International Journal of Medical Science and Clinical Research Studies

ISSN(print): 2767-8326, ISSN(online): 2767-8342

Volume 04 Issue 11 November 2024

Page No : 1962-1967

DOI: https://doi.org/10.47191/ijmscrs/v4-i11-04, Impact Factor: 7.949

Prevalence and Associated Factors of Obesity Among Women of Childbearing Age in the Communes of Bamako, Mali

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ABSTRACT

Background: Obesity and especially women's obesity is increasingly becoming a health problem in all countries, including low-income countries.

Objective: To assess the prevalence and associated factors of obesity among women of childbearing age in the communes of Bamako in Mali.

Methodology: Quantitative and analytical study using a questionnaire. The population of this study concerned obese women of childbearing age from the Communes of Bamako in Mali.

Results: This study included 384 women of childbearing age, more than half (59.3%) of whom were over 35 years of age. The prevalence of overweight among women of reproductive age in the district of Bamako was 30% and the prevalence of obesity was 27% at the time of the survey. The results reported a statistically significant relationship between body mass index and the following variables: age (p=0.04); education (p=0.03), consumption of sugary drinks (p=0.001); sleep duration (p=0.04), exercise (p=0.03) and history of obesity in the family (p=0.01).

Conclusion: This study provided clear evidence of an increase in overweight and obesity among urban women in the six communes of the Bamako district of Mali. It is therefore important to develop health promotion actions, focusing on healthy eating, physical activity, weight reduction in the district of Bamako, especially in the urban areas of Mali.

ARTICLE DETAILS

Published On:
05 November 2024

Available on:
https://ijmscr.org/

INTRODUCTION

Despite major investments in preventive health in recent decades, health issues related to body weight continue to worry global health authorities. Obesity is a global public health problem that is on the rise at an alarming rate. Several countries around the world have experienced a double or triple increase in the prevalence of obesity over the past three decades, likely due to urbanization, sedentary lifestyles, and increasing consumption of high calorie processed foods[1].

In 2022, 2.5 billion adults aged 18 and older were overweight, including more than 890 million adults with obesity. This corresponds to 43% of adults aged 18 years and older (43% of males and 44% of females) who were overweight, an increase from 1990, when 25% of adults aged 18 years and older were overweight [2]. Obesity is more prevalent among women than men in most countries, but in some countries and population subgroups, this gap is more pronounced [3]. An earlier study conducted in India reported that obesity based on body mass index (BMI) is more prevalent in older women than men (26.3% vs. 17.6%) [4].

Other health problems caused by obesity can also occur in women. The risk of diabetes mellitus increases with the duration and degree of obesity [5,6]. Increased visceral fat increases insulin resistance. The two associated are the most important signs of metabolic syndrome and are risk factors for diabetes mellitus and cardiovascular disease. The risk of diabetes increases when the BMI is above 24 [6].

The nutritional landscape in West Africa has been dominated by programs to combat undernutrition. However, with increasing urbanization, technological developments and associated changes in eating habits and physical activity, overweight and obesity in children and adults are becoming more prevalent (Bosu et al., 2014). [6].

In Mali, a previous study reported that overweight and obesity should be taken into account in health policy measures rather than in the daily practice of health professionals, who will each have to follow overweight or obese patients to different degrees [7]. It is therefore important to look at the factors associated with obesity, especially among women in the communes of Bamako in Mali.

MATERIALS & METHODS

Study design and setting

This is a descriptive and analytical study using a questionnaire to collect information from women of reproductive age in the six communes of the district of Bamako in Mali.

Definition of obesity and overweight

Being overweight is a state of excessive fat deposits. Obesity is a complex chronic disease characterized by excessive fat deposits that can be detrimental to health. The diagnosis of overweight and obesity is made by measuring the weight and height of people and calculating the body mass index (BMI): weight (kg)/height² (m^2). Body mass index is a surrogate marker of obesity and additional measures, such as waist circumference, can help in the diagnosis of obesity [2].

For adults, the WHO defines overweight and obesity as follows:

- overweight corresponds to a BMI greater than or equal to 25; and
- obesity is a BMI greater than or equal to 30.

Target population

The population of this study was obese women of childbearing age in the Communes of Bamako, Mali. According to the DHIS2, in 2024 the proportion of women of childbearing age in Mali will total 3,687,939, with a total of 571,360 in the Bamako district.

The sample size estimate was calculated using the RAOSOFT online software. The following parameters have been included:

- 95% confidence level,
- 5% margin of error
- Expected response frequency of 50%.

The required sample is 384 obese women of childbearing age.

Data collection process

Data were collected using a questionnaire. The questionnaire consisted of four parts: (i) socio-demographic characteristics of participants; (ii) habits and lifestyle; (iii) gyneco-obstetric history; and (iv) anthropometric data. Data were collected during the period from April 1 to June 30, 2024.

Ethical considerations

This study received approval from the National Institute for Public Health Research ethics committee of Mali . Also, a written consent form was submitted to each participant prior to data collection. The participants' data will remain confidential.

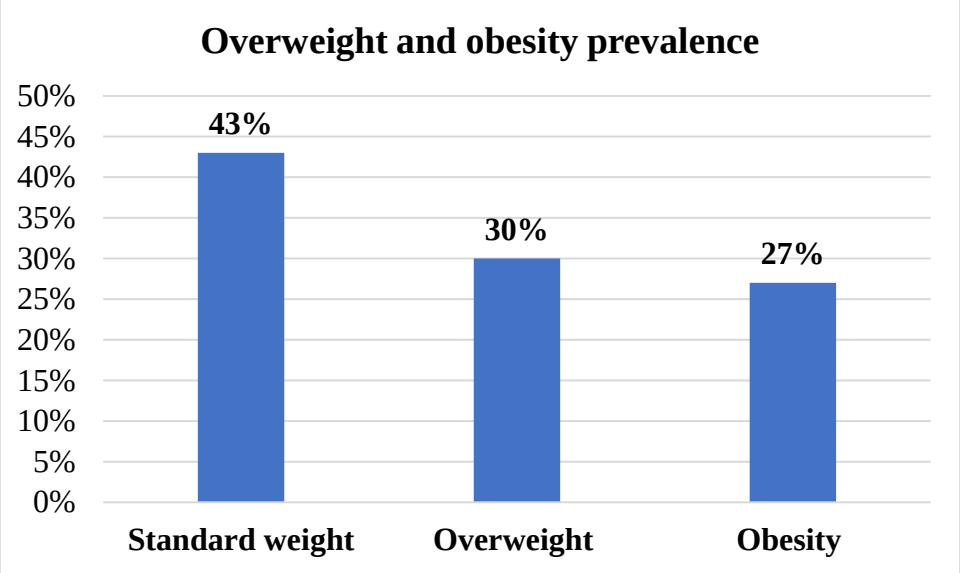
Data analysis

Data analysis was performed using SPSS 22 version software (SPSS Inc., Chicago, IL). Data analysis included descriptive statistics to estimate the frequency and percentage (%). Chi-Square test was performed to determine the relation between variables. The level of significance considered will be set at $p < 0.05$ for all analyzes.

RESULTS

Prevalence of overweight and obesity

A total of 384 women of childbearing age took part in the study. The prevalence of overweight among women of childbearing age in the Bamako district was 30%, and that of obesity was 27% at the time of the survey.



Determinants of obesity among women of childbearing age in the communes of Bamako, Mali

The chi-square test reported a statistically significant relationship between body mass index and the following variables: age (p=0.04); education (p=0.03), consumption of sugary drinks (p=0.001); sleep duration (p=0.04), exercise (p=0.03) and history of obesity in the family (p=0.01). (Table I).

Table I. Relationship between body mass index and socio-demographic characteristics, lifestyle habits and medical-obstetric history.

	Normal weight N(%)	Overweight/Obesity N(%)	P value
Age (years)			**0,04**
18 - 34	99 (54,3)	102 (46,4)	
35 - 54	51 (31,1)	79 (35,9)	
55 and more	24 (14,6)	39 (17,7)	
Mother's marital status			0,91
Married	128 (78,0)	171 (77,7)	
Single	36 (22,0)	49 (22,3)	
Education			**0,03**
Non educated	37 (22,6)	68 (30,9)	
Educated	127 (77,4)	152 (69,1)	
Occupational status			0,89
Employee	16 (9,8)	22 (10,0)	
Merchant	75 (45,7)	99 (45,0)	
Unemployed	73 (44,5)	99 (45,0)	
Monthly income (FCFA)			0, 20
< 100 000	83 (50,6)	101 (45,9)	
> 100 000	81 (49,4)	119 (54,1)	
Family size (persons)			0,24
<5	29 (17,7)	29 (13,2)	
5-8	35 (21,3)	47 (21,4)	
>9	100 (61,0)	144 (65,5)	
Have breakfast			0,34
Yes	149 (90,9)	196 (89,1)	
No	15 (9,1)	24 (10,9)	
Frequency of meals per day			0,17
1 - 2	38 (23,2)	66 (30,0)	
3 - 4	116 (70,7)	142 (64,5)	
5 – 6	10 (6,1)	12 (5,5)	
Consume sugary drinks per day			**0,001**
Yes	114 (69,5)	115 (52,3)	
No	50 (30,5)	105 (47,7)	
Sleep duration per day			**0,04**
< 6 h	65 (39,6)	93 (42,3)	
6 - 8 h	83 (50,6)	99 (45,0)	
9 h and more	16 (9,8)	28 (12,7)	
Practice of physical exercises			**0,03**
Yes	106 (64,6)	121 (55,0)	
No	58 (35,4)	99 (45,0)	
Number of pregnancies			0,90
0	15 (9,1)	23 (10,5)	
1 - 2	40 (24,4)	46 (20,9)	
3 and more	109 (66,5)	151 (68,6)	
Number of deliveries			0,61
0	16 (9,8)	26 (11,8)	
1 - 2	42 (25,6)	48 (21,8)	
3 and more	10 (64,6)	146 (66,4)	
Taking contraceptives			0,58
Yes	92 (56,1)	124 (56,4)	
No	72 (43,9)	96 (43,6)	

History of obesity in the family			**0,01**
Yes	123 (75,0)	185 (84,1)	
No	41 (25,0)	35 (15,9)	
History of diabetics in the family			0,49
Yes	62 (37,8)	82 537,3)	
No	102 (62,2)	138 (62,7)	

DISCUSSION

This study reported a high prevalence of overweight and obesity among women of childbearing age in the Bamako district of Mali. Our results are almost similar to those of a study conducted in Zimbabwe, which reported that the weighted prevalence of overweight and obesity among adult women was 34.2% and 12.3% respectively [8].

Overweight and obesity are increasing among women of childbearing age in urban Africa. Our findings are in line with those of a previous study using data from repeated cross-sectional Demographic and Health Surveys collected in 24 African countries. Obesity doubled in Kenya, Benin, Niger, Rwanda, Côte d'Ivoire and Uganda, while it tripled in Zambia, Burkina Faso, Mali, Malawi and Tanzania [9].

Despite the fact that our study did not report a significant relationship between gestiture, contraceptive use and overweight or obesity . This study reported that more than two-thirds of women had already experienced pregnancy or had already given birth; and more than half of women had already taken contraceptives. The use of combined oral contraceptives doubles the risk of overweight/obesity in adult women of childbearing age [10]. Our study reported a statistically significant relationship between body mass index and the following variables: age, education, sweetened beverage consumption, sleep duration, physical exercise and family history of obesity. A study conducted in Ethiopia reported that women with higher levels of education, higher wealth status, older age, former unions and urban women were at higher risk of overweight and obesity [11]. In Zimbabwe, the main social factors associated with this situation are advanced age, being married, wealth and the use of hormonal contraceptives. Higher education and Christianity also increase the risk of obesity and overweight.

In this study, obesity was much more prevalent among older women. Weight gain accompanied by an increased tendency towards central fat distribution is common in middle-aged women. And our results are in line with a previous study which reported that advanced age was a factor associated with overweight and obesity in non-pregnant women of childbearing age in South Africa [12].

Women's education improves their knowledge of overweight prevention. This study reported that low levels of education were associated with overweight and obesity. And this figure is similar to that of a study conducted in Sweden, which reported that the prevalence of obesity was 7.8 percentage points higher in women with a low level of education than in those with a high level [13]. Our results and previous literature indicate that education level exerts a negative influence on obesity in countries with different income levels, and also suggest that education level is one of the most effective instruments for reducing obesity [14-15].

Sugar-sweetened beverage consumption is linked to the global epidemic of obesity and chronic disease. With economic growth, urbanization and market attractiveness for beverage manufacturers, sweetened beverage consumption is a growing public health challenge in low- and middle-income countries [16]. In this study, more than half consumed sugar-sweetened beverages; and sugar-sweetened beverage consumption was associated with overweight and obesity. This figure is similar to that of a previous study, which reported that 50.38% of women aged 15-49 in two sub-Saharan African countries (Kenya and Burkina Faso) said they had consumed sweetened beverages in the 24 hours prior to the PMA 2018 nutrition survey [16].

Sleep is increasingly recognized as an essential factor in overall health and well-being. Changes in sleep patterns often occur in the elderly [17]. Previous studies have documented associations between sleep duration, sleep quality and the risk of obesity in the elderly. This study reported that overweight and obesity were more prevalent in people with short or long sleep durations. Numerous epidemiological studies have associated short sleep duration with obesity [18, 19, 20]. Medium- and long-term interventional studies are needed to assess the potential of sleep-enhancing interventions to help tackle the obesity epidemic. Our findings confirm with those of a previous study that reported that shorter sleep durations were associated with overweight/obesity and that longer sleep durations were associated with obesity [21].

Physical activity is an important public health strategy for reducing the risk of obesity, diabetes and other prevalent chronic diseases among African women. Several studies have highlighted the enormous benefits of physical activity in women [22]. This study reported a significant relationship between exercise and the presence of overweight or obesity in women of childbearing age. Motivational factors, predictors and barriers need to be integrated into future interventions to successfully improve the physical activity behavior of African women.

CONCLUSION

This study provided clear evidence of the increase in overweight and obesity among urban women in the six communes of the Bamako district in Mali. The prevalence of overweight among women of reproductive age in the district

of Bamako was 30% and the prevalence of obesity was 27% at the time of the survey. These findings call for deliberate strategies and interventions by health authorities and health promotion experts, focusing on healthy eating, physical activity, weight reduction in the district of Bamako, particularly in urban areas of Mali.

ACKNOWLEDGMENT

We would like to thank all women of childbearing age in the district of Bamako who participated in this study

AUTHORS' CONTRIBUTIONS

All authors participated in the conceptualization and the design of this manuscript. In addition, they provided essential comments for the data analyzes and the manuscripts. The co-authors have read and approved the final version for submission.

COMPETING INTERESTS

The authors declare that they have no competing interest in the preparation of this document.

CONSENT FOR PUBLICATION

There are no individual details, videos, or images used in this study. Therefore, consent to post is not applicable. Data was collected in the in the district of Bamako. The datasets used for all analyzes in this study are available from the corresponding author.

FUNDING

The authors received no financial support for this study.

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