Prevalance of Overweight and Obesity among School Going Children in India - A Narrative Review of Literature

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Abstract

Back ground: Childhood obesity is a common concern to all developed and developing countries. Most of the children who are obese continue to be obese in adulthood. With the increasing rates of non communicable disease striking the general population one of the most common culprits who out stand as a contributing factor is obesity.

Methods: A review of literature on prevalence of childhood obesity in India from 2015 January to 2019 December was done using different database strategies such as Google scholar and Pub med.

Results: The study findings show in summary the prevalence of obesity in different parts of country. However studies are heterogeneous and hence pooled data was not obtained. Further almost all studies identified were school based and age group kept varying in between 5-19 years.

Conclusions: The prevalence of overweight and obesity showed an increasing trend in India in comparison to data collected before 2010 and after 2010.

Key words: *Overweight, Obesity , Child hood Obesity ,Prevalence , BMI Standards.*

Introduction

Obesity is a public health problem and is a growing epidemic concern. The increased prevalence of obesity has a direct effect on health care expenditure. Despite increasing attention to the health and economic effects of obesity the prevalence continues. Further the prevalence of obesity & overweight varies in different states of India. Hence it is difficult to generalize the national scenario .Obesity as such if grows significantly in Indian population it would drain our health care resources.

Aim of the Review: This review identifies the published prevalence studies done in different parts of India from 2015 to 2019 .Literature search was done using Google Scholar & Pub Med using the search terms childhood obesity, overweight, prevalence BMI and school children.

Objectives of the Review: To examine and review related published studies and other articles regarding prevalence of overweight and obesity among school children in 5-19 years age group done in different states of India.

Methods and Materials

Search Process: Here both descriptive and quantitative approach were used .Potentially relevant review of studies published from 2015 to 2019 which reported on prevalence of childhood over weight and obesity in the age group of 5 to 19 years in different parts of India using a systematic approach were selected by screening the titles and screening the abstracts . Initially the search revealed related titles or abstracts after which full texts were retrieved for papers in which abstracts mentioned the search terms. Literature search was done using different strategies such as Google scholar and Pub

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med using following search term for childhood obesity, school children, overweight, prevalence.There was no attempt made to locate unpublished studies. Data related to age group or class of students, place of study done, period of data collection done, setting, design, sample and sampling method, and important significant findings were extracted.

Eligibility criteria:

The studies were critically reviewed based on the eligibility criteria. All reported findings were directly taken from the primary reported studies.

Inclusion criteria:

Cross sectional studies that were conducted in last five years January 2015 till December 2019.Results that reported with both overweight and Obesity findings were included .Studies related to prevalence of overweight and obesity among 5-19 years old school children. Studies that mentioned standard definitions of overweight and obesity. Literature published in English language were only included. Studies which mentioned the period of data collection and all data that were collected in the period January 2015 to December 2019 were only included.

Data abstraction:

Based on eligibility criteria the studies were evaluated. Out of the search results only specific and relevant studies were included. Out of total 26 studies only18 were included. Few studies published after 2015 but data collection were done before 2010 were not considered.

Data Analysis

A preliminary analysis were done by tabulating the data as Author, Year of study , Region and setting Age group/ class of study, standards defining overweight &obesity, setting and design, prevalence of overweight, prevalence of obesity.

The findings are summarized as follows:

A cross sectional study was done in Telangana, Hyderabad among students of Class 4-10, were screened on the day of data collection in January 2018.The BMI was estimated using IAP &CDC standards. Out of 544 students 15.4% were obese while 26.1% were overweight. Girls were more obese than boys while obesity was found to be highest in 8-10 year age group[1].

A school based cross sectional study was done in Ludhiana, Punjab among 1959 students by using simple random sampling strategy for schools while stratified sampling study was done for students in the age group of 11-17 year old. Data collection was done in March 2016-July 2017. Using IAP classification, 2.7% were found to be obese in rural area while 11% were obese in urban area. Boys were more overweight & obese than girls[2].

In a school based cross sectional study done among 5-16 years old children in rural Bangalore present on the day of survey during August –December2017 among 1127 students the overall prevalence of overweight and obesity were 7.09% and 4.08%.Girls were more obese and overweight than boys and in 11-16 years age group 6.8%&10% children were found to be obese &overweight[3].

In a cross sectional study done in Udupi , Karnataka, using stratified cluster random sampling among 1185 students from 9 schools studying in Class 8-10 students during March –Aug 2012, it was found that 11.0% of males were overweight & 7.1% were obese while 10.6% were overweight & 5.4% were obese[4].

A cross sectional, observational study was conducted in both rural &urban private schools among 188 subjects in 10-18 Years age group in Vadodara, Gujarat. The data collection was done from September to November 2016. The study findings showed 17.6% were obese while 20.2% were overweight. Similarly 65.22% urban boys &62.26% girls were obese or overweight compared to 15.78% of rural boys &3.92% were girls[5].

A cross-sectional study was done among both government & private schools in Udaipur,Rajasthan among 12-15yrs children studying in class 8th to 10th during July2014 to January2015. Simple random sampling was done among 1000 study subjects. Using BMI standard methods over weight was found to be 8.20% and obesity was found to be 2.40%. High prevalence (14%) was seen in private schools while 7.20% prevalence was seen in Government schools. Prevalence of overweight & obesity was reported higher

among girls (12.60) % than boys (8.60%) [6].

In a comparative cross-sectional school study done among 2govt & 2 private schools from Class VI to X, in Sambalapur ,Odhisa during December 2016 to April 2017 using systematic sampling method among 600 school children was found with overweight 8.9% & obesity was found to be 3.4% with an overall prevalence of 12.3%. Further obesity was found more in private schools and the study used WHO Child Growth reference was used. [7].

A descriptive cross sectional study done among 600 high school students in 13-16 years at Urban Shimoga, Karnataka during July 2015-September 2015 using WHO Child Growth reference. Overweight was found to be 7.67% and Obesity was found to be 5.83% [8].

A school based study using stratified multistage random sampling method among 300 school going children in 10-12 year old during 2012-13,in Sambalpur ,Odhisha. The study used IOTF Standards where overweight was found to be 6.3% & obesity to be 3.3%. Boys were 5.6% overweight & 3.4% obese while 7.4% girls were overweight while 3.3% were obese[9].

A cross sectional school based study was done in 3 private English medium schools using simple random sampling among 150 students in 12-17 year age group studying in class 8th, 9th& 10th in Nagpur, Maharastra during May 16-December2016.Using WHO BMI classification for children 2007, 12% of students were overweight and 2% were obese[10].

In a cross sectional school based study done in Pondicherry ,South India among 2465 students from 5 schools in 10-18 yrs age group during June 2014 to December2014 using IAP age and gender specific body mass index. The prevalence of overweight & obesity were high among students who belonged to private schools of urban region (14.8%) There was no significant difference among both boys & girls. Overall overweight was found to be 9.7% while obesity was found to be 4.3% .Overall prevalence of overweight & obesity among early adolescents (10-15 yrs) was 12.3% [11].

In a cross sectional school based study done in December 2014-January 2015 in private & government schools of students studying in Class 5th to 10th, 1828 students were screened from 4 schools in South Mumbai and it was found that overweight was 17.5% and obesity to be 7.8%. There was significant difference seen among boys & girls .Khadilkar criteria & Cole et al was used to describe the BMI[12].

In a school based cross sectional study among 2465 students from 5 schools in Pondicherry ,South India conducted in June 2014 to December2014, it was found that the prevalence of overweight & obesity were high among students who belonged to private schools of urban region (14.8%) There was no significant difference among both boys & girls. Overweight was found to be 9.7% while obesity was found to be 4.3% . Overall prevalence of overweight & Obesity among early adolescents (10-15 yrs) was 12.3% .IAP age and gender specific body mass index was used to describe the BMI[13].

In a school based cross-sectional study using multistage simple random sampling done among 4560 students of 12-19 years studying in class 9-12. The data collection was done in July 2012-June 2014 of both govt and pvt schools. Overall prevalence of overweight was found to be 5.6% & obesity was found to be 1.0%. In private schools it was found to be 63.3% & 58.7% while in government schools it was found to be 36.7% & 41.3%[14].

In an observational cross-sectional school based study done among 6-17 year old children in Dehradun,Uttarakhand, among 1266 students from 13 government and private schools The data collection was done during June 2013 –May 2014 . The BMI for age z-score cutoffs WHO Anthro plus was used. Overall prevalence of overweight was found to be 15.6% and obesity was found to be 5.4% . Overweight in urban private school was found to be 32.7% and in rural private school was found to be 22.4% [15].

In a cross sectional school based study using random selection of schools, 60 students from 2 schools of 10-19 years were selected for data collection during Jan-March 2015 in Guwahati. Using WHO criteria, the prevalence of overweight & obesity was found as 13.3%&1.7% while using Agarwal BMI standards it was 6.7%&10%. Obesity was higher among students from private school,

boys & nuclear families[16].

In Kanpur, a school based cross sectional ,multistage random sampling was done among 806 subjects in 12-15year age group. Data collection was done in September 2013-August 2014 Using CDC-BMI Cut off point the prevalence of obesity & overweight was found to be 3.97% & 9.70%[17].

An observational cross sectional study was conducted among 10-18 year old children studying in Class VI-XII in Delhi . The data collection was done in July 2013 –June 2014 using BMI Standard methods . Prevalence of overweight was found to be 11.8% & Obesity was 7.5%. Overweight was maximum seen in 11 yr old with 20.1% & minimum in 17 yr old as 5.3%. Similiarly obesity was maximum in 18yr old with 15% & minimum in 15 yr old with 3.2%.Moreover males were both overweight & obese than female[18].

Strength and limitation on review.

The study is limited only to articles reported in the published search data bases The review collects details from various states of India to present the overall scenario. Unpublished studies were not included and there are chances that the results may be affected by publication bias. In addition to that the author may have missed studies that are not listed in the databases or referenced in any other published studies or reviews.

The strength of the systematic review is that it has covered findings from most of the states from India and are recent data to correlate the present existing figures. Further the author has made an attempt only to include those published studies that mention data collection done after 2010 .

Conclusion

Overweight and Obesity among school children is in increasing trend. The study concludes that awareness among parents have to be created and they have to be encouraged to educate and adapt healthy life practices in children The school authorities also have to establish practices to support healthy behavior among children. Further physical activity classes can be included in syllabus making it mandatory for all schools to follow.

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