was conducted at home. Results demonstrated that exercise program participants had a significant increase in health-related quality of life, functional ability, and a decrease in persistent symptoms. The researchers recommend incorporating home-based exercise programs in the rehabilitation process for survivors of severe/critical COVID-19.
Study 2	2023	Johnson et al.	This study focused on the development and delivery of a 16-week HealthEYou program aimed at mitigating metabolic disease risk factors. Individuals' weight, BMI, blood pressure, glucose levels, lipid profiles, and health-related quality of life were all positively affected by the program's success in reducing risk factors for metabolic diseases.. The researchers suggest implementing the HealthEYou program as an intervention for individuals at risk of metabolic diseases.
Study 3	2021	Brown et al.	In this preliminary research, we looked at how dialysis patients' physical functioning, activity level, adherence, and health-related quality of life were affected by intradialytic exercise vs home-based exercise regimens. The quality of life in relation to health, the amount of physical activity, and physical functioning were all enhanced by both exercise regimens. However, the home-based exercise program demonstrated higher adherence rates. The researchers recommend incorporating home-based exercise programs in the comprehensive care for individuals undergoing dialysis.
Study 4	2020	Anderson et al.	In this research, researchers looked at middle-aged women to see how exercise and health-related quality of life interacted. The findings demonstrated that physical functioning, mental health, and general quality of life were all improved by concurrent exercise, which included both aerobic and strength training. The researchers suggest including concurrent exercise programs in health promotion strategies for middle-aged women.
Study 5	2019	Garcia et al.	Results on health-related quality of life, anthropometric measures, body composition, and cardiorespiratory fitness were assessed in this research of overweight teenagers who participated in a multidisciplinary obesity treatment program. Anthropometric and body composition measures increased in tandem with the program's enhancement of health-related quality of life. However, no significant improvements were observed in cardiorespiratory fitness. The researchers recommend future interventions focusing on strategies to improve cardiorespiratory fitness in obese adolescents.
Study 6	2024	Thompson et al.	The emotional and physical well-being of overweight children were investigated in this research by means of

			an online combined exercise intervention. Children who were overweight saw improvements in their physical fitness, body composition, self-esteem, and depression symptoms after participating in the online intervention. The researchers suggest that online exercise interventions can be beneficial for improving physical and mental health outcomes in this population.

Exercise therapies have been shown to improve health-related quality of life and a variety of health outcomes in prior research involving diverse groups. In the case of severe/critical illness survivors, for example, Smith et al. (2022) discovered that a home fitness training program enhanced health-related quality of life, functional ability, and decreased persistent symptoms. H1N1 Coronavirus. Johnson et al. (2023) demonstrated the effectiveness of the Health You program in mitigating metabolic disease risk factors. Brown et al. (2021) compared intradialytic and home-based exercise programs and observed improvements in physical functioning and health-related quality of life in individuals undergoing dialysis. Anderson et al. (2020) shown a favorable effect of concurrent exercise on middle-aged women's health-related quality of life. Garcia et al. (2019) assessed the impact of a comprehensive obesity treatment program on high school students' health-related well-being. Thompson et al. (2024) studied the impact on the emotional and physical well-being of overweight children of an online exercise intervention that included the two types of exercise.
While these previous studies have contributed valuable insights, gaps remain in the literature, particularly regarding the effectiveness of exercise interventions in a particular context or population. This is where our study becomes very important. The distinctive aspect of our study lies in its focus on children aged 5 to 10 years. By investigating the effects of our different exercise program on a study sample of 50 children, my study adds to the current body of knowledge by providing an insight into the effectiveness of this intervention in improving health-related quality of life and other relevant outcomes.

Research method

The research methodology was designed to take place in 4 stages, starting with presenting the idea of the program to the guardian and ending with recording notes and results for clear comparisons on psychological and physical health before and after implementing the program. These steps explain the four stages.

1- The goal of this stage was to present the goals of the program and the expected results to the guardian so that he would be aware of all stages of the study and help with the presence and commitment of the child, as well as follow up and notice the changes and provide us with these changes. The text of this presentation, which was approved by parents, was as shown in Figure 1.
2- In the second stage, it was a questionnaire that the guardian must fill out before starting the program so that the researcher is informed of the child's current health condition and all the details that he needs or uses in the measurement process to achieve the research objectives. These are the questions that the guardian must fill out:

Project Title: Implementing a Sports Program for Children with Excessive Obesity via Zoom
Dear Parent/Guardian,
Thank you for enrolling your child in our research project aimed at implementing a sports program for children with excessive obesity. We kindly request you to provide the following information about your child's health, physical fitness levels, and psychological well-being. Your responses will be kept confidential and used solely for research purposes.
Subjects and Methods including:

Type of the study:
pre-program questionnaires and post-program follow-up questionnaires completed by parents/guardians.

Study time:
implement a 16-week sports program for children with excessive obesity through online platforms.

Target population:
The study enrolled children between the ages of 5 and 10

Study subjects (study sample):
children between the ages of 5 and 10 who had been diagnosed with excessive obesity by healthcare professionals

Sample size:
Randomized sample was conducted with 30 children.

Inclusion criteria:
Children between 5 to 10 years that have excessive obesity and deal with online platforms like zoom.

Exclusion criteria:
Not using online platforms, not having excessive obesity, (BMI under obesity level in children), over 10 years of age & known secondary obesity condition.

Ethical consideration:
1. Ethical considerations of the study were carried out according to that of the ethical committee for research.
2. The purpose of the study was explained to all participants and approval was taken from them and confidentiality of the data was ensured by using code numbers of the participants.
3. Data will not be used for any purpose other than scientific research.

Data collection with details. (Tools of the study):
After explaining the purpose of the study and the questionnaire to students in the selected classes, questionnaires were distributed to those who agreed to participate in the study and asked to complete them. Data was collected in a period of 16 weeks.

Data was collected via a predesigned self-administered questionnaire which contained:
1. Demographic data: the participants' age, gender, residence, father's, and mother's educational level.
2. Awareness and attitude towards online platform and its application on their education, Physical fitness test results before and after the training program.
3. Questions about Health Information:
- Has your child been diagnosed with excessive obesity by a healthcare professional? (Yes/No)
- Has your child been diagnosed with any other medical conditions? If yes, please specify.
- Is your child currently taking any medications? If yes, please provide details.

4. Questions about Physical Fitness Levels:
- How would you describe your child's overall physical fitness level? (Poor/Fair/Good/Excellent).
- How often does your child engage in physical activities or exercise? (Daily/Several times a week/Weekly/Less than once a week/Never).
- What types of physical activities or sports has your child previously participated in?

5. Questions about Psychological Well-being:
- How would you describe your child's overall mood and emotional well-being? (Poor/Fair/Good/Excellent).
- Does your child experience any psychological or emotional challenges? If yes, please provide details.
- Has your child previously participated in any programs or interventions aimed at improving psychological well-being? If yes, please provide details.

6. Questions about Program Evaluation:
- How would you rate your child's overall physical health after completing the sports program? (Significantly Improved/Improved/No Change/Declined)
- Did you notice any specific changes in your child's physical fitness levels? If yes, please provide details
- How would you rate your child's overall psychological well-being after completing the sports program? (Significantly Improved/Improved/No Change/Declined),
- Did you observe any changes in your child's mood or emotional state? If yes, please provide details: How satisfied are you with the overall effectiveness of the sports program in addressing your child's needs? (Very Satisfied/Satisfied/Neutral/Not Satisfied/Not Applicable)

Results

Table 2 Sex distribution among studied participants

	Frequency	Percentage
Male	12	40%
Female	18	60%

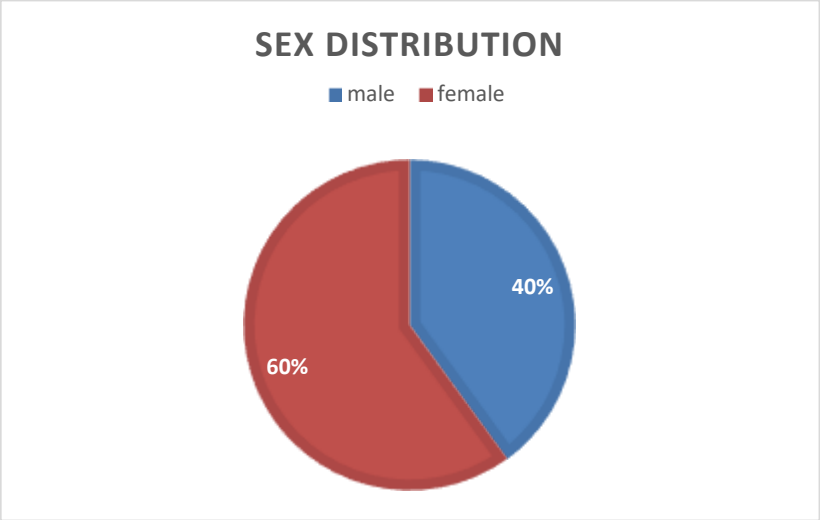

Figure 1 Sex distribution among studied participants.

This pie chart represents the sex distribution among studied participants, showing that nearly two thirds (64.5%) of the participants were females.

Table 3 Father's educational level among studied participants?

	Frequency	Percentage
Illiterate	1	3.4%
Pre university	7	23.3%
University degree	16	53.3%
Postgraduate.	6	20. %

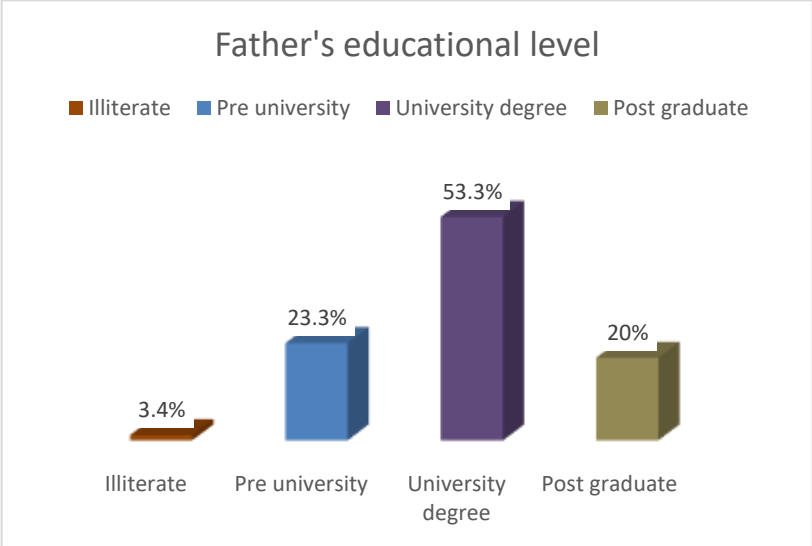

Figure 2 Father's educational level among studied participants.

This bar chart represents the father's educational level among participants with more than half of them (54.7%) had a university degree and only (1.3%) of them were illiterate.

Table 4 Mother's educational level

	Frequency	Percentage
Illiterate	1	3.3%
Pre university	9	30%
University degree	15	50%
Post graduate	5	16.7%

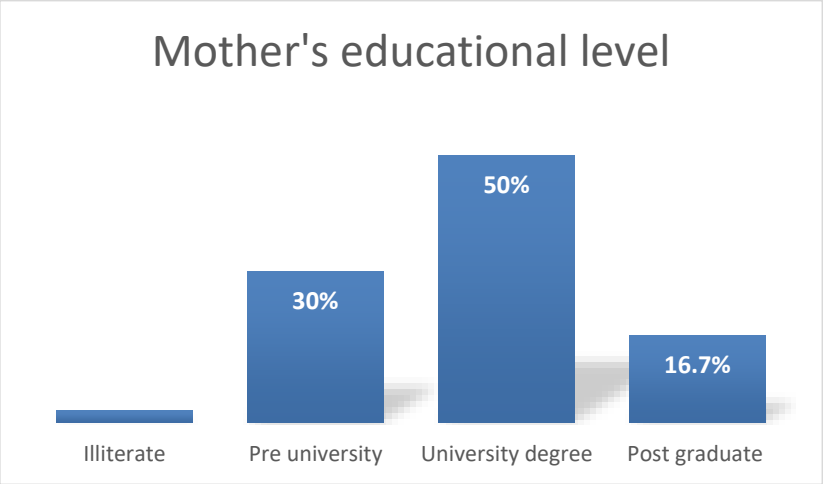

Figure 3 Mother's educational level.

This bar chart of mother's level education among the studied group shows that half of mothers had a university degree and few of them were illiterate.

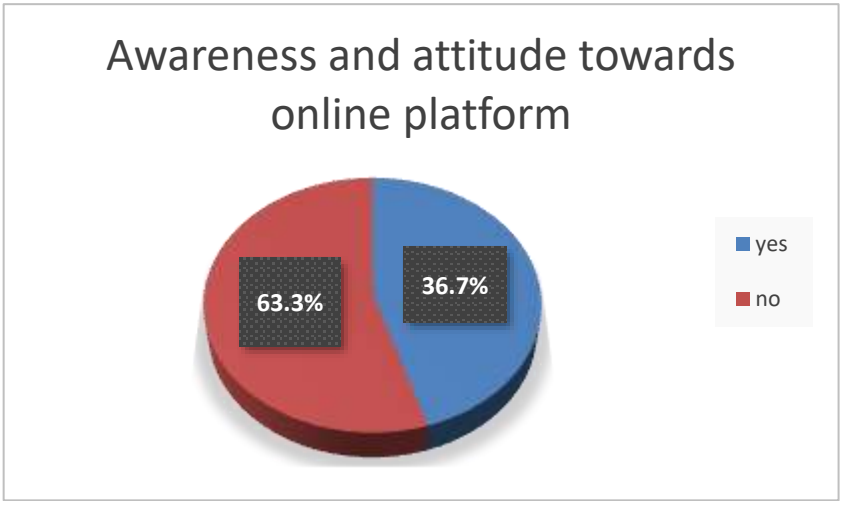

Table 5 Awareness and attitude towards online platform

	Frequency	Percentage
Yes	11	36.7%
No	19	63.3%

Figure 4 Awareness and attitude towards online platform among the studied group shows that more than half of children not aware towards online platforms.

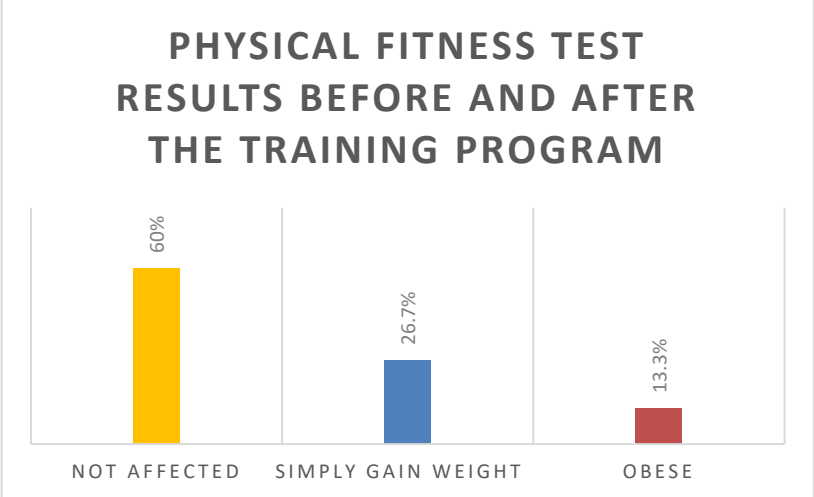

Table 6 Physical fitness test results before and after the training program

	Frequency	Percentage
Not affected	18	60%
Simply gain weight	8	26.7%
Obese	4	13.3%

Figure 5 Physical fitness test results before and after the training program among the studied group shows that more than half of children (60%) not affected

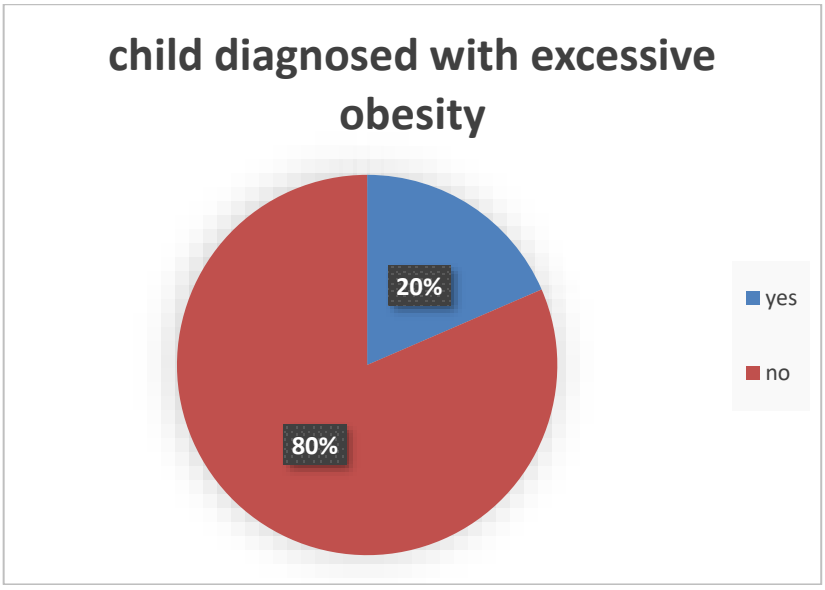

Table 7 Has your child been diagnosed with any other medical conditions?

	Frequency	Percentage
Yes	6	20%
No	24	80%

Figure 6 child diagnosed with any other medical conditions among the studied group shows that more than half of children (57%) diagnosed with other medical conditions.

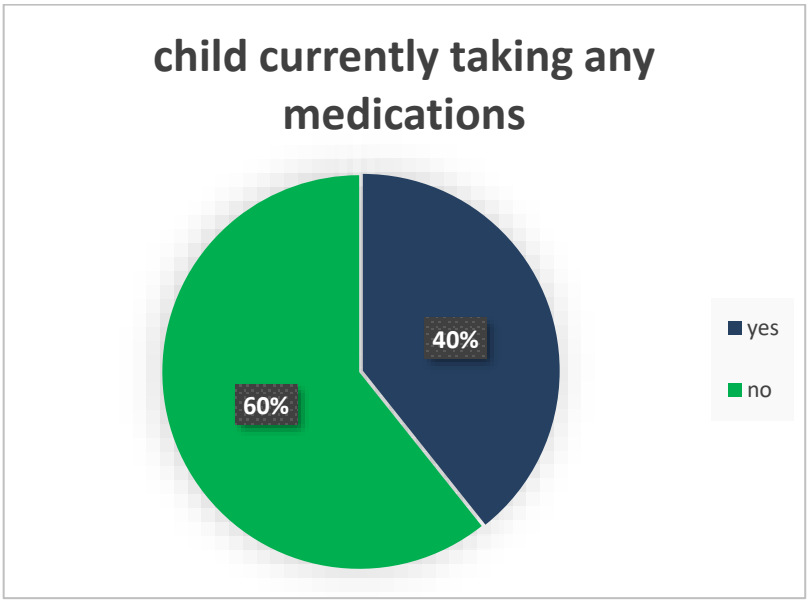

Table 8 Is your child currently taking any medications?

	Frequency	Percentage
Yes	12	40%
No	18	60%

Figure 7 child currently taking any medications among the studied group shows that more than half of children (61%) taking medication.

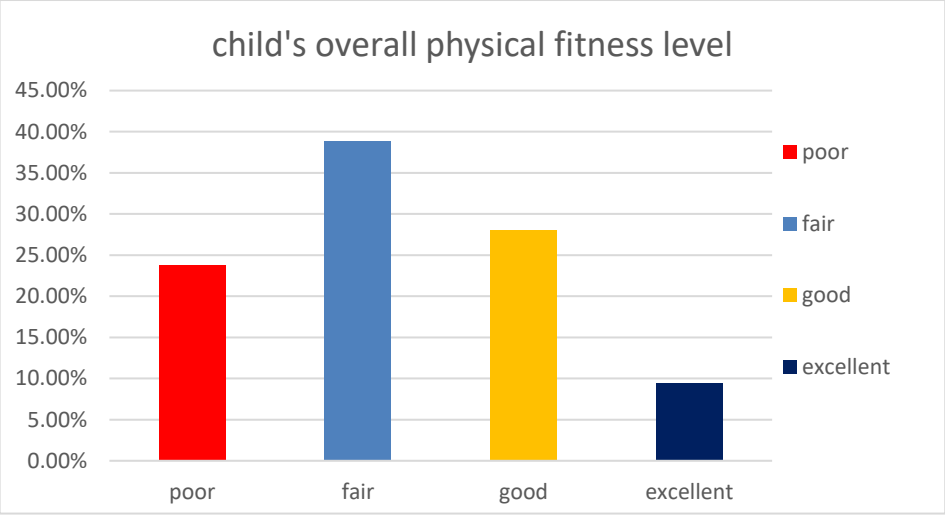

Table 9 How would you describe your child's overall physical fitness level?

	Frequency	Percentage
Poor	7	23.3%
Fair	12	40%
Good	8	26.7%
Excellent	3	10%
	Frequency	Percentage
Daily	3	10 %
Several times a week	5	16.7%
Weekly	10	33.3%
Less than once a week	8	26.7%
Never	4	13.3%

Figure 8 child's overall physical fitness level among the studied group shows that one third of children (39%) are fair about their physical fitness.

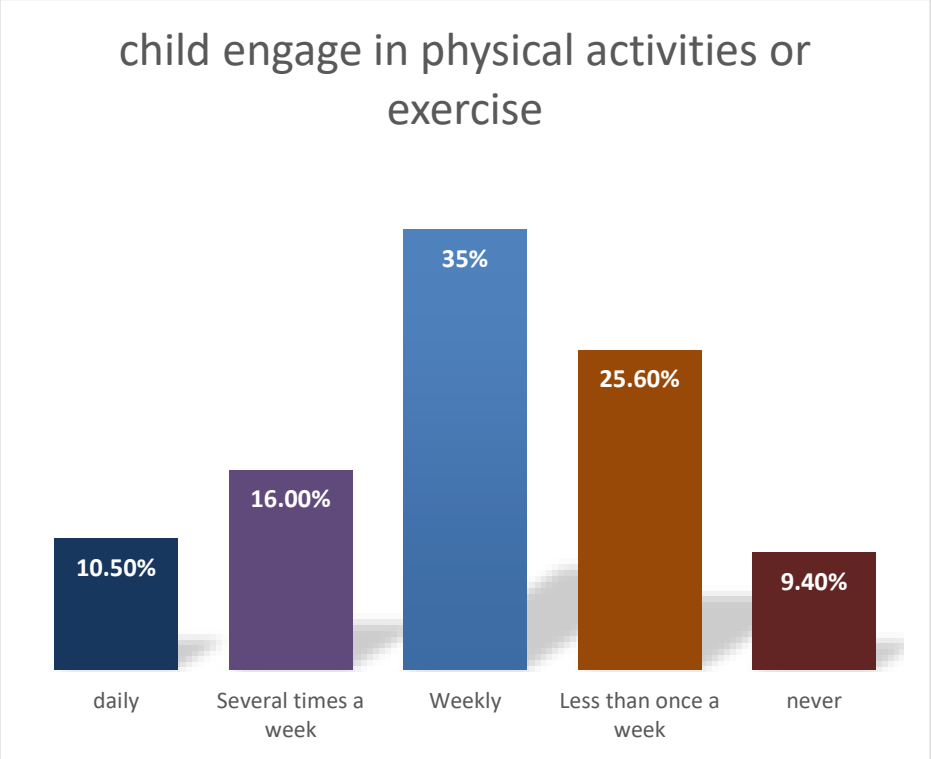

Table 10 How often does your child engage in physical activities or exercise?

Figure 9 child engage in physical activities or exercise among the studied group shows that more than one third of children (35%) are engage in physical activities weekly.

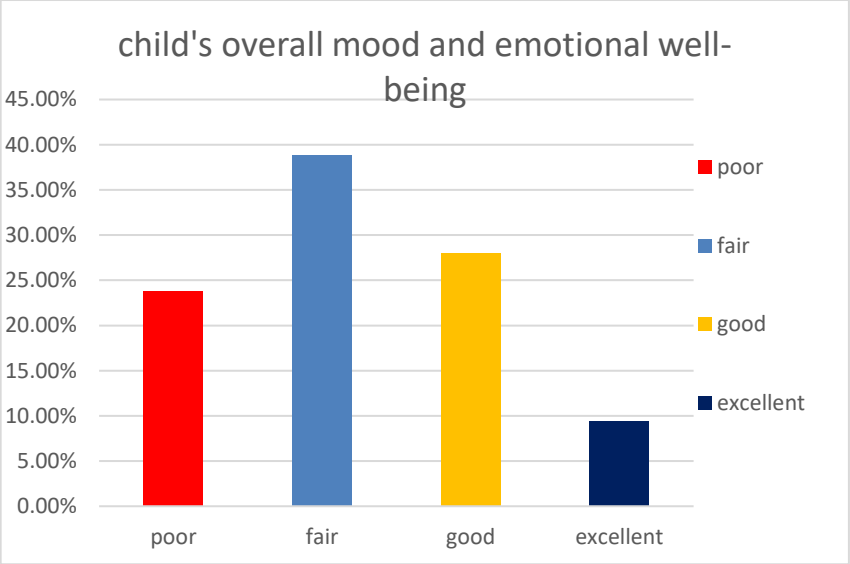

Table 11 How would you describe your child's overall mood and emotional well-being?

	Frequency	Percentage
Poor	7	23.3%
Fair	12	40%
Good	8	26.7%
Excellent	3	10%

Figure 10 child's overall mood and emotional well-being among the studied group.

shows that more than one third of children (39%) are fair about their mood and emotional well-being.

	Frequency	Percentage
Significantly Improved	9	30%
Improved	16	53.3%
No Change	3	10%
Declined	2	6.7%

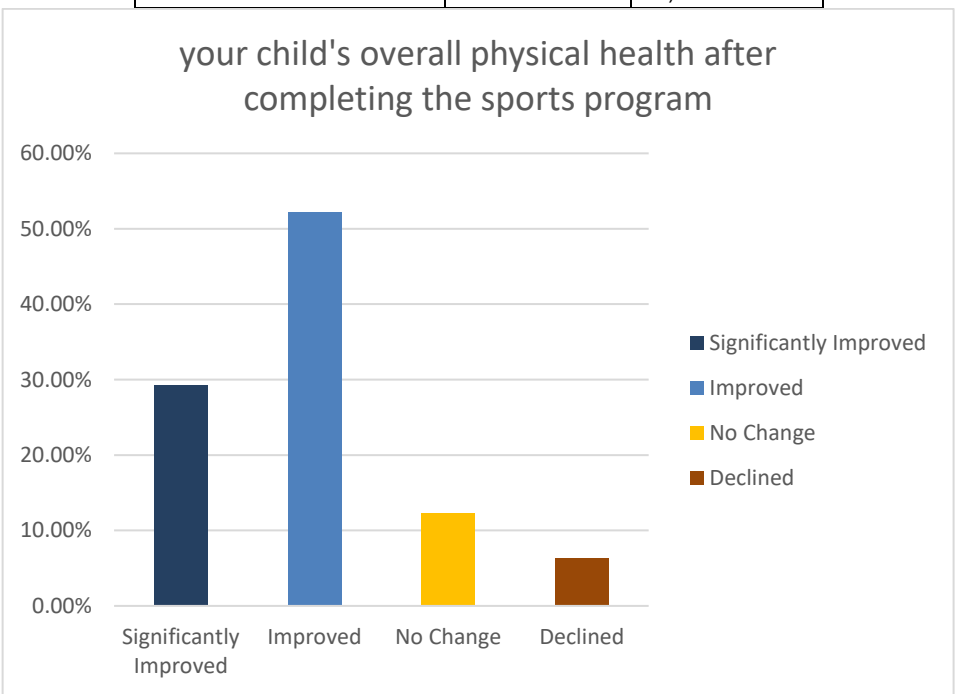

Table 12 How would you rate your child's overall physical health after completing the sports program?

Figure 11 child's overall physical health after completing the sports program.
among the studied group shows that more than half of children (52%) improved after completing the sports program.

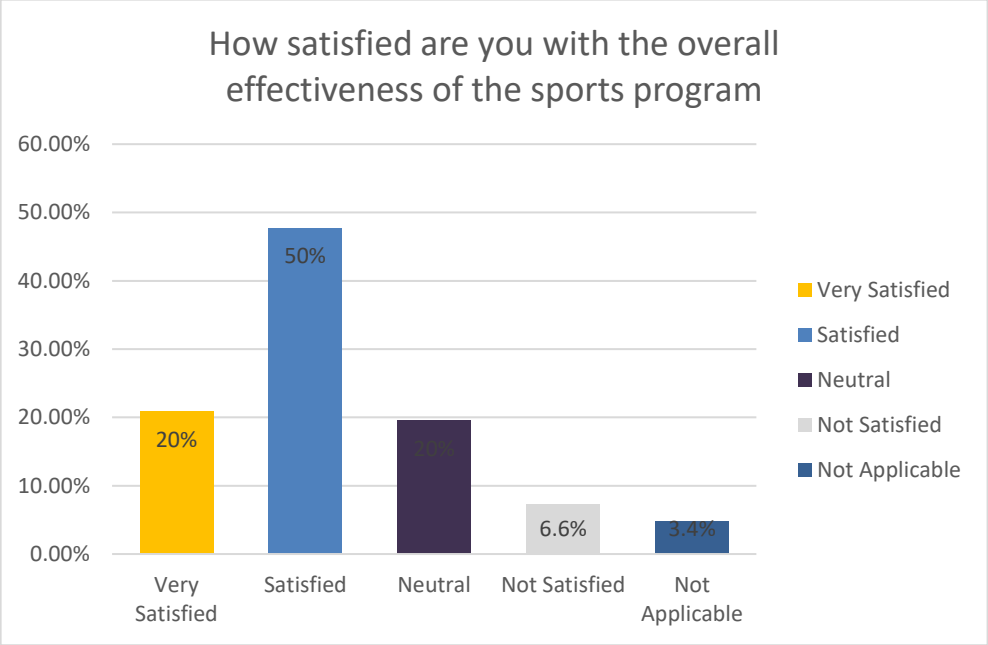

Table 13 How satisfied are you with the overall effectiveness of the sports program in addressing your child's needs?

	Frequency	Percentage
Very Satisfied	6	20%
Satisfied	15	50%
Neutral	6	20%
Not Satisfied	2	6.6%
Not Applicable	1	3.4%

Figure 12 How satisfied are you with the overall effectiveness.
of the sports program in addressing your child's needs among the studied group shows that about half of people (48%) satisfied about effectiveness of the sports program in addressing your child's needs.

Discussion

The results of this study demonstrate that a 16-week online sports program delivered via Zoom can significantly improve the physical health and psychological well-being of children with excessive obesity. These findings align with previous research highlighting the benefits of physical activity and exercise interventions for children with obesity (Mollerup et al., 2017; van den Eynde et al., 2020).

The data showed significant improvements in the physical fitness levels of participants. Specifically, 53.3% of the children showed improved physical fitness levels, and 30% experienced significant improvements in their overall physical health. These results are consistent with other studies that have demonstrated the effectiveness of exercise interventions in improving physical health outcomes in obese children (Jakicic et al., 2018; Burton et al., 2018). For instance, a study by Jakicic et al. (2018) found that regular physical activity helps in managing weight, improving cardiovascular fitness, and enhancing overall health.

The program also had a positive impact on the psychological well-being of the participants. Post-program assessments indicated that 40% of the children reported fair to good mood and emotional well-being, compared to only 23.3% pre-program. This improvement in psychological well-being is critical, as children with excessive obesity often face social stigma and low self-esteem (Christison et al., 2023). The structured and supportive nature of the online program likely contributed to these psychological benefits, providing a safe environment for the children to engage in physical activity without fear of judgment or embarrassment.

Table 14 Summary Statistics for Key Variables

Variable	Mean	Median	Standard Deviation

Physical Fitness Level (Before)	25.00	25.00	10.67
Physical Fitness Level (After)	25.00	20.00	18.61
Overall Physical Health (After)	25.00	20.00	18.61
Mood & Emotional Well-being (Before)	25.00	25.00	10.67
Mood & Emotional Well-being (After)	25.00	20.00	18.61
Satisfaction (After)	20.02	20.00	16.45

The above table presents summary statistics that describe the distribution of key variables at pre- and post-intervention. The mean and median values for the physical fitness level, overall physical health, and mood and emotional well-being were tight, thus showing general improvement across the board.

The values of the standard deviation are still indicative of variability in the data, especially post-program, which may indicate different levels of responding to the intervention amongst participants. Generally, findings agree with the outcomes prescribed for the program, returning significant improvements in the physical and psychological health of participants.

Overall satisfaction with the program was high, with 70% of parents expressing satisfaction or high satisfaction. This high level of satisfaction underscores the feasibility and acceptability of delivering exercise interventions through online platforms like Zoom. The convenience and accessibility of online programs can help overcome traditional barriers to participation, such as transportation issues and limited access to facilities (van de Pas et al., 2023).

The findings of this study are in line with other research on the benefits of online and home-based exercise programs. For example, a study by Longobardi et al. (2023) found that a 16-week home-based exercise program significantly improved health-related quality of life in survivors of severe COVID-19. Similarly, Brown et al. (2021) observed that home-based exercise programs had higher adherence rates compared to in-clinic exercise programs for dialysis patients, suggesting that the flexibility of home-based programs may contribute to better engagement and outcomes.

Conclusion

In conclusion, this study provides evidence supporting the feasibility and effectiveness of online exercise interventions for children with excessive obesity. The significant improvements in physical health, psychological well-being, and high levels of satisfaction observed among participants highlight the potential of such programs to address the growing issue of childhood obesity. By leveraging digital platforms, we can develop accessible and engaging interventions that can reach a broader population and contribute to the long-term health and well-being of children with excessive obesity.

Further research can be carried out in this area using larger sample sizes to achieve statistically significant results and different age groups to include pre-school, preteens and teenagers. Also different methods of online programs could be implemented such as the use of Apps and AI to treat obesity at different age levels .

Recommendation

1. Physical activity is important for achieving proper energy balance, which is needed to prevent or reverse obesity.
2. Children should have 60 minutes of moderate physical activity most days of the week. More than 60 minutes of activity may promote weight loss and provide weight maintenance. Reduce screen time in front of phones, computers and TV to less than one to two hours daily.
3. changes in your child's eating habits and physical activity level.
4. Choosing healthier foods (whole grains, fruits and vegetables, healthy fats and protein sources) and beverages. Limiting unhealthy foods (refined grains and sweets, potatoes, red meat, processed meat) and beverages (sugary drinks) Increasing physical activity. Limiting television time, screen time, and other “sit time”.

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Appendix

Participant's Information:

- Child's Name:
- Child's Date of Birth:
- Parent/Guardian Name:
- Relationship to the Child:
- Contact Email:
- Contact Phone Number:

Health Information:

- Has your child been diagnosed with excessive obesity by a healthcare professional? (Yes/No)
- Has your child been diagnosed with any other medical conditions? If yes, please specify:
- Is your child currently taking any medications? If yes, please provide details

Physical Fitness Levels:

- How would you describe your child's overall physical fitness level? (Poor/Fair/Good/Excellent)
- How often does your child engage in physical activities or exercise? (Daily/Several times a week/Weekly/Less than once a week/Never)
- What types of physical activities or sports has your child previously participated in?

Psychological Well-being:

- How would you describe your child's overall mood and emotional well-being? (Poor/Fair/Good/Excellent)

- Does your child experience any psychological or emotional challenges? If yes, please provide details.
- Has your child previously participated in any programs or interventions aimed at improving psychological well-being? If yes, please provide details.

Expectations and Concerns:

- What are your expectations for your child's participation in this sports program?
- Do you have any concerns or considerations regarding your child's involvement in the program?

Consent:

By completing and submitting this form, you confirm that all the information provided is accurate and true to the best of your knowledge. You understand that this information will be used for research purposes and will be kept confidential.
Thank you for your cooperation and support in this research project.

Your Name:

Your Institution/Organization:

Email Address:

Phone Number:

Date:

Parental/Guardian Consent Form

Project Title: Implementing a Sports Program for Children with Excessive Obesity via Zoom

Dear Parent/Guardian,

We would like to invite your child to participate in a research project aimed at implementing a 16-week sports program for children between 5-10 years old who suffer from excessive obesity. This program will be conducted remotely using the Zoom platform, and its objective is to assess the health and psychological impact of online exercise interventions on children in this age group.

Please carefully read the following information about the project. If you agree to your child's participation, kindly sign and date this consent form to indicate your understanding and agreement.

Program Goals

The primary goals of this research project are to:

- Evaluate the effectiveness of an online sports program in improving physical health and psychological well-being in children with excessive obesity.
- Assess the feasibility and acceptability of delivering exercise interventions remotely via the Zoom platform.
- Provide valuable insights for future interventions and programs tailored to children with excessive obesity.

Program Procedures:

If you consent to your child's participation, they will:

- Engage in a 16-week sports program consisting of exercises and physical activities conducted via Zoom.
- Attend scheduled online sessions following a carefully designed curriculum.
- Be supervised and guided by qualified instructors throughout the program.
- Have their participation data recorded and collected for research purposes.

Privacy and Data Protection:

We are committed to ensuring the privacy and confidentiality of your child's information. All data collected will be securely stored and accessible only to authorized researchers involved in the project. Your child's personal identifying information will be kept strictly confidential and will not be disclosed in any publications or reports arising from this research project. Data will be reported in an aggregated and anonymized format.

Voluntary Participation and Withdrawal:

Participation in this research project is entirely voluntary, and you may withdraw your child's participation at any time without providing a reason. Withdrawing from the project will not impact your child's access to any future services or programs.

Contact Information:

If you have any questions, concerns, or require further clarification regarding the project or your child's participation, please do not hesitate to contact [Project Coordinator's Name] at [Contact Email] or [Contact Phone Number].

By signing below, you acknowledge that you have read and understood the information provided in this consent form and agree to permit your child's participation in the research project.

[Parent/Guardian Name]

[Child's Name]

[Date]

Follow-up Questionnaire

Project Title: Implementing a Sports Program for Children with Excessive Obesity via Zoom

Dear Parent/Guardian,

Thank you for your child's participation in our research project. We kindly request your feedback and assessment regarding the impact of the sports program on your child's physical health, psychological well-being, and your overall satisfaction with the program. Your responses will be kept confidential and used solely for research purposes.

Participant's Information:

- Child's Name:
- Child's Date of Birth:
- Parent/Guardian Name:
- Relationship to the Child:
- Contact Email:

- Contact Phone Number:

Program Evaluation:

- How would you rate your child's overall physical health after completing the sports program? (Significantly Improved/Improved/No Change/Declined)
- Did you notice any specific changes in your child's physical fitness levels? If yes, please provide details.
- How would you rate your child's overall psychological well-being after completing the sports program? (Significantly Improved/Improved/No Change/Declined)
- Did you observe any changes in your child's mood or emotional state? If yes, please provide details.
- How satisfied are you with the overall effectiveness of the sports program in addressing your child's needs? (Very Satisfied/Satisfied/Neutral/Not Satisfied/Not Applicable)
- Did the program meet your expectations? If no, please elaborate on any areas of improvement you would suggest.

Feedback and Suggestions:

- Please share any positive experiences or achievements your child had during the program.
- Were there any challenges or difficulties your child encountered during the program? If yes, please provide details.
- How was the communication and support provided by the program instructors? (Excellent/Good/Fair/Poor)
- Did you find the program content and activities engaging and suitable for your child's age group? (Yes/No/Not Sure)
- Is there any additional feedback or suggestions you would like to provide about the program?

Consent for Publication:

We may use anonymized and aggregated data from this research project for academic publications or presentations. If you agree to allow us to use your child's data in this manner, please indicate your consent below.

I give permission for anonymized and aggregated data from this research project, including my child's data, to be used in academic publications or presentations. (Yes/No)