

Research Article

# Psychological Impact on Overweight and Obese Among Adolescents Visited in a Tertiary Care Hospital, Dhaka

Mohammed Rizwanul Ahsan<sup>1,\*</sup>, Khaleda Islam<sup>2</sup>, Kinkar Ghosh<sup>3</sup> , Sabrina Makbul<sup>4</sup>, Shanta Roy<sup>4</sup>, Maliha Anjum Torsa<sup>5</sup>

<sup>1</sup>Department of Emergency Referral and Observation, Bangladesh Shishu Hospital & Institute, Dhaka, Bangladesh

<sup>2</sup>Institute of Nutrition and Food Science (INFS), University of Dhaka, Dhaka, Bangladesh

<sup>3</sup>Department of Epidemiology and Research, Bangladesh Shishu Hospital & Institute, Dhaka, Bangladesh

<sup>4</sup>Department of Gastroenterology, Hepatology and Nutrition, Bangladesh Shishu Hospital & Institute, Dhaka, Bangladesh

<sup>5</sup>Department of Medical Services, Evercare Hospital, Dhaka, Bangladesh

## Abstract

**Background:** The relationship between overweight/obesity and Psychological impact is quite complex. Many researchers believe that overweight/obesity has a direct impact on mental health and can lead to mental disorders. Mental illness is common during the period of adolescence. Overweight and obesity in adolescent's present significant challenges to public health and have become major public health issues in recent decades in Bangladesh. This study needed as there was very few information of Psychological impact on overweight and obese among adolescents. **Methodology:** This cross sectional observational study was held in Bangladesh Shishu Hospital & Institute from 1st September 2023 to 29th February 2024. A total 84 participants were included in this study. Data were collected by SDQ questionnaire and demographic variables like age, sex and BMI were measured. **Results:** Among 84 participants 57% were male and 43% were female. Most of the respondents 63 (75%) were between the age of 10 to 14 years, 13 (15.5%) respondents were between the age of 15 to 17 years and 8 (9.5%) respondents were between the age of  $\geq 18$  years. Regarding Participant's Education, 58.33% of respondents were in Junior Secondary, 28.57% were in Primary, 8.3% were in Higher Secondary and 4.76% were in Secondary education. According to the Parent's Monthly Income, most of the parents 83.33% earn more than Forty Thousand Taka Per Month. Among 84 Participants, 58 (69%) were Overweight and 26 (31%) were Obese. Among Overweight participants 6(10.34%) were normal, 42 (72.41%) respondents had Emotional symptoms, 7 (12.07%) respondents had Conduct Problem, 2 (3.45%) respondents had Hyperactivity/Inattention and 1 (1.72%) respondents had Peer Relationship Problems. Among Obese participants 1 (3.85%) was normal, 17 (65.38%) respondents had Emotional symptoms, 5 (19.23%) respondents had Conduct Problem, 2 (7.69%) respondents had Hyperactivity/Inattention and 1 (3.85%) respondents had Peer Relationship Problems. **Conclusion:** This study have been conducted regarding the Psychological impact on overweight and obese among adolescents and found significant impact of both overweight and obesity but Obese adolescents face more psychological impact comparatively.

## Keywords

Psychological Impact, Overweight, Obese, Adolescent

\*Corresponding author: rizwanul.ahsan@gmail.com (Mohammed Rizwanul Ahsan)

**Received:** 5 June 2024; **Accepted:** 29 June 2024; **Published:** 30 September 2024



Copyright: © The Author(s), 2024. Published by Science Publishing Group. This is an **Open Access** article, distributed under the terms of the Creative Commons Attribution 4.0 License (<http://creativecommons.org/licenses/by/4.0/>), which permits unrestricted use, distribution and reproduction in any medium, provided the original work is properly cited.

## 1. Introduction

Adolescents make up 16% of the world's population [1]. More than half of all adolescents live in Asia with 344 million in South Asia and 296 million in East Asia and the Pacific [2]. Additionally, adolescents with good health contribute to the growth of the economy by increasing productivity, reducing health expenditures, and preventing intergenerational transmission of poverty, discrimination, and poor health. The social and economic returns on adolescent health are estimated to be tenfold for every dollar invested [3, 4]. Globally, the death rate of adolescents worldwide is over 1.2 million per year. It is possible to prevent or treat the majority of adolescent health issues [5]. Measurement of body fat and an appropriate cutoff range are necessary for defining obesity [6].

In this study, body mass index (BMI) was calculated based on weight in kilograms divided by height in meters squared. The Centers for Disease Control and Prevention (CDC) defined obesity in children and adolescents as a BMI greater than 95th percentile for their age and gender, and overweight as a BMI between 85th and 95th percentiles [7].

As obesity and overweight have become major public health problems in recent decades, obesity and overweight present significant challenges to public health [8, 9]. There is an increase in the prevalence of overweight and obesity in children and adolescents around the world. In 2016, it was estimated that approximately 340 million kids and teenagers, ages 5 to 19, were overweight or obese [10]. The prevalence of overweight and obesity in children (0–12 years old) and teenagers (13–19 years old) in Bangladesh was reported to be 1.0%–20.6% and 0.3%–25.6%, respectively, in a systematic review [11].

It is estimated that, 10–20% of children and adolescents worldwide suffer from psychosocial disorders, with depression being the primary cause of adolescent morbidity and disability worldwide [12, 13]. Evidence suggests that many teenage psychosocial illnesses go undiagnosed and untreated until maturity, and that approximately half of all adult psychosocial disorders manifest by the time a person is 14 years old [13, 14]. Other common psychosocial disorders that frequently emerge during adolescence include behavioral and emotional problems, anxiety disorder, conduct disorder, and attention deficit hyperactivity disorder [15]. A popular, trustworthy, and valid tool for screening for psychosocial problems or disorders in adolescents is the parent-reported Strengths and Difficulties Questionnaire (SDQ) [16, 17]. The 25 items on this SDQ—which are divided equally among five subscales (5 items per subscale) and measure emotional symptoms, conduct issues, hyperactivity/inattention, peer problems, and prosocial behavior—are rated on a 3-point scale (0 being not true, 1 being somewhat true, and 2 being definitely true). A total difficulties score for each student was computed by summing the item scores from all the subscales except the prosocial scale. Potential SDQ total difficulties

scores ranged from 0 to 40, with higher scores indicating more psychosocial difficulties. The scale inventor also suggested categorizing the total scores into three groups for descriptive purposes: low (0–13), borderline (14–16), and significant (17–40) psychosocial issues [18]. SDQ has been validated in Bangladesh [19].

## 2. Methodology

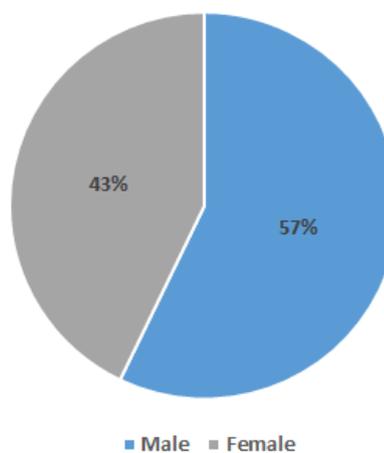
Data were collected from Bangladesh Shishu Hospital & Institute [Ex- Dhaka Shishu(Children) hospital] Through Cross sectional observational study from 1<sup>st</sup> September 2023 to 29<sup>th</sup> February 2024. A pre tested semi-structured questionnaire used which contains SDQ questionnaire and demographic variables like age, sex and BMI measured. All families live in the urban area. A total 84 participants were included in this study. Data analysis was performed using the Statistical Package for Social Science (SPSS).

## 3. Results

*Table 1. Distribution of the respondents by Gender (N=84).*

Gender	Frequency	Percent
Male	48	57.14
Female	36	42.86
Total	84	100.0

This table shows that 57% were male and 43% were female.



*Figure 1. Distribution of the respondents by Gender in percentage.*

**Table 2.** Distribution of the respondents by age (N=84).

Age in Years	Frequency	Percentage (%)
10-14 years	63	75
15-17years	13	15.48
≥ 18 years	8	9.52
Total	84	100.0

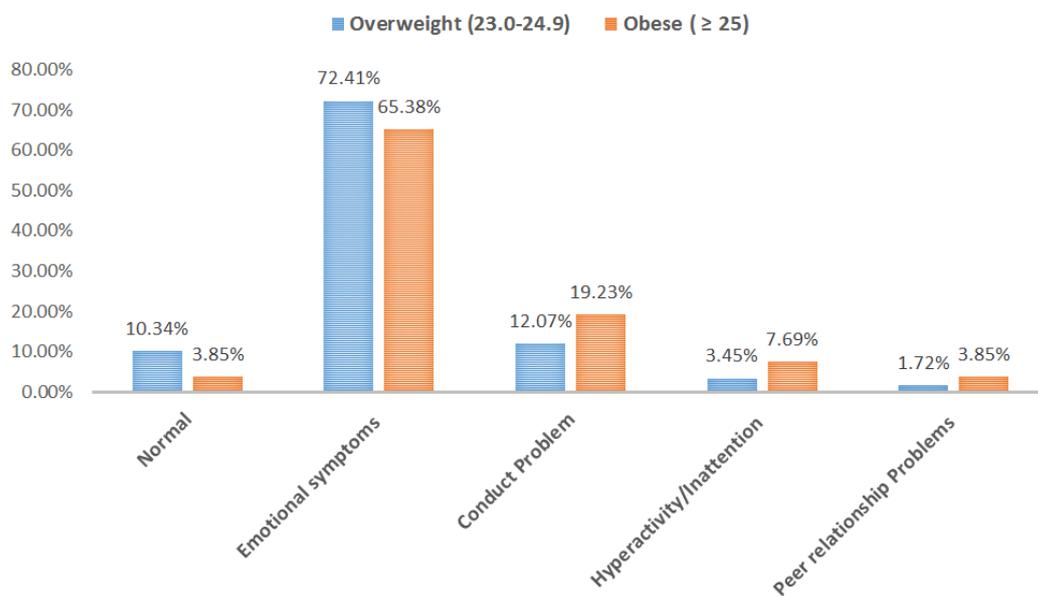
This table shows the distribution of the respondents by their age; 63 (75%) respondents were between the age of 10 to 14 years, 13 (15.5%) respondents were between the age of 15 to 17 years and 8 (9.5%) respondents were between the age of ≥ 18 years.

**Table 3.** Distribution of the respondents by Participant's Education and Parent's Monthly Income (N=84).

Variables	Frequency	Percentage
Participant's Education		
Primary	24	28.57

Variables	Frequency	Percentage
Junior Secondary	49	58.33
Secondary	4	4.76
Higher Secondary	7	8.33
Total	84	100
Parent's Monthly Income		
15000-20000	6	7.14
=<40000	8	9.52
>40000	70	83.33
Total	84	100

Regarding Participant's Education, the above table shows that 58.33% of respondents are in Junior Secondary, 28.57% are in Primary, 8.3% are in Higher Secondary, and 4.76% are in Secondary education. According to the Parent's Monthly Income, 83.33% of parents earn more than forty thousand taka per month, 7.14% earn between fifteen and twenty thousand taka per month, and 9.52% earn less than forty thousand taka per month.



**Figure 2.** Distribution of the Participants by Psychological impact in percentage (N=84).

**Table 4.** Distribution of the Participants by Psychological impact via SDQ total score (N=84).

According to BMI	Participants Number	Normal	Emotional symptoms	Conduct Problem	Hyperactivity/Inattention	Peer relationship Problems
Overweight (23.0-24.9)	58	6	42	7	2	1
Obese (≥ 25)	26	1	17	5	2	1

From the [table 4](#) and [figure 2](#), we can see that, among 84 Participants, Overweight (23.0-24.9) were 58 (69%) and Obese ( $\geq 25$ ) were 26 (31%). Among Overweight participants 6 (10.34%) were normal, 42 (72.41%) respondents had Emotional symptoms, 7 (12.07%) respondents had Conduct Problem, 2 (3.45%) respondents had Hyperactivity/Inattention and 1 (1.72%) respondents had Peer Relationship Problems. Among Obese participants 1 (3.85%) was normal, 17 (65.38%) respondents had Emotional symptoms, 5 (19.23%) respondents had Conduct Problem, 2 (7.69%) respondents had Hyperactivity/Inattention and 1 (3.85%) respondents had Peer Relationship Problems.

## 4. Discussion

Worldwide, overweight and obesity in children (0–12 years) and adolescents (13–19 years) are recognized as a major public health issue because of their link with a wide range of health complications like hypertension, insulin insensitivity, diabetes mellitus, cardiovascular disease, and different types of cancers in adulthood [20]. Bangladesh is a densely populated developing nation of South Asia and is experiencing economic transition and rapid shifts in demographics [21, 22]. A nationwide recent epidemiological survey revealed that among children (6–15 years), 3.5% were obese, 9.5% were overweight, and 17.6% were underweight [23]. These reports highlight the context of overweight and obesity in Bangladesh could soon emerge as a major public health challenge [24]. This study found that 57% were male and 43% were female. Similar study report rates of 37% for girls and 45% for boys for overweight or obesity in Greece [25].

In 2016, approximately 340 million children and adolescents aged between five and 19 years old worldwide were diagnosed with overweight or obesity [26]. This study founds the distribution of the respondents by their age; 63 (75%) respondents were between the age of 10 to 14 years, 13 (15.48%) respondents were between the age of 15 to 17 years and 8 (9.52%) respondents were  $\geq 18$  years. Regarding Subject Education, this study shows that 58.33% of respondents are in Junior Secondary, 28.57% are in Primary, 8.33% are in Higher Secondary, and 4.76% are in Secondary education.

According to this study, 83.33% of parents earn more than forty thousand taka per month, 7.14% earn between fifteen and twenty thousand taka per month, and 9.52% earn less than forty thousand taka per month. Similarly, studies show that, obesity was significantly more in the highest income group (OR = 2.06) [27]. Similar to previous studies in developing countries living in a higher socioeconomic status was associated with overweight/obesity [28].

This study found that, Among 84 Participants, Overweight (23.0-24.9) 58 (69%) and Obese ( $\geq 25$ ) 26 (31%). Among Overweight participants 42 respondents had Emotional symptoms, 7 respondents had Conduct Problem, 2 respond-

ents had Hyperactivity/Inattention and 1 respondents had Peer Relationship Problems. Among Obese participants 18 respondents had Emotional symptoms, 5 respondents had Conduct Problem, 2 respondents had Hyperactivity/Inattention and 1 respondents had Peer Relationship Problems.

An explanation might be reduced physical activity and fitness in adolescents with higher BMI [29]. The finding that physical well-being was lower in adolescents with higher BMI- SDQ is in line with previous findings [30, 31]. An explanation might be reduced physical activity and fitness in adolescents with higher BMI [32]. Regarding psychological well-being, previous studies showed lower levels in children and adolescents with obesity compared to children and adolescents with normal weight [33, 34]. Previous research has demonstrated associations between obesity and depression in children and adolescents [35]. Nevertheless, the mental well-being and psychiatric health of children and adolescents suffering from obesity are the subject of considerable debate [36-39].

## 5. Conclusions

Childhood obesity has come up as a threat to physical as well as mental health of the children and adolescents. Based on the mixed results of studies, it can be concluded that most of the overweight and obese children experience psychosocial problems. However, it is important to screen each and every overweight and obese child and adolescent for psychosocial problems, considering their developmental vulnerabilities and social stigma attached to obesity.

## Abbreviations

BMI	Body Mass Index
CDC	Centers for Disease Control and Prevention
SDQ	Strengths and Difficulties Questionnaire
SPSS	Statistical Package for Social Science

## Conflicts of Interest

The authors declare no conflicts of interest.

## References

- [1] UNICEF. Adolescent Demographics – UNICEF Data. 2016. Available at <https://data.unicef.org/topic/adolescents/demographics/> Accessed 12.01.2020
- [2] UNICEF analysis based on United Nations, Department of Economic and Social Affairs, Population Division, World Population Prospects: The 2017 Revision (UN WPP). 2017; New York; United Nations.”

- [3] Sheehan P, Sweeny K, Rasmussen B, Wils A, et al. Building the foundations for sustainable development: a case for global investment in the capabilities of adolescents. *Lancet* 2017; 390: 1792–806.
- [4] Susanna Lehtimäki and Nina Schwalbe, May 2019. Adolescent Health – the Missing Population in Universal Health Coverage. AstraZeneca Young Health Programme, Plan International UK: p3.
- [5] Patton, GC, Sawyer, SM, Santelli, JS, Ross DA, et al. Our Future: the Lancet Commission on Adolescent Health and Wellbeing. *Lancet* 2016; 387: 2423–78.
- [6] Obesity Rates & Trends Overview: The State of Obesity, Better policies for a better America. <https://stateofchildhoodobesity.org/monitor/>
- [7] Ogden CL, Flegal KM. Changes in Terminology for Childhood Overweight and Obesity. *National Health Statistics Reports*; No. 25. Hyattsville, MD: National Center for Health Statistics; 2010.
- [8] Reilly, J. J., 2006. Obesity in childhood and adolescence: evidence based clinical and public health perspectives. *Postgrad. Med.* 82 (969), 429–437.
- [9] Lobstein, T., Jackson-Leach, R., Moodie, M. L., Hall, K. D., Gortmaker, S. L., Swinburn, B. A., et al., 2015. Child and adolescent obesity: Part of a bigger picture. *Lancet* 385 (9986), 2510–2520.
- [10] WHO, 2018. Obesity and Overweight. Retrieved February 14, 2020, from. <https://www.who.int/news-room/fact-sheets/detail/obesity-and-overweight>
- [11] Biswas, T., Islam, A., Islam, M. S., Pervin, S., Rawal, L. B., 2017. Overweight and obesity among children and adolescents in Bangladesh: a systematic review and meta-analysis. *Publ. Health* 142, 94–101.
- [12] Kieling C, Baker-Henningham H, Belfer M et al. Child and adolescent mental health worldwide: evidence for action. *Lancet* 2011; 378(9801): 1515–25.
- [13] World Health Organization. Health for the world’s adolescents. A second chance in the second decade. Geneva: World Health Organization, 2014. [http://apps.who.int/adolescent/seconddecade/files/1612\\_MNCAH\\_HWA\\_Executive\\_Summary.pdf](http://apps.who.int/adolescent/seconddecade/files/1612_MNCAH_HWA_Executive_Summary.pdf) [accessed 9 September 2015].
- [14] Hutchinson P, Morelli V. International comparisons in underserved health: Issues, policies, needs and projections. *Prim Care* 2017; 44(1): 185–202.
- [15] Muris P, Meesters C, van den Berg F. The Strengths and Difficulties Questionnaire (SDQ)—further evidence for its reliability and validity in a community sample of Dutch children and adolescents. *Eur Child Adolesc Psychiatry* 2003; 12(1): 1–8.
- [16] Page AS, Cooper AR, Griew P et al. Children’s screen viewing is related to psychological difficulties irrespective of physical activity. *Pediatrics* 2010; 126(5): e1011–7.
- [17] Hamer M, Stamatakis E, Mishra G. Psychological distress, television viewing, and physical activity in children aged 4 to 12 years. *Pediatrics* 2009; 123(5): 1263–8.
- [18] Goodman R. The Strengths and Difficulties Questionnaire: a research note. *J Child Psychol Psychiatry* 1997; 38(5): 581–6.
- [19] Mullick MSI, Goodman R. Questionnaire screening for mental health problems in Bangladeshi children: a preliminary study. *Soc Psychiatry Psychiatr Epidemiol.* 2001; 36(2): 94–9.
- [20] De Onis M, Blössner M, Borghi E. Prevalence and trends of stunting among pre-school children, 1990–2020. *Public Health Nutr.* 2012; 15(1): 142–8.
- [21] Ahsan Karar Z, Alam N, Kim Streatfield P. Epidemiological transition in rural Bangladesh, 1986–2006. *Glob Health Action.* 2009; 2(1): 1904.
- [22] Islam A, Biswas T. Chronic non-communicable diseases and the healthcare system in Bangladesh: current status and way forward. *Chronic Int.* 2014; 1(2): 6.
- [23] Bulbul T, Hoque M. Prevalence of childhood obesity and overweight in Bangladesh: findings from a countrywide epidemiological study. *BMC Pediatr.* 2014; 14(1): 86.
- [24] Chopra M, Galbraith S, Darnton-Hill I. A global response to a global problem: the epidemic of overnutrition. *Bull World Health Organ* 2002; 80(12): 952–958.
- [25] OECD. Health at a Glance 2011: OECD Indicators. 2011. Available online: <http://www.oecd-ilibrary.org/sites/health> (accessed on 15 November 2020).
- [26] WHO. Obesity and Overweight. Available online: <http://www.who.int/mediacentre/factsheets/fs311/en/> (accessed on 15 November 2020).
- [27] Sultana S: Master thesis. Prevalence and risk factor of childhood overweight and obesity in primary school children of Dhaka city. 2010, University of Oslo: Faculty of Medicine, <http://urn.nb.no/URN:NBN:no-26615>
- [28] Popkin BM, Adair LS, Ng SW: Global nutrition transition and the pandemic of obesity in developing countries. *Nutrition reviews* 2012, 70(1): 3–21.
- [29] Raistenskis J, Sidlauskiene A, Strukcinskiene B, Uğur Baysal S, Buckus R. Physical activity and physical fitness in obese, overweight, and normalweight children. *Turk J Med Sci.* 2016; 46(2): 443–50.
- [30] Williams J, Wake M, Hesketh K, Maher E, Waters E. Health-related quality of life of overweight and obese children. *JAMA.* 2005; 293(1): 70–6.
- [31] Ottova V, Erhart M, Rajmil L, Dettenborn-Betz L, Ravens-Sieberer U. Overweight and its impact on the health-related quality of life in children and adolescents: results from the European KIDSCREEN survey. *Qual Life Res Int J Qual Life Asp Treat Care Rehabil.* 2012; 21(1): 59–69.
- [32] Raistenskis J, Sidlauskiene A, Strukcinskiene B, Uğur Baysal S, Buckus R. Physical activity and physical fitness in obese, overweight, and normalweight children. *Turk J Med Sci.* 2016; 46(2): 443–50.

- [33] Schwimmer JB, Burwinkle TM, Varni JW. Health-related quality of life of severely obese children and adolescents. *JAMA*. 2003; 289(14): 1813–9.
- [34] Meixner L, Cohrdes C, Schienkewitz A, Mensink GBM. Health-related quality of life in children and adolescents with overweight and obesity: results from the German KIGGS survey. *BMC Public Health*. 2020; 20(1): 1722.
- [35] Mühlig, Y.; Antel, J.; Föcker, M.; Hebebrand, J. Are bidirectional associations of obesity and depression already apparent in childhood and adolescence as based on high-quality studies? A systematic review. *Obesity Rev*. 2015, 17, 235–249.
- [36] Aparicio, E.; Canals, J.; Voltas, N.; Hernandez-Martínez, C.; ARIJA, V. Emotional psychopathology and increased adiposity: Follow-up study in adolescents. *J. Adolesc*. 2013, 36, 319–330.
- [37] Duarte, C. S.; Sourander, A.; Nikolakaros, G.; Pihlajamaki, H.; Helenius, H.; Piha, J.; Kumpulainen, K.; Moilanen, I.; Tamminen, T.; Almqvist, F.; et al. Child mental health problems and obesity in early adulthood. *J. Pediatr*. 2010, 156, 93–97.
- [38] Goodman, E.; Whitaker, R. C. A prospective study of the role of depression in the development and persistence of adolescent obesity. *Pediatrics* 2002, 110, 497–504.
- [39] Hillman, J. B.; Dorn, L. D.; Huang, B. Association of anxiety and depressive symptoms and adiposity among adolescent females using Dual Energy X-ray Absorptiometry. *Clin. Pediatr*. 2010, 49, 671–677.