Allied Medical Research Journal

Volume 1 | Issue 2 | Systematic Review

June 2023

A Comprehensive Review on Prevalence of Overweight and Obesity among School Going Children of Pakistan

Received
Jan 31st, 2023

Revised
March 19th, 2023

Accepted
April 7th, 2023

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Recommended Citation

[Chandio AS, Rind NA, Khuwaja I, Latif A. Comprehensive Review on Prevalence of Overweight and Obesity among School Going Children of Pakistan. Allied Med Res J. 2023;1(2):218-230. Available from: https://ojs.amrj.net/index.php/1/article/view/157/72]

DOI: https://doi.org/10.59564/amrj/01.02/019

Abstract

Background

Obesity has become a global epidemic affecting health and healthcare costs, increasing dramatically over the past three decades. Childhood obesity is also a growing problem and is defined differently by organizations such as the International Obesity Task Force (IOTF) and the CDC. Lifestyle changes, including poor nutrition and decreased physical activity, can increase obesity. Obesity increases the risk of chronic diseases such as diabetes and heart disease, highlighting the urgent need for effective management strategies. Hence, the current review is aimed to identify the prevalence of childhood obesity in Pakistan.

Methodology

Two independent researchers with the keywords performed a comprehensive review search; 'Obesity', 'overweight', 'Pakistan' and 'prevalence' on Scopus, CINAHL, Google Scholar, and PubMed. All studies that assessed childhood obesity were included in this review. The outcome measure was the prevalence of obesity, which was measured via the Body Mass Index.

Results

Seven articles from 2013 to 2024 were included in this review, clearing the selection criteria. The findings reported a prevalence of 5.4%, 0.89%, 10.8%, 5.0%, 15.2%, 44.7%, and 15% among seven reported studies.

Conclusion

Obesity, a significant public health problem, continues to be a matter of debate all over the world in recent years. The prevalence of obesity in Pakistan varies with reported prevalence in rural and urban Pakistan.

Keywords

Obesity, Overweight, Pakistan, Prevalence.

Introduction

Obesity is considered a significant health hazard globally and has emerged as the non-communicable pandemic of the 21st century. Both developed and developing countries have a soaring rise in obesity[1-2]. Obesity or being overweight describes the accumulation of abnormal or excessive amounts of fat in the body's fat tissue, which can cause certain health problems[3]. One pathophysiology behind this disease is the imbalance between calories taken and calories expended[4]. The prevalence of obesity has increased exponentially in the last 30 years. It almost doubled in adults and children and tripled in teenagers. According to a 2015 study, obesity is now a global health problem affecting morbidity, mortality and medical costs[6]. The risk of obesity affects everyone, regardless of age, gender and population. Non-Communicable Disease Risk Factor collaboration has provided the most extensive data based on the measurement of weight and height of 128.9 million children, adolescents, and adults from 200 countries that revealed a soaring proportion of obesity, particularly in South Asian Populations including Bangladesh, Bhutan, Pakistan, India and Nepal[7] had also increased to 0.64% and 1.6% among adult male and female population respectively in the year 2014. The epidemiological dynamics, distribution, and determinants (3Ds) of obesity and BMI in terms of prevalence were heterogeneous among countries regarding the steepness of the increase, period of acceleration, and slowing down[4,7]. Studies have found that healthcare costs associated with obesity increase with body mass index (BMI) and obesity class. Studies have shown that obesity-related costs depend on the increase in body mass index (BMI) and class type. A review of 33 US studies found that the direct medical costs of an obese person were more than six times greater than those of a non-obese population, with total costs estimated at $114 billion[8].

Body mass index is the most informative and helpful indicator for measuring weight and obesity in adults worldwide. Accordingly, individuals with a BMI of 25 to 30 kg/m2 are overweight and obese[9-10]. While there is no consensus on the cutoff points for overweight or obesity in children and adolescents, there will be greater recognition of the rights of the International Obesity Task Force (IOTF) and the Centers for Disease Control and Prevention (CDC)[11].

Obesity is a severe health problem, and its consequences range from disability to premature death. Therefore, a decrease in quality of life (QOL) is inevitable[12]. Some studies suggest that the increase in obesity can be linked to significant changes in lifestyle in towns and cities, inferior nutrition (using unhealthy outdoor meals), and not working every day[13]. Genetic factors, Nutrition habits, and race are causes of obesity, as is poor health[14]. Obesity is the sixth leading cause of disease worldwide[15]. Some studies have revealed that obesity increases the risk of chronic and life-threatening diseases such as type-2 diabetes, heart disease, high blood pressure, hyperlipidemia, and insomnia. It is estimated that obesity can shorten life by approximately seven years. Epidemiological surveys are needed in order to design appropriate management of this epidemic. Hence, we conducted this literature review to evaluate the prevalence of obesity and overweight children in Pakistan.

Methodology

In this review, we conducted a comprehensive search from 2013 to 2024 and included all the studies that were assessing the prevalence of obesity among children in Pakistan. Details of these research strategies are described below.

Search Strategy

The research proposal was reviewed and accepted by X Research Institute. We searched the English literature Scopus, CINAHL, Google Scholar, and PubMed to retrieve all relevant studies between 2013 and 2024. Keywords search included the following terms: ‘Obesity’, ‘overweight’, ‘Pakistan’ and ‘prevalence’, which were used to search English literature. A manual search was also conducted to identify items not found in the electronic search. Child/adolescent reporting is based on CDC and WHO standards.

Selection of Studies

We include all population-based studies of children and youth. Extracted participant data were recorded in two separate Excel software packages (Microsoft Office Software Suite 2010),

including the first author's name, publication year, study design, age, and sample size, obesity, cutoff points for obesity, prevalence valuesand their 95% confidence intervals.

Data Extraction

Inclusion and exclusion criteria were assessed by reviewing first- and second-year study lists and descriptions. Then, in cases where reading the abstract was insufficient, all articles were reviewed. Since many studies document BMI as a daily variable, we recommend reviewing the entire literature to rule out obesity or obesity even when determining obesity. Being overweight or obese is not the primary goal. The entire process was carried out independently by two researchers. If an agreement cannot be reached, negotiation is held to reach an agreement. Otherwise, a third-party reviewer will be asked to decide.

Results

In primary search, we found 2078 articles based on keywords related to our topic. Of those, 1148 were obtained after excluding the duplicate studies. Again, 407 articles were excluded based on study design and language, yielding 741 articles. The independent researcher performed a rigorous evaluation of the articles, which excluded 718 articles due to differences in the target population and outcomes. The 23 retrieved articles were critically appraised, and n=7 were included in this review. The number of initial studies and the detailed process for selecting appropriate studies are shown in Figure-1. Table-1 provides an overview of cross-sectional studies conducted in various cities of Pakistan, focusing on the prevalence of overweight and obesity among school-age children and adolescents. The studies included in this analysis spanned different geographic regions and sample sizes, providing a better understanding of the prevalence of severe problems in the country. Data collection methods use anthropometric measurements, typically using body mass index (BMI) to measure weight according to World Health Organization (WHO) standards. The findings highlight significant differences in the prevalence of overweight and obesity across age groups and regions, highlighting the urgent need for intervention programs to address growing health problems. The main findings from these studies include many differences between being overweight and being obese, with some areas showing severe risk. By combining these findings,

this review increases our understanding of the interactions between socioeconomics, nutrition, and lifestyle choices that influence weight among children and adolescents in Pakistan.

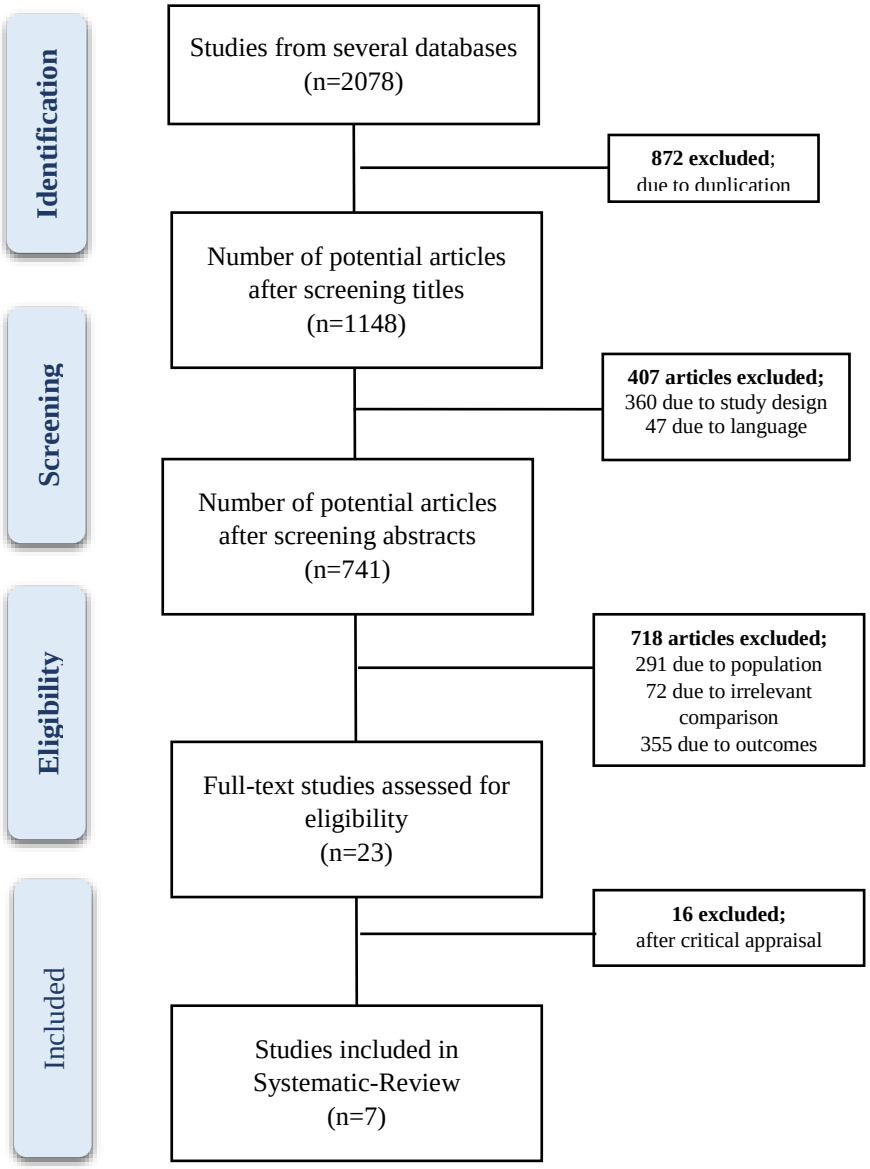

Figure-1 showing PRISMA Flow of Studies

Table-1 Characteristics of Participants

Authors, Year	Design	Age	Sample size	Data Collection Procedure	Outcome	Findings
Tanveer et al., 2022[16]	Cross-sectional survey	Age 9 to 17 years	3,551	School children from 52 schools throughout seven districts in central Punjab were enrolled via convenience random clustered sampling approach. Anthropometric measurements was performed using BMI	Obesity	In Pakistani school-aged children and adolescents, the prevalence of underweight, normal weight, overweight, and obesity was 21.9%, 66.9%, 5.8%, and 5.4%, respectively
Bishwajit and Yaya, 2020[17]	Cross-sectional survey	Not mentioned	132,231	Data were collected through population and health surveys in Bangladesh (2014), India (2015-16), Maldives (2016-17), Nepal (2016) and Pakistan (2017-18)	Overweight, obesity	Overweight=1.91% Obesity=0.89%
Mansoori et al., 2020[18]	Cross-sectional survey	13.4±1.3	887	Survey was conducted among public and private schools of Karachi. Anthropometric measurements was performed using BMI	Overweight, obesity	Overweight=19.1% Obesity=10.8%
Khan et al., 2019[19]	Cross-sectional survey	3-18 years	1872	Children from different districts of Multan were enrolled via simple random sampling technique. A trained nutritionist measured the BMI, and dietary status of children	Overweight, obesity	Overweight=10.0% Obesity=5.0%
Chattha et al., 2019[20]	Cross-sectional survey	12.79±1.53	520	Data were collected from two schools in Sialkot. Height and weight measurement and calculation and interpretation of body mass index according to	Overweight, obesity	Overweight=22.1% Obesity=15.2%

				the World Health Organization		
Amjad et al., 2015[21]	Cross-sectional survey		600	The data was collected from 12 schools of Faisalabad and Rawalpindi	Overweight, obesity	Overweight=16.5% Obesity=44.7%
Hashmi et al., 2013[22]	Cross-sectional survey	13.8±1.6	504	Students of class 6th to 7th were enrolled via simple random sampling technique. Obesity was measured using BMI, WHO cut off point	Overweight, obesity	Overweight=23% Obesity=15% Girls Overweight=16% Obesity=8%

Risk of Bias in Studies

A low risk of bias was reported in funding and conflict of interest among all studies[16,17,19,20,21,22] except for one study[18] that showed a high risk of Bias. For outcome assessment, all studies[16-22] showed a low risk of Bias. In the domain of exposure assessment, two studies showed[18,22] a low risk of bias, three studies[16,17,21] showed the unknown risk of Bias, and two studies[19-20] showed a high risk of Bias. The details are mentioned in Table-2.

Table-2 Assessing Risk of Bias of Included Studies

Author' Year	Funding and Conflict of Interest	Outcome Assessment	Exposure Assessment	Confounding Factors	Attrition Bias	Analysis
Tanveer et al., 2022[16]	+	+	?	?	-	+
Bishwajit and Yaya, 2020[17]	+	+	?	?	-	+
Mansoori et al., 2020[18]	-	+	+	?	-	+

Khan et al., 2019[19]	+	+	-	?	+	+
Chattha et al., 2019[20]	+	+	-	?	+	+
Amjad et al., 2015[21]	+	+	?	?	-	+
Hashmi et al., 2013[22]	+	+	+	+	+	+

+ Low Risk of Bias
- indicates High Risk of Bias
? Unknown Risk of Bias

Discussion

Obesity is increasing as a result of a sedentary lifestyle and consumption of high-calorie foods. Studies showed the dangers of overweight and obesity, and according to estimates, the number of people affected by obesity and obesity will reach 1.35 billion and 573 million by 2030[23]. In the United States, where obesity rates are high, more than one-third of adults were obese in 201024. Among Asian countries, the obesity rate in Pakistan is 10.3%, with a combined prevalence of overweight and obesity of 25.0%[25]. This trend is also evident among children and adolescents, where the obesity rate has doubled and quadrupled over the past three decades[26]. Obesity rates among children in the United States increased from 7% to almost 18% between 1980 and 2012[27].

The prevalence of overweight and obesity among adolescents and school-aged children in Pakistan has been the focus of several cross-sectional surveys conducted over the years. The current study's findings showed a soaring prevalence among school-going children in Pakistan. Hashmi et al. (2013) surveyed 504 students aged 13.8±1.6 years, revealing concerning rates with 23% of boys and 16% of girls classified as overweight and 15% of boys and 8% of girls classified as obese. Tanveer et al. (2022) investigated obesity prevalence in central Punjab among 3,551 students aged 9 to 17 years, reporting a prevalence of 5.4%. This underscores the ongoing challenge of obesity among young individuals in the region, necessitating targeted interventions.

Bishwajit and Yaya (2020) analyzed data from 132,231 individuals across South Asian countries, including Pakistan, showing relatively low rates of overweight (1.91%) and obesity (0.89%). The study highlights regional variations in weight-related issues, emphasizing the need for tailored interventions. Mansoori et al. (2020) assessed overweight and obesity among 887 students in Karachi, revealing notable prevalence rates of 19.1% and 10.8%, respectively. This underscores the urgency of school-based interventions to address rising obesity rates. Khan et al. (2019) surveyed 1,872 children in Multan, highlighting moderate rates of overweight (10.0%) and obesity (5.0%), underscoring the importance of nutrition education. Chattha et al. (2019) studied students in Sialkot, revealing a high prevalence of overweight (22.1%) and obesity (15.2%), emphasizing the need for local health policies. Another study by Chattha et al. (2019) in Faisalabad and Rawalpindi reported alarming rates of overweight (16.5%) and obesity (44.7%) among students, highlighting a critical public health issue requiring comprehensive interventions. Together, these studies provide valuable insights into the regional variations and challenges associated with overweight and obesity among Pakistani youth, underscoring the need for targeted interventions and continued research to address this growing public health concern.

Despite regional differences, a growing number of studies show that obesity has increased by age and gender in recent years. This highlights the urgent need for targeted interventions to promote healthy lifestyles and reduce the development of health problems.

Conclusion

Obesity, a significant public health problem, continues to be a matter of debate all over the world in recent years. The prevalence of obesity in Pakistan varies with reported prevalence in rural and urban Pakistan.

Authors Contribution

Chandio AS: Conception, design and data acquisition.

Rind NA: Data acquisition and analysis.

Khuwaja I: Manuscript Writing.

Latif A: Manuscript Writing, Revising the draft.

Declaration of Interest

None.

Funding Sources

None.

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