Effect of obesity on the Health and Quality of life in Late Adolescents

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Abstract

Introduction: Obesity in children and adolescents is a serious public health issue. It is on a rise due to sedentary lifestyles and unhealthy dietary habits. As these individuals are at higher risk of like diabetes and cardiovascular diseases, it is crucial to educate them at this stage of life. Education and interventions at this stage can prevent long-term complications. This study aims to understand the effect of obesity on the health and quality of life in late adolescents through a survey.

Materials and Methods: This study involves 17-20-year-old adolescents, selected using a multi-stage sampling method. Divided into four age groups, students aged 17, 18, 19, and 20 were selected and invited into the study.

Results and discussion: A total of 262 students participated in the survey, the majority being from RAKCOMS (69.4%), 19 years of age (42.7%), females (73. 2%), and Asians (52%). Adolescents who were obese had significantly worse self-reported health (OR: 3.29; 95% CI: 1.46-7.43) including walking, running, lifting, participating in sports, and doing household chores, although most of the restriction was reported in lifting a weight. Obese individuals are also significantly likely to have psychological effects (OR: 1.32; 95% CI: 1.04- 1.63), like sadness (23%) followed by anger (20.6%). Among the academic parameters, obese individuals were more likely to forget things and have difficulty concentrating on studies, but it is not statistically significant (p=.07).

Conclusion: Adolescents with obesity had worse self-reported health, including physical limitations, psychological effects, and social limitations. There is a need for preventive strategies and interventions in obese individuals to prevent long-term complications.

Keywords: Obesity, Adolescents, cardiovascular disease, psychological issues

Background

Obesity is generally regarded as an abnormal accumulation of body fat. It has detrimental effects on the obese individual. According to the Center for Disease Control and Prevention (CDC), a Body mass index (BMI) above the 85th and below the 95th percentile is regarded as overweight, and BMI above the 95th percentile is considered to be obesity [1]. Adolescence is the phase of life wherein a child transitions into adulthood, from the ages 10 to 19years. It is a period where a child finds it hard to navigate emotions and this gradually makes them gravitate towards unhealthy eating habits along with a sedentary lifestyle.

A major global health issue is childhood and adolescent obesity. Adolescent obesity is linked to serious cardio-metabolic comorbidities and biochemical changes, such as hypertension, dyslipidemia, dysglycemia, and hyperinsulinemia, as well as a higher risk of Polycystic Ovary Syndrome (PCOS) in females [1-3]. Many obese teenagers carry their weight into adulthood, significantly raising their risk of illness and mortality. Therefore, it is crucial to address adolescent obesity. The cornerstone of the fight against the steady growth in obesity prevalence is public health programs for the primary prevention of obesity in children and adolescents [4, 5]. But to date, no country has managed to stop the global obesity pandemic, despite some small improvements [2]. The majority of overweight/obesity prevention strategies to date have concentrated on a person's behavior, such as increasing daily exercise or improving meal quality while reducing excess calorie intake [6]. These efforts, though, have not yielded much. Changes in the local environment, such as promoting healthy food choices by taxing unhealthy foods, improving lunch food quality, and increasing daily physical activity at schools and childcare facilities, are additional measures that are required in addition to behavioral and dietary recommendations [7,8]. Late Adolescents (17-19 years age group) who are overweight or obese are at higher risk of low self-esteem, distorted body image, depression, anxiety, discrimination, and strained peer relationships. Psychosocial morbidity is higher in girls than boys and tends to increase as children transition into adolescence and adulthood [9-11]. In girls in addition, it can lead to menstrual abnormalities, subfertility, and pregnancy complications when they start a family [12-15].

Adolescents and children must be educated on the risks of obesity on health and quality of life. They should be made aware of the importance of a healthy lifestyle, and support should be provided to those individuals who are suffering the negative effects of obesity (especially in late adolescents). Although a number of studies have reported significant effects on school-age children, it has been explored less in late adolescents. There are very few recent studies exploring this aspect in the United Arab Emirates, none in the age group. As the medical and health sciences students are at higher stress due to the demands of the curriculum, the problems are exaggerated.

Hence, this study aimed at exploring the effect of obesity on health and quality of life in obese individuals at late adolescent age group.

Materials and Methods

This is an observational, descriptive cross-sectional survey done among the students of all constituent health sciences colleges in Ras al Khaimah Medical and Health Sciences University (RAKMHSU) [RAK College of Medical Sciences, RAK College of Pharmacy, RAK College of Nursing, and RAK College of Dental Sciences], between January till April of 2024.

Study Population

The study was conducted on the late adolescent age (17-19 years) group students at RAKMHSU, Ras al Khaimah. The age group corresponds to the 1st and 2nd-year students in different constituent colleges. With an estimated total population size is 650, a population proportion of 50%, a confidence interval of 95% and a margin of error of 5%, the sample size was calculated to be at least 242, for the data to be statistically relevant.

Study Tools

The survey collected demographic information from each student, namely their college, age, gender, and nationality. Students were then specifically asked to rate problems faced in the past month with walking, running, lifting heavy weights, feelings of anxiety, sadness, anger, problems getting along with others, and attention problems regarding work and study. The Pediatrics Quality of Life Inventory. (n.d.). [16] was used after permission for the purpose of this research. The PedsQL Generic Core Scales contain a total of 23 items, including eight items for Physical Functioning, five respectively for Emotional, Social, and School Functioning. The questionnaire incorporated these item measures for a student's health status, psychological state, social interaction, and effect on work or study respectively. The responses were collected using a 5-point Likert scale of never, rarely, sometimes, often, and almost always. Scores were given at 100, 75, 50, 25, and zero, depending on the positive or negative framing of the questions.

Data Collection

Consecutive sampling included all the students of the adolescent age group. They were informed about the purpose of the survey, their doubts were clarified and consent was obtained. A copy of the questionnaire was then given to them. The data was analyzed using appropriate p values, Odds Ratio, and Confidence Interval, and then collated to draw appropriate inferences.

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Results

A total of 262 students participated in the survey, the majority being from RAKCOMS (69.4%), followed by RAKCONS (19.6%) RAKCOPS, and RAKCODS (Figure 1). Further, the majority were 19 years of age (42.7%), females (73. 2%), and Asians (52%) (Figure 2, 3).

Figure 1: Participants from colleges

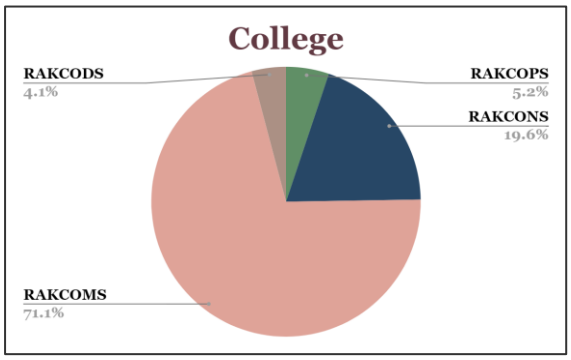

Figure 2: Gender distribution

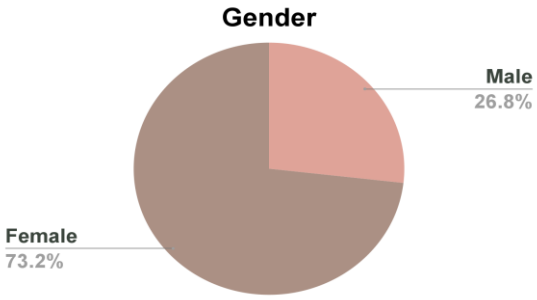

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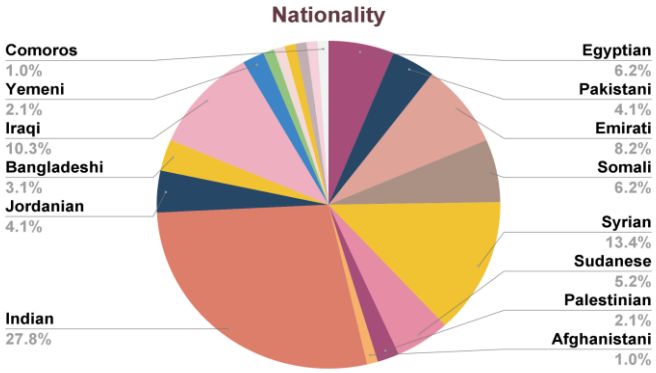
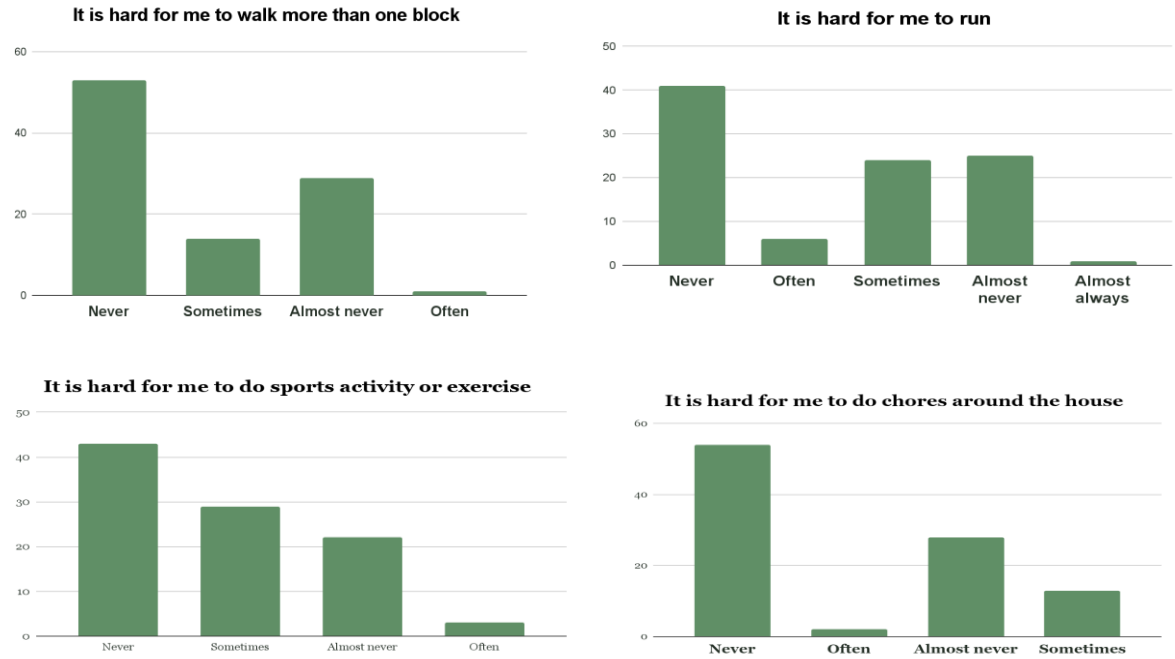
Figure 3: Nationality of participants



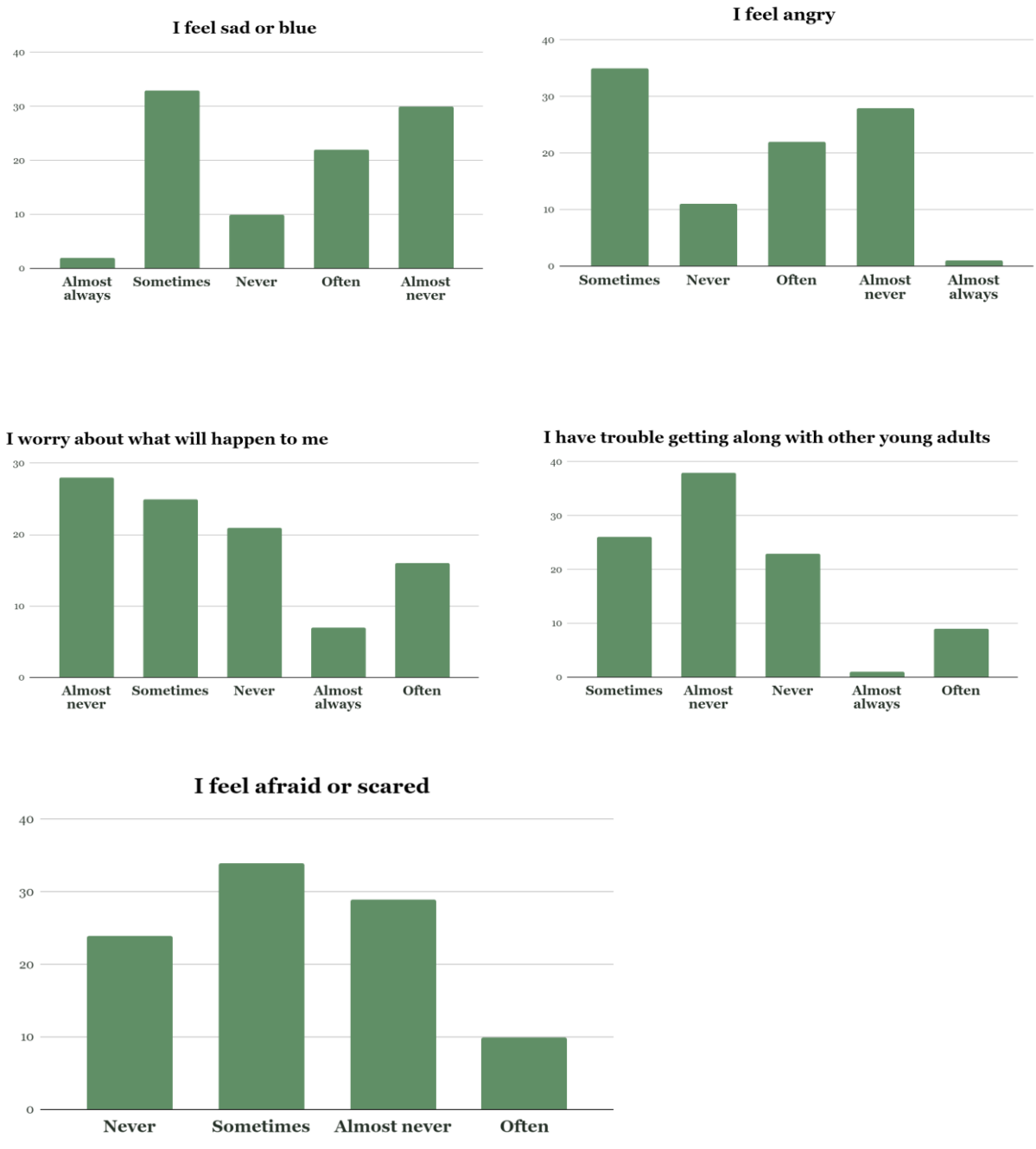
When comparing the responses we found that adolescents who were obese had significantly worse self-reported health (OR: 3.29; 95% CI: 1.46-7.43) including walking, running, lifting, participating in sports, and doing household chores, although most of the restriction was reported in lifting a weight (Figure 4).

Figure 4: Activity restriction



Obese individuals are also significantly likely to have psychological effects (OR: 1.32; 95% CI: 1.04- 1.63), and more likely to be sad (23%) followed by angry (20.6%) (Figure 5).

Figure 5 : Psychological impact



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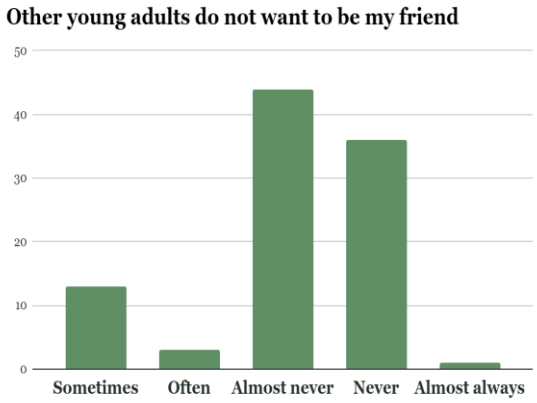
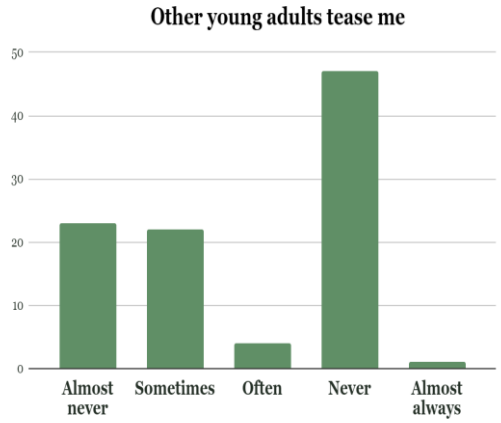
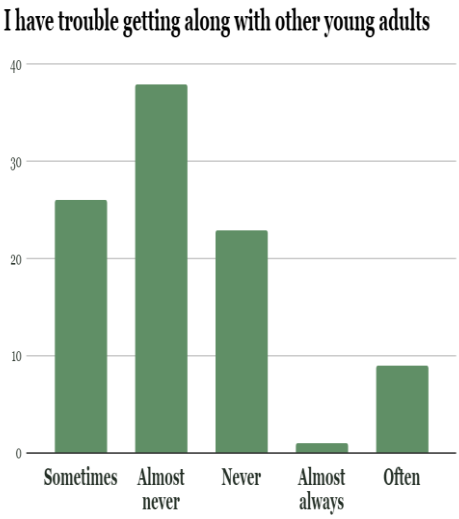
Social limitations were not statistically significant, yet the majority felt that they have problems getting along with others or felt that others do not want to be with them sometimes (20.8%; p>.05) (Figure 6).

Figure 6: Social impact of obesity

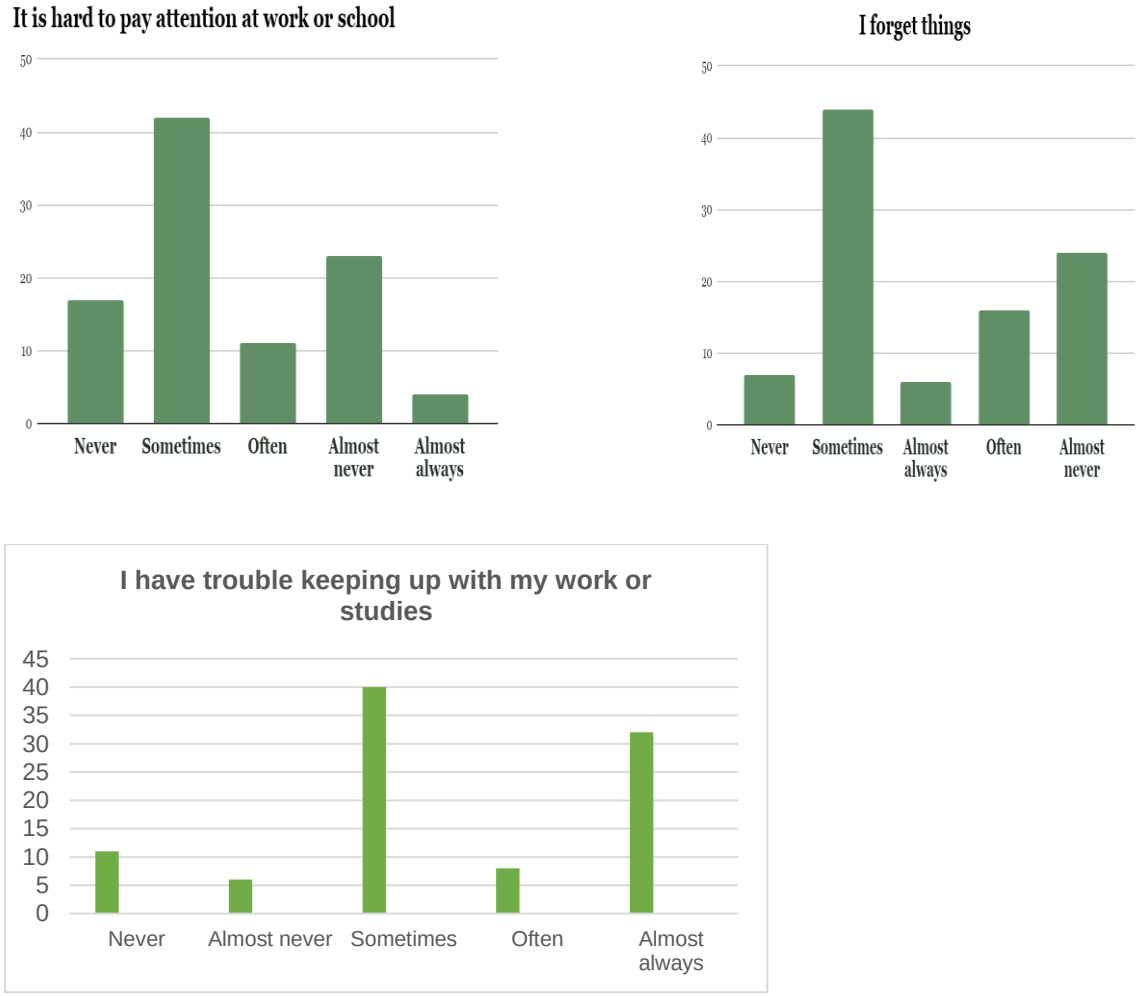






Among the academic parameters, obese individuals were more likely to forget things (Figure 7). They also perceive that they have difficulty concentrating in studies, and trouble completing tasks on time. However, these are not statistically significant (p=.07).

Figure 7: Academic impact



Discussions

Obesity is a condition that influences biological, behavioral, developmental, and genetic factors and is a great health problem in society. The most common cause of obesity in the younger age group is due to excessive caloric intake and inadequate caloric expenditure. Obesity has also been linked with conditions like type 2 diabetes, hypertension, dyslipidemia, obstructive sleep apnea, menstrual irregularities, depression, anxiety, eating disorders, just to name a few [1-3]. Further, several studies have shown that obesity in adolescence is associated with increased morbidity in adulthood [6-8].

Our study found that late adolescents with obesity had worse self-reported health. They were more likely to be sad, and angry, and struggled with social interactions. Obese individuals were also

more likely to forget things and struggle with concentration in studies. This illustrates the poor health and quality of life that late adolescents battling obesity face and emphasizes the need for early education and adoption of a healthy lifestyle.

We went ahead and compared our data with previously existing studies and found that our study seems to be in concordance with those studies. This is seen in a study conducted on children and adolescents in Germany by Meixner et al. in 2020. It was found that girls and boys who were overweight and obese showed reduced physical well-being. In their study, 18.7% of the children and adolescents were affected by being overweight and 8.0% were obese. They found that overweight and obesity were associated with lower physical well-being as compared to normal weight in both sexes [9]. Similar findings were reported in another group on adolescents in the Netherlands involving 419 individuals. The physical, and psychological well-being were worse with higher body weight [17]. Our study however did not show linear correlation.

Another recent study done on adolescents in Italy in 2024 measured the Parent-child agreement regarding emotional and behavioral problems in adolescents with obesity. Achenbach's Child Behavior Checklist (CBCL) for parents and the Youth Self Report (YSR) for teens were administered. Most of the CBCL and YSR scores were normal, with more borderline and clinical scores being found in CBCL than in YSR. However, borderline scores in attention problems, feelings of depression, and anxiety were found in both. These results are similar to ours since although not significant, our study also showed obese adolescents reporting feelings of sadness, anger, and inability to concentrate [10, 18]. A recently published study demonstrated significant correlation of overweight and obesity on the emotion of being happy. The group with no overweight and obese individuals reported the highest sense of happiness [19]. However, unlike our findings, a recent study among 413 school children showed no relationship between BMI and quality of life. However, there was a significant correlation of waist circumference with body dissatisfaction in girls (but not in boys) [20]. Another study in Saudi Arabia also demonstrated no effect of obesity on emotional problems and attendance [21]. However, they only included preadolescent school children. Our study did not find any gender differences in quality of life. A randomized control trial involving 948 used obesity-related health education, physical exercise, and diet control as interventions. The group receiving these measures showed significant improvement in the psychological, social, pubertal dimensions, and total QoL compared to the control group ($p<.05$). The improvement was more robust for psychological QoL in the intervention group ($p= .004$), and the effect of the intervention was more substantial in boys than

in girls. However, in our study, there was no comparison after the advice, and there was no gender difference in the results [22].

Hence, it is evident through our study and previously done that adolescents who are overweight and obese face several issues in terms of physical activities, emotional regulation, social and interpersonal relationships as well as academic performance.
It is proposed that there can be genetic predisposition to obesity in individuals which gets triggered by unhealthy lifestyle [23, 24]. A recent study identifies frequent eating, prolonged use of electronic devices, family history of obesity, and certain misconceptions as the risk factors of obesity in adolescents [25]. However, they only included adolescents up to 17 years of age. The issues caused by overweight and obesity emphasize the need to develop proper interventions for weight management, these include lifestyle changes, diet, exercise, medications, and in extreme cases surgeries [11, 23, 26]. Further, counseling and cognitive behavioral therapy for young adolescents must be encouraged to battle the psychological and emotional impact of obesity [27]. If a person was currently overweight or obese in this study, they were encouraged to seek treatment from a nutritionist or counselor. Additionally, they were motivated to follow a healthy lifestyle.

Conclusion

This study reports that individuals with obesity had worse self-reported health, and poor quality of life in aspects that encompass psychological, social, and academics. Obesity has a significant impact on their social and psychological health and quality of life. There is an unmet need for early education and adoption of a healthy lifestyle in adolescents to prevent long-term health issues. Educational institutes should encourage students to choose healthy lifestyle options like participating in sports and physical activities, and to include healthy food alternatives.

Ethical consideration- We have followed the declaration of Helsinki guidance for the research. It is reviewed and approved by the institutional research committee with no. RAKCOMS-REC-55-2023/24-UG. Written informed consent was obtained from the participants.

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