

Eating Habits And Over-Nutrition Of Women Of Childbearing Age In Commune III Of Bamako, Mali

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Abstract

Objectives: Overweight and obesity rank fourth among risk factors for death, after high blood pressure, dietary risks and tobacco. It is also the first non-contagious disease to be classified as a global epidemic. The objectives of this study were to describe the dietary habits of women of childbearing age in Commune III of Bamako, to determine the prevalence of their overnutrition and identify risk factors associated with their overnutrition.

Methods: This is a descriptive and analytical cross-sectional study that took in 2023 in the community health centers in Bamako's commune III. A total of 384 women of childbearing age were included.

Results: The average household size was 7.51 ± 4.636 . Pauciparous and primiparous women were the most numerous, with 30.6% and 30.1% respectively. 93% of our FAPs claimed to have 3 meals a day. 23.9% of women of childbearing age said they took part in physical exercise. A family history of obesity concerned 22.6% of women of childbearing age. A family history of diabetes concerned 19.2%. Over-nutrition concerned 40.4%; 1069 women were overweight and 50 obese. The food consumption score of 96.9% of our respondents was acceptable. The dietary diversity score of 73.8% of our respondents was acceptable. Statistically significant relationships were found between overnutrition, monthly ration level ($p = 0.014$) and wealth quintile (0.007).

Conclusion: Multidisciplinary interventions are needed to promote a balanced diet and healthy lifestyles to improve nutritional health.

Key words: Dietary practices, overnutrition, women of childbearing age, Mali.

1. INTRODUCTION

Overweight and obesity rank fourth among risk factors for death, after high blood pressure, dietary risks and smoking(1). Today, almost one person in 3 suffers from at least one form of malnutrition (2). According to the WHO, overweight and obesity are defined as an abnormal or excessive accumulation of body fat that can damage health (3). These two entities are grouped together under the term overnutrition (3). A central element in the diagnosis of obesity is the Body Mass Index or BMI, calculated by dividing weight (in kg) by height (in m) squared(4).

Over a billion people worldwide are obese - 650 million adults, 340 million adolescents and 39 million children. WHO estimates that by 2025, some 167 million people - adults and children - will be in poorer health because they are overweight or obese(5). One in five adults and one in ten children and adolescents are expected to become obese by December 2023 in ten

heavily affected African countries, according to a new WHO analysis (6). Based on 2018 data, the analysis estimates that prevalence among adults in the ten heavily affected African countries will rise from 13.6% to 31%, while among children and adolescents it will range from 5% to 16.5%(6,7). According to the final report of the SMART 2022 survey, in Mali, the prevalence of obesity among women of childbearing age is 20.4% overweight and 10.6% obese, compared with 31.0% nationally (8). In Bamako, the prevalence of overnutrition is 42.4%, with 23.9% overweight and 18.5% obese (8).

Recent literature indicates that the prevalence of obesity is increasing worldwide at an alarming rate at all ages(9). Obesity is a disease that affects the heart, liver, kidneys, joints and reproductive system. It leads to a range of non-communicable diseases, such as type 2 diabetes, cardiovascular disease, hypertension and stroke, various forms of cancer, as well as mental health problems (5).

An obese person is three times more likely to be diabetic than a non-obese person; over 80% of type 2 diabetes can be attributed to obesity(10).

Obesity has reached global epidemic proportions, causing the deaths of 2.8 million people every year(4,9). Research shows that few community studies have been conducted in Mali to show the relationship between dietary practices and obesity, hence the aim of this study to assess the relationship between dietary practices and overnutrition among women of childbearing age in Bamako's Commune III.

2. OBJECTIVE

The main objective of this study was to assess the relationship between dietary practices and overnutrition among women of childbearing age in Commune III of Bamako.

3. METHODOLOGY

This was a cross-sectional study carried out in the community health centers (CSCoM) of Bamako commune III from May to September 2023 on 384 women of childbearing age. The selection criteria concerned women of childbearing age (15-49 years) who had given their consent, not pregnant, had not given birth in the 3 months preceding the survey and were residents of Commune III. The sample will be drawn randomly from the 08 health centers in Bamako's commune III. The sample size was calculated using the Daniel Schwartz formula $n = z^2pq/i^2$ with a prevalence of 5%.

The dependent variable of the study was nutritional status defined by BMI, and the independent variables were sociodemographic, economic, dietary, lifestyle, family and psychosocial factors. Data were collected on a pre-established KoboCollect survey form after an interview given in French or in the local Bambara language to eligible participants.

4. COURSE OF THE STUDY

The study took place successively in the community health centers of Bamako's Commune III, which includes Asacobakon, Asacodes, Asacodrap, Asacokoul-Point G, Asacoob, Asacotom, Ascodar and Ascom, after getting authorization from the centers' technical directors.

A pre-survey phase was carried out, during which an administrative letter signed by the DERSP and validated by the CSRef of Commune III was deposited in each CSCoM to make contact and explain the purpose of the study. The study concerned all the women of childbearing age

present in the centers or who had come for consultation in the CSCoM.

Data were collected via 1 questionnaire installed on smartphones with the koboCollecte application, containing quantitative and qualitative questions. After explaining the objectives of the study to the participants and obtained their consent, they were invited to answer the questionnaire orally in the language of their choice.

No financial compensation was given to the participants, but advice on a healthy lifestyle, food hygiene, prevention of overweight and obesity, and ways of eliminating them will be provided.

We worked with two (2) investigators; the first was a medical student who will be carrying out a similar study as part of his final medical thesis, and the second was externally recruited and trained before the start of the survey.

Of the 384 patients to take part in the study, 15 minutes per participant would be expected, so 1 or 2 days per CSCoM are planned, depending on attendance, making a total of around 10 to 14 days of fieldwork.

5. DATA ANALYSIS

Data were exported to Excel and analyzed using SPSS version 25 software. The results were presented in the form of a table, graphs in Excel and Word.

Student's t test will be used to evaluate differences between means (standard deviation) of quantitative variables. Fischer's exact test, Pearson's Chi-square and Yates correction will be used as appropriate to detect variable correlations, with a significance level of $P \leq 0.05$.

6. ETHICAL CONSIDERATION

The protocol was submitted and validated by the national ethics committee. The study was carried out anonymously, taking into account the informed consent of the respondents before their inclusion in the study. Each respondent will be free to withdraw from the study whenever they wish.

7. RESULTS

7.1. Economic situation of households

The data shows that households had an average monthly ration level of 89,870.14 CFA francs, with considerable variation ranging from 15,000 to 1,000,000 CFA francs. The distribution of monthly ration levels indicates that most households (45.2%) are in the range of 50,000 to 100,000 CFA francs (Table 1). Using the wealth

index quintile, the data reveals that more than half of households (60.8%) are classified as living in poverty, while 20.5% are classified as wealthy (Table 2).

7.2. Habit/Lifestyle

93% of participants reported eating three meals a day (Table 3). The average number of meals per day was calculated to be 2.94 meals, with variation around this average (standard deviation of 0.257). The average number of participants snacking between meals was 84.9% (Table 3). The consumption of tea and coffee was 53.8% and 45.2% respectively (Table 3). Regular exercise was reported by only 23.9% of women (Table 3).

7.3. History and other contributing factors

Family history of obesity was reported in 22.6% of participants (Table 4). Family history of diabetes was reported by 19.2% of women (Table 4). 89.6% indicated that they were not going through a psychotraumatic state (Table 4).

7.4. Anthropometry

156 (40.4%) were identified as being overnourished compared to 55.3% normal (Table 5). The average BMI was 24.903 with a standard deviation of 4.51 (Table 5).

7.5. Food consumption

The food consumption score showed that 96.9% of respondents had acceptable food consumption and 3.1% were within the limit (Table 6). Likewise, the dietary diversity score revealed that 73.8% of respondents had acceptable dietary diversity, while 26.2% were within the limit (Table 7). The participants consumed an average of 6.59 food groups 5 (figure 1).

8. FACTORS LINKED TO OVERNUTRITION

Statistically significant relationships were revealed between overnutrition and the level of monthly ration ($p = 0.014$) and the wealth quintile (0.007) (table 8 and 9).

Table 1. Distribution of women according to their household's monthly ration level

Level of monthly ration in Fcfa	size	Percentage
0 - 30 000	46	11,9
30 001 - 50 000	82	21,3
50 001 - 100 000	174	45,2
100 001 - 200 000	74	19,2
> 200 000	9	2,3
Total	385	100,0

Table 2. Distribution of women by wealth quintile

Quintile wealth index	size	Percentage
Pauvre	234	60,8
Moyen	72	18,7
Riche	79	20,5
Total	385	100,0

Table 3. Distribution of women according to lifestyle habits

Habits/lifestyle		Size (n = 385)	Percentage
Number of meals per day	2	26	6,8
	3	358	93,0
	4	1	0,3
Snacking between meals	Yes	327	84,9
	Tea	207	53,8
	Coffee	174	45,2
	sedentarity	98	25,5
	Cola	5	1,3
	Lipton	4	1,0
	Other*	4	1,0
	None	24	6,2
Physical exercises	Yes	92	23,9
Daily sleep time in hours	< 6	18	4,7
	6 - 10	347	90,1
	> 10	20	5,2

Table 4. Distribution of women according to factors contributing to overnutrition

factors contributing to overnutrition		Size (n = 385)	Percentage
Family history of obesity Family history of diabetes Current life events Moving	Yes	87	22,6
	Yes	74	19,2
	Moving	9	2,3
	Family or work conflict	3	0,8
	Break-up	2	0,5
	Other*	5	1,3
	None	366	95,1
Taking	estrogen-progestin drugs	8	2,1
	Analgesics	3	0,8
	Neuroleptics	2	0,5
	Anti-malarials	2	0,5
	Other**	6	1,6
	None	366	95,1
Current psychotraumatic state	Stress	37	9,6
	Depression	3	0,8
	Anxiety	2	0,5
	None	345	89,6
Intercurrent pathologies	Ulcer	3	0,8
	Other***	9	2,3
	None	374	97,1

Table 5. Distribution of women by body mass index.

BMI in Kg/m ²	Size	Percentage
Severe acute malnutrition (SAM)	1	0,3
Moderate malnutrition	15	3,9
Normal	213	55,3
Overweight	106	27,5
Obesity	39	10,1
Severe obesity	9	2,3
Morbid obesity	2	0,5
Total	385	100,0

Table 6. Distribution of women by food consumption score

Food consumption score	Size	Percentage
FCS Limite	12	3,1
FCS Acceptable	373	96,9
Total	385	100,0

Table 7. Distribution of women by dietary diversity score

Dietary Diversity Score	Effectif	Pourcentage
DDS limite	101	26,2
DDS acceptable	284	73,8
Total	385	100,0

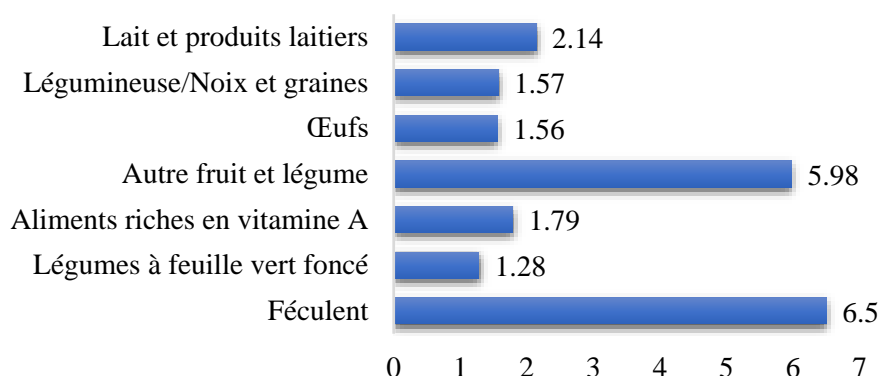


Figure 1. Average number of days of consumption of various food products

9. ANALYTIC STUDY

Table 8. Distribution of women according to overnutrition and monthly ration level

Level of monthly ration in Fcfa	Overnutrition		Total (%)	OR [CI]
	Yes (%)	No (%)		
0 - 30 000	21 (45,7)	25 (54,3)	46 (11,9)	1,27 [0,68- 2,36]
30 001 - 50 000	30 (36,6)	52 (63,4)	82 (21,3)	0,81 [0,49 – 1,34]
50 001 - 100 000	59 (33,9)	115 (66,1)	174 (45,2)	0,60 [0,40 – 0,91]
100 001 - 200 000	40 (54,1)	34 (45,9)	74 (19,2)	1,98 [1,19 – 3,30]
> 200 000	6 (66,7)	3 (33,3)	9 (2,3)	3,01 [0,74 – 12,23]
Total	156 (40,5)	229 (59,5)	385 (100,0)	

Fisher's exact test = 12.210; dof= 4; $p = 0.014$

Overnutrition was found to be correlated with the level of monthly ration ($p = 0.014$).

Table 9. Distribution of women according to overnutrition and wealth quintile

Quintile wealth index	Overnutrition		Total (%)	OR [CI]
	Oui (%)	Non (%)		
Poor	88 (37,6)	146 (62,4)	234 (60,8)	0,74 [0,49 – 1,12]
Medium	24 (33,3)	48 (66,7)	72 (18,7)	0,69 [0,40 – 1,17]
Rich	44 (55,7)	35 (44,3)	79 (20,5)	1,15 [0,71 – 1,87]
Total	156 (40,5)	229 (59,5)	385 (100,0)	

Fisher's exact test = 9.916; dof = 2; $p = 0.007$

Overnutrition was found to be correlated with wealth quintile ($p = 0.007$).

10. DISCUSSION

10.1. Household economic situation

Assessing the economic situation of households plays a crucial role in understanding the determinants of nutrition and health among women of childbearing age in Bamako's Commune III. The data show that households had an average monthly ration level of 89,870.14 Fcfa, with considerable variation ranging from 15,000 to 1,000,000 Fcfa. This diversity in income levels reflect the heterogeneous economic reality of households within the study population.

The distribution of monthly ration levels indicates that most households (45.2%) are in the 50,000 to 100,000 Fcfa range. This category reflects a relatively median economic situation among the households surveyed, but it is important to note that half of the households fall outside this median.

Using the wealth index quintile, the data reveals that over half of households (60.8%) are classified as living in poverty, while 20.5% are classified in the wealth category. This confirms the economic challenges faced by many households in Bamako's Commune III, and their vulnerability to nutrition-related health problems.

10.2. Habits/Lifestyle

Data on the habits and lifestyles of women of childbearing age in Bamako's Commune III enable us to explore behavioral factors that could influence their nutritional status and overall health. One important finding is that almost 100% of women (93%) reported eating three meals a day. This observation is encouraging, as it reflects compliance with general meal frequency recommendations for maintaining an adequate nutritional balance.

The average number of meals per day was calculated at 2.94 meals, with little variation around this mean (standard deviation 0.257). These results indicate a general consistency in eating habits in terms of meal frequency.

The practice of snacking between meals was reported by 84.9% of women. This could have implications for overall diet quality, depending on the type of snacks consumed. Nutritious snacks can help maintain a stable energy intake throughout the day.

Tea and coffee consumption emerged as frequent lifestyle habits, with 53.8% and 45.2% of women respectively. These beverages can have varied effects on health and metabolism, and it would be useful to determine the frequency and quantity of consumption for a more accurate assessment of their impact. Engagement in regular physical exercise was reported by only 23.9% of women.

The low engagement of our participants in regular exercise is of concern, as exercise plays a crucial role in weight management and overall health.

11. FAMILY HISTORY AND OTHER FACTORS

Information on family history and favoring factors provides important insights into the possible determinants of overnutrition among women of childbearing age in Commune III of Bamako.

Family history of obesity was reported in 22.6% of women participating in the study. Family history plays a role in predisposition to certain health conditions, including overnutrition.

A family history of diabetes was reported by 19.2% of the women. This family history of diabetes may increase women's susceptibility to developing this metabolic condition, particularly when combined with behavioral factors.

The majority of women (89.6%) reported not experiencing a psychotraumatic state. However, it should be noted that psychotraumatic events can have a significant impact on eating behaviours and weight gain. Mental health and nutrition are closely linked.

12. ANTHROPOMETRY

Of the women studied, 156 (40.4%) were identified as being over-nourished, compared with 55.3% who were normal. This high prevalence of over-nutrition, combining overweight and obesity, underlines the importance of nutrition issues in this specific population.

The average body mass index (BMI), which measures the relationship between weight and height, was calculated at 24.903 with a standard deviation of 4.51. This average suggests that the study population falls broadly into the "overweight" weight category. However, it is important to note that BMI is a global measure and does not take into account body fat distribution or ethnic variations, meaning that a more in-depth assessment of body composition may be required. The results concerning overnutrition and average BMI are in line with trends observed in other nutrition studies in West Africa and Mali, such as the 2022 SMART Mali report, which gave the prevalence of overnutrition as 31.0% at national level, as well as in the regions of Taoudenit (81.0%), Kidal (59.8%), Timbuktu (47.1%) and Bamako (42.4%) (8).

Overnutrition at this age can have lasting consequences on maternal health, the health of

newborns and the general well-being of the population.

13. FOOD CONSUMPTION

The dietary habits of our women of childbearing age were studied to assess the diversity and frequency of food consumption. The foods most widely consumed by respondents were starchy foods (cereals, roots, tubers) (100%), fruit/vegetables (100%) and meat/fish (99.7%).

Of the women who said they consumed cereals, almost all (99%) mentioned rice and/or bread/meal. Other cereal sources such as flour, millet and maize were also mentioned by a significant percentage of respondents.

As for vegetables, the majority of women mentioned tomatoes and onions, cited by 99.7% and 99.5% respectively. This indicates a high prevalence of vegetable consumption, which is an important source of vitamins and minerals.

Starchy foods were the most frequently consumed foods, with an average of 6.50 days per week, followed by fruit and vegetables with an average of 5.98 days per week. These figures reflect a certain consistency in eating habits.

Dietary quality was assessed using food consumption and dietary diversity scores. The food consumption score showed that 96.9% of respondents had an acceptable food intake, and 3.1% were within the limit.

Similarly, the dietary diversity score revealed that 73.8% of respondents had acceptable dietary diversity, while 26.2% were in the borderline range. Our women consumed an average of 6.59 food groups. Our results are superior to those of Sow D (11) in 2020, who reported an acceptable dietary diversity score and a dietary diversity score of 70.8% each, with 50.9% of women consuming more than five food groups.

14. FACTORS LINKED TO OVERNUTRITION

The results of our series showed significant correlations between overnutrition and certain specific factors: monthly ration level and wealth quintile.

With regard to monthly ration level, the results show a significant correlation ($p = 0.014$) with overnutrition. Women with a monthly ration of over 200,000 CFA francs were 3.01 times more likely to be over-nourished (OR [CI] = 3.01 [0.74 - 12.23]). Similarly, those whose monthly ration was between 100,001 and 200,000 Fcfa were 1.98 times more likely to be over-nourished, with a CI of 1.19 to 3.30. These results suggest that

women with higher monthly rations are more likely to be affected by overnutrition.

Wealth quintile also showed a significant correlation with overnutrition ($p = 0.007$). Women belonging to the "rich" wealth quintile were 1.15 times more likely to be overnourished, with a CI of 0.71 to 1.87. This indicates that overnutrition was slightly more prevalent among women in the top wealth quintile.

All this may be explained by greater access to food, including energy-dense food, in households with higher economic resources.

These correlations are consistent with trends observed in other studies highlighting the link between socio-economic status and nutrition.

15. CONCLUSION

At the end of this study of women of childbearing age in Commune III of Bamako, we can say that the high prevalence of overnutrition underlines the urgency of tackling nutritional problems in the region. Multidisciplinary interventions are needed to promote a balanced diet and healthy lifestyles, taking into account social, economic and behavioral factors.

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