RESEARCH ARTICLE

GYNECOLOGICAL AND PSYCHOSOCIAL RISK FACTORS ASSOCIATED WITH OBESITY IN ADOLESCENT GIRLS

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ABSTRACT

Background: There has been an increase in childhood and adolescent obesity worldwide, which affects the girls resulting low self-esteem and depression and diminishes health-related quality of life. The overweight and obese teenage girls are more likely to have gynaecologic and obstetric complications during adolescence and later in life. **Objective:** To determine gynaecological and psychosocial risk factors associated with obesity in adolescent girls. **Methods:** A cross sectional study conducted at schools and colleges of Islamabad and Rawalpindi with a sample size of n=99. The participants were divided into two groups of which n=25 were obese adolescents (cases) and n=74 were non-obese adolescents (controls). The Data collection was done based on self-structured questionnaire from adolescent females aged 10 to 19 years in cases with BMI >27.5kg/m2 in controls 18.5 to 23kg/m2. The study duration was 6 months from (October- 2020 to March- 2021). Study was conducted in various school and colleges of Islamabad and Rawalpindi. To determine the association odds ratio (OR) was calculated. **Results:** The mean age of the cases was 16.2±2.10 years and 14.78±1.82 years for controls. The BMI of cases was 29.38±1.97 kg/m^2 and a control was 18.06±2.88 kg/m^2. In gynaecological risk factors cases are more at risk to have excessive acne/pimple on face (Odds ratio: 3.484, p= 0.008), more likely to experience amenorrhea (OR: 4.504, p=0.007) and more likely to have excessive facial/abdominal hair growth (OR: 3.600, p=0.014). For psychosocial risk factors the cases presented with a greater need/referral of a psychological evaluation (OR: 4.063, p=0.008) and feel social limitation or emotional disturbance (OR: 2.561, p=0.044). **Conclusion:** It was concluded that certain gynaecological and psychosocial determinants could be influenced by adolescent obesity leading to many complications and negative consequences on present and future health outcomes.

Key words: Adolescents, females, gynaecologic, obesity, overweight, quality of life

INTRODUCTION

The obesity is the condition in which excessive accumulation of triglyceride occur in adipose tissue which later on leads to increase in fat mass which ultimately effects health[1]. The Obesity is chronic disease just like hypertension and atherosclerosis[2]. the Obesity is the condition in which the weight of the body is more than normal. It is connected with low educational performance and a lower personal satisfaction accomplishes by the youngsters[3].

About 20% of the world's population is obese; thus, obesity is classified among the diseases of civilization. In certain developed countries, 50% to 65% of the total population are overweight or obese, which means that only 1/3 of the people have normal body weight[4]. The prevalence of obesity in children is the reason for affecting the body fitness, social and psychological welfare and the self-respect which profoundly influence their living a normal life[5]. The latest data from the National Health and Nutrition Examination Survey show that the prevalence of obesity among US children and adolescents was 18.5% in 2015-2016[6]. The Childhood and adolescent obesity has greatly increased in the United States. In 2016, Pakistan female obesity prevalence was 11.3 %, the percentage is alarming because most of the obese adolescents will turn to obese adults[7].

In 2018, the research was conducted in Karachi among the schoolgirls, in which the prevalence of obesity in total of n=362 adolescent girls was 40.8%. The overweight was found in 169 (19.1%) children, whereas the obese were total of 96 (10.8%). Thus, from the recorded estimation the epidemic of obesity is growing with high speed, mostly in Karachi[8].

The Psychosocial issues that are associated with obesity are mental and social difficulties, specifically involving their habits or behaviour and academic issues. The issues also include depression, anxiety, family problems, substance abuse, body image dissatisfaction, stigma and discrimination. Anxiety and depression was linked to higher BMI, particularly in female adolescents with increased waist circumference and higher body fat[9].

The outcomes of overweight youth encompass sexual development disorders, dysmenorrhea, unsafe sexual conduct, infertility, cartilage

thickness deformity, macromastia and an exponential danger of uterine tumor[10].

Obesity also associated with early onset of puberty, infertility, irregular menstruation, polycystic ovary syndrome (PCOS) and hormonal alterations which leads to impaired ovulatory function and reproductive health[11].

Obesity is a common nuisance affecting many around the world, particularly large number of young adults and adolescents due to sedentary lifestyles and poor eating habits. Complains of gynecological issues and the prevalence of anxiety and depression among teenage girls has arisen gradually and is oft linked to being overweight or obese. The available literature lack about the association between obesity and above mentioned factors. So the current study was conducted to determine the gynecological and psychological factors with Obesity in adolescent girls.

METHODOLOGY

It was a cross sectional study, conducted at school and colleges of Islamabad and Rawalpindi including Allied School 6th road Rawalpindi campus, Kainat School System (Both Islamabad and Rawalpindi Campus), and Allied School I-10/4, Islamabad Campus. The Research was carried over a period of 6 months (Oct-20 to Mar-21) after getting approval from Research Ethical Committee (REC) of Riphah International University with Ref # Riphah/RCRS/REC/00839. A Sample size of n=99 was calculated by OpenEpi tool. and divided into n=25 cases and n=74 controls on the basis of 1:3 of cases: control ratio[12].

The adolescent girls with age between 10 – 19 years were included in the study. A Nonprobability Purposive Sampling technique was used for sample collection. The data of gynecological and psychological risk factors assessed through self-developed questionnaire from the literature[13,14]. The data collection questionnaires are having total of 25 questions relating to gynecological and psychological aspects. The screening tool used for cases and control was BMI score (kg/m$^{2)}$ for Asian population. The first phase of data collection was obtaining permission and approval from various schools and colleges of Islamabad. A meeting was held with the management of the respective institutes to explain the questionnaire and duration of study. In the second phase, in-person meeting with participants was carried out in which explanation was done for the questionnaire and its terminologies to them, and consent was taken from them to participate in the study. The female adolescents who were willing and were allowed by their parents in case of minors were included in the study.

The data was analysed through SPSS Version 21. The descriptive analysis was done to present the frequencies, percentages, mean and standard deviation of variables (age, weight, height, BMI). The Odds ratio was calculated for risk estimation and likelihood among cases as compared to controls. The level of significance was set at $p<0.05$.

RESULTS

The mean age of the adolescent girls recruited in the study was 16.2±2.10 years and 14.78±1.82 years in cases and control group respectively. The Asian BMI scale was used as a reference, in which participants with BMI >27.5 kg/m^2 are falls under case group (29.38±1.97 kg/m^2) and participants less than this BMI falls under control group (18.06±2.88 kg/m^2).

The odds ratio (OR) was calculated using Pearson Chi-square test which depicted that gynecological risk factors in cases like excessive acne/pimple on face (OR=3.484, p=0.008), experience of amenorrhea (OR=4.504, p=0.007) and excessive facial/abdominal hair growth (OR=3.600, p=0.014) have greater risk and are significantly associated with obesity. While the psychological risk factors like need a psychological evaluation (OR=4.063, p=0.008) and feeling of social limitation or emotional disturbance (OR=2.561, p=0.004) were also significantly associated with obesity in adolescent girls. The remaining gynecological and psychological risk factors did not show any significant association with obesity in adolescent girls. (Table 1)

Table 1: Gynaecological and Psychological Risk Factors Associated With Obesity (Odds Ratio)

KEY TERMS	Obesity N(%) Yes	Obesity N(%) No	X^2	OR	CI 95% Lower	CI 95% Upper	p-value
Gynecological Risk Factors							
Need of gynecological consultation	7 (28%)	18 (72%)	2.757	2.489	0.830	7.465	0.097
Disturbed menstrual cycle	10 (40%)	15 (60%)	0.699	1.478	0.578	3.782	0.413
Diagnosed gynecological dysfunction	5 (20%)	20 (80%)	1.949	2.393	0.684	8.365	0.163
Passing of blood clots	8 (32%)	17 (68%)	1.222	0.585	0.224	1.523	0.269
Breast tenderness/pain on touch	11 (44%)	14 (56%)	0.297	1.291	0.515	3.235	0.586
Family history of Breast/endometrial cancer	4 (16%)	21 (84%)	0.019	1.091	0.314	3.794	0.891
Excessive acne/pimple on face	16 (64%)	9 (36%)	7.032	3.484	1.350	8.993	0.008**
History of fracture	4 (16%)	21 (84%)	0.749	0.593	0.180	1.955	0.387
Early onset of menstruation	8 (32%)	17 (68%)	0.413	0.730	0.279	1.909	0.521
Excessive menstrual pain	11 (44%)	14 (56%)	0.004	1.031	0.414	2.572	0.947
Experience of Amenorrhea	8 (32)	17 (68%)	7.385	4.504	1.433	14.162	0.007**
Excessive facial/abdominal hair growth	9 (36%)	16 (64%)	6.093	3.600	1.255	10.330	0.014*
Psychological Risk Factors							
Experienced heart burn/chest congestion	10 (40%)	14 (60%)	0.669	1.478	0.578	3.782	0.413
Shortness of breath	9 (36%)	16 (64%)	0.207	1.247	0.481	3.237	0.649
Need a psychological evaluation	9 (36%)	16 (64%)	7.138	4.063	1.388	11.888	0.008**
Satisfied with your appearance	20 (80%)	5 (20%)	0.364	0.698	0.217	2.252	0.546
Felt of anxiety or depression	15 (60%)	10 (40%)	1.206	1.671	0.665	4.199	0.272
Feeling of social limitation or emotional disturbance	13 (52%)	12 (48%)	4.055	2.561	1.011	6.487	0.044*
Body Shamming by peers	7 (28%)	18 (72%)	2.757	2.489	0.830	7.465	0.097
Lack of Confidence due to weight	7 (28%)	18 (72%)	2.167	2.227	0.754	6.577	0.141
Difficulty buying cloths	9 (36%)	16 (64%)	2.047	2.039	0.780	5.469	0.153
Difficulty making friends	8 (32%)	17 (68%)	3.538	2.695	0.937	7.753	0.060
Disease awareness due to obesity	8 (32%)	17 (68%)	2.098	0.497	0.191	1.292	0.148
Weight loss strategies	22 (88%)	3 (12%)	0.133	0.766	0.182	3.220	0.716
Tested for hyperglycaemia	4 (16%)	21 (84%)	0.472	1.571	0.430	5.748	0.429

Significance Level: p<0.05, p<0.01**, p<0.001****

DISCUSSION

The objective of this study was to evaluate gynecological and psychosocial effect of obesity on adolescents' girls. This study was carried out based on self-structured questionnaires with having questions related to gynecological and psychosocial risk factors caused because of obesity and screening tool used is Asian BMI chart.

Overweight and obese teenagers are at an increased risk of gynaecologic and obstetric dysfunctions in the period of adolescence and continued to be so in later years which encompass sexual maturation and reproductive disorders, menstrual variations, dysmenorrhea, questionable sexual behaviour, improper or inadequate usage of contraception, polycystic ovary syndrome (PCOS), bone density abnormalities, macromastia, and a peaking risk of cancer of the breast or endometrium[13]. The current study is in line with these facts such that obese participants reported having excessive acne and facial hair which are signs of PCOS and amenorrhea that depicts variation in menstrual cycle.

PCOS affectees, majority being obese, go through fluctuating and multifactorial levels of menstrual disturbances. PCOS may not even be present, even so, obesity has been associated with longer and irregular cycles. Women with a BMI of 35 have a five times greater likelihood of long cycles in contrast to women who have BMI between 22 and 23[15].This study shows that obesity causes gynecological issues with problem in menstruation and occurrence of signs of PCOS.

A cross-sectional research conducted on Australian females between 26 to 36 years presented the outcome that the probability of experiencing disturbed cycles was 2.61 for women with a BMI greater than 30 when observed parallel to women with a BMI between 20 and 24.9. This goes on to evidentiate an association between visceral adiposity and menstrual disruptions[16] which have been depicted via the results of the current study.

Childhood and adolescent obesity have long lasting negative consequences for health outcomes. In particular, the onset of psychiatric and psychological symptoms and disorders is more prevalent in the stated age group[14]. Anderson et al. quantified the health-related quality of life and psychological wellness of children and adolescents who were obese, noting poor mental health and insisting on the need of psychotherapeutic mediation to ameliorate the subject population's mental health[17]. Thus the important factor relating to the need of a psychological evaluation that showed significance in this study's outcomes will have great impact on identifying risks for future

problems.

Owing to the objectifying view of the society for obesity, obese people have low self-esteem. The worst most outcomes of obesity in the age of adolescence probably end up in long-term disorders and issues until older ages. Lack of confidence in self is also linked with behavioural disorders, sceptical and grim moods, and pessimistic and unchecked emotions[18].Obese adolescents might be subjected to derision from peers, friends, and classmates and also persistently shamed for their eating habits by their parents[17]. Similar aspects have been observed in the study as obese adolescent females reported a higher likelihood of having social limitations owed to their physical presentation and body imaging.

In some studies, the mostly occurred disorders seen in the adolescent girls due to obesity were anxiety or depression problems, lack of confidence, and they were mostly isolated and having low self-esteem[19]. Current study depicts similar outcomes and depicts the obese adolescents to be more likely to have emotional disturbances.

Obesity in adolescence may lead to grave outcomes for the adolescents suffering from the condition and even for society. Obese adolescents usually have continued obesity into adulthood, which causes many medical and psychological problems. Furthermore, obesity in adolescents is linked to a wide variety of social issues[20]. This has been depicted from outcomes of present study revealing the impact of obesity upon an adolescent's gynecological and psychosocial health. The self-structured questionnaire had lack objectivity, so the understanding of subjective statement may impact the current results. As the purposive sampling technique was used for sample collection, so the results may not be generalized. In current study dietary and nutritional factors were not controlled, which may affect the results.

CONCLUSION

It was concluded that certain gynecological and psychosocial determinants could be influenced by adolescent obesity leading to many complications and negative consequences on present and future health outcomes. Future research should focus on detail list of risk factor the underlying mechanism in this special group to obtain a better understanding that could lead to focus on a comprehensive management of obese adolescent girls.

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