

Obesity in relation to risk factors and socioeconomic conditions among school-age children at Khartoum State 2011/2012

Dr. Suzan Ail Yousif Abo^{1*},[†], Dr. ALI abdalazez Salih²

¹Department of Food Science and Nutrition, Faculty of Science and Art - Al Baha University, Al Bahah, Saudi Arabia

²Research Supervisor

DOI: <https://doi.org/10.15520/ijmhs.v9i5.2570>

Accepted 15 Apl 2019; Received 3 Apl 2019; Publish Online 15 May 2019

Reviewed By: Dr
Daniel V.
Department: Medical

ABSTRACT

This is a descriptive cross-sectional study that was carried out at Khartoum State during the school year 2011/2012 to estimate the prevalence of obesity among school children aged 6-15 years and to investigate the relationship between BMI (Body Mass Index) and socioeconomic status and life style factors. Two hundred and fifty pupils participated in this study. The researcher took the anthropometric measurement inside the class room and gave the questionnaire the students to be answered by one of child's parents. The data was analyzed using the Statistical Package for the Social Sciences (SPSS Version 13.0).

In this study, prevalence of obesity was found to be (48%) of them 18% males and 30% females. Income of the family, number of high caloric carbonated beverages/week, way of transportation to school, length of daily playing outside the home, and time spent in watching TV and video games were significantly correlated with student's BMI. While parent's BMI was not having significant correlation with student's BMI.

This study is considered as the first study in its field regarding this age category in Khartoum State, and it is promoting future researches in obesity and its determinant.

Key words: Obesity in relation to risk factors and socioeconomic conditions among school-age children

1 INTRODUCTION

Obesity is often defined as a condition of a normal and excessive fat accumulation in adipose tissue to the extent that health may be adversely affected (WHO, 2000). The prevalence of obesity is increasing worldwide at an alarming rate in both developing and developed countries. It has become a serious epidemic health problem, estimated to be the fifth leading cause of mortality at global level (James et al., 2004). Moreover, it is a risk factor for many diseases such as certain cancers, hypertension, type II diabetes mellitus, dyslipidemia, metabolic syndrome and coronary heart disease (Yang, et al., 2009).

At an individual level, a combination of excessive food energy intake and a lack of physical activity is thought to explain most cases of obesity (Lau, et al., 2007). Diet and exercise helps maintain a healthy weight; and psychological,

depression, sadness, anxiety, stress, and other psychological conditions may affect the amount of food one eats and/or the amount of exercise one engages in. In addition, some illnesses can lead to obesity or a tendency to gain weight. These include hypothyroidism, Cushing's syndrome, depression, and certain neurological problems that can lead to overeating. Also, drugs such as steroids and some antidepressants may cause weight gain. Poor or interrupted sleep may also contribute to obesity and overeating (Barnes, et al., 2007).

2 METHODOLOGY

Study design

This is a descriptive, and cross sectional study which will be designed to assess obesity, among school-age children of Khartoum state in relation to risk factors and socioeconomic conditions.

* Corresponding author.

[†] Email: Suzanaluyosif@yahoo.com.

Area and location

Khartoum state has an area of 20140KM² and situated in the center of Sudan, and it lies between latitudes 15.10 to 16.30 degrees north and longitudes 31.5 to 34.2 degrees east.

Population size of Khartoum state

According to the projection studies Khartoum state had grown from 1.801.850 in 1993 to 3.413.034 in 2003. And according to 2008 census it is 5.548.784 amounting to an average annual growth rate of (3.67) percent. 44% of the population of the state is lifetime migrants. A study conducted by the National population council showed that approximately 1.000 people enters and settle in the state daily.

Average size of the house holds is 6.1 people per house. Children between 5-14 years of age constitute 37.6%. The working age of (15-59) years accounts for the 57.9% of the total population.

Administration situation

The state is divided into seven localities these are: Khartoum, Bahri, Omdorman, Karri, Ombbdha, Jabalawlia and East Nile.

METHODS**Education services**

In the state there are 1435 basic schools, 320 higher secondary schools and many universities.

Health services:

It can be divided into promotive, preventive and curative services, there are 144 health centers and dispensaries 45 hospitals and 28 primary health care units.

Study population

All governmental and private basic schools were included in the study. The total number of the basic schools in the state of Khartoum and East Nile. are (67) with the number of (862,170) pupils (See Appendix A).

Study variables

In this study, obesity was the dependent variables, while independent variables include socioeconomic factors (education of parents, economic condition of the family, age of the child, family size, etc), in addition to risk factors associated with obesity such as dietary intake, history of obesity in the family, physical activity, etc.

Inclusion criteria

The followings will be used as inclusion criteria:

Aged between 6 – 13 years.

Currently resident in Khartoum State.

Enrolled in primary schools.

Exclusion criteria

The followings will be used as exclusion criteria:

Aged less than 6 years and above 15 years.

Not residence of Khartoum state.

Not enrolled in primary schools.

Ethical consideration

The participant's families were informed that all the information used in this study will be confidentially dealt with, and will be only used for scientific purposes.

The study was approved by the Research Ethical Committee of the Omdurman Islamic University, and Directorates of Education in Khartoum State. Approval was also obtained from high rank authority of the university. The consent form was signed by one of the parents.

Sampling**Sample techniques**

Random sampling technique was used by which primary school students was randomly selected from schools from 2 localities in Khartoum State (AMARAT AND HAJY-OUSIF), 5% from Sschool –age and 5% from Children.

Determination of sample size:

$$n = N / (1 + N(e)^2)$$

Where:

n= Sample size

N= Total schools

e² = Level of precision = 0.05

n= 67 = 57 school

1+67(0.0025

Based on the formula, the total number of schools that were selected for the study was 57 schools.

And then this number of schools was distributed proportionally over the Governmental and private schools according to the following table:

Distribution of schools to Governmental and private schools

Type of schools	No. of schools	%
Governmental	18	31.5
Private	39	
Total	57	

A total of 1700 questionnaire and the consent form (appendix B) were distributed to students among the chosen schools. Only 250 questionnaires were returned. The researcher excluded those less than 6 years, or more than 15 years leaving 1744 to be included in this study.

3 RESULTS

This study was the first study that estimates the prevalence of obesity among 6-15 years old school children and determines their associated factors in primary schools of Khartoum state. The etiology of obesity is still not understood, especially because it more likely arises from the interaction between the genetics and the environmental factors (WHO, 2000).

Few cases of child obesity arise as a result of genetic factors, like Prader-willi syndrome, or thyroid disorder, or as a side effect of steroid drugs (Rudolf, 2004). The environmental factors still play an important role in developing obesity. Behavioral and social factors affect energy intake, thus developing obesity (WHO, 2006).

This study deals with some socioeconomic and life style factors thought to be responsible for childhood obesity among school children in Khartoum State.

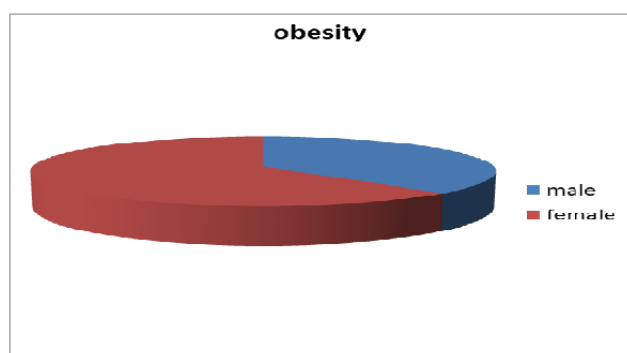
This study was the first study that estimates the prevalence of obesity among 6-15 years school children, and it determines the associated factors in primary schools of Khartoum state.

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Prevalence

1. The overall prevalence of obesity was (48%),
2. (18%)among male school children and 30% among females.
3. No previous studies were carried out in Sudan at this age group which makes it difficult to compare.

Percentage of obesity and over weight



4 CONCLUSION

This study found a relatively clear prevalence of obesity among 6-15 years school children in Khartoum State.

Prevalence of obesity was (48%), males (18%) and 30% among females. This was near to the prevalence of obesity among USA children and adolescents, Kuwait and among Lebanon adolescents aged 10-19.

Parental BMI, monthly income, intake of high caloric foods as well as drinking carbonated beverages, way of transporting to school, and daily length in playing, showed a strong correlation with the BMI of the students.

5 RECOMMENDATIONS

According to the findings of this study, it is recommended to:

1. Conduct further studies on same age groups in different areas in Sudan.
2. Give attention to what schools canteen offer for children.

3. Increase awareness about childhood overweight/obesity through Publications and symposia, for parents.

4. Official authority should arrange four starting common clubs for different sport activities.

5. Family involvement in the responsibility to modify eating habits, and increasing activity mainly sharing their children when playing.

6. Distribution of pamphlets by the health office at schools to children and advice them on their eating habits as much as possible.

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AUTHOR BIOGRAPHY

Dr. Suzan Ail Yousif Abo Department of Food Science and Nutrition, Faculty of Science and Art - Al Baha University, Al Bahah, Saudi Arabia