

Factors Associated with Diet Quality in Women of Childbearing Age in Southern Benin in 2022

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Abstract

Background: The nutritional status of women while in pregnancy influences foetus growth, infant development, and the mother's health. The objective of this study was to assess diet quality and associated factors among women of childbearing age in the Comè community, Benin. **Methods:** The cross-sectional and analytical study involved 215 participants randomly selected by multi-stage sampling technique. Two non-consecutive dietary recall data were collected as well as sociodemographic information. The International Food Quality Index (IQD-I) was used to assess diet quality. Factors associated with the nutritional quality of the diet were identified by using linear regression. **Results:** Among 212 women, a diet quality of 175 (82.55%) was fair while 14.62% had good diet quality. Factors associated with the diet quality were the level of household possession, health issues, and nutritional advice at the health care facilities. **Conclusion:** Nutritional education interventions and income-generating activities may improve the diet quality among women of childbearing age in the Comè in Benin.

Keywords

Diet Quality, Women, Associated Factors, Benin

1. Introduction

The nutritional status of women, when they get pregnant and during pregnancy, influences the health of the foetus, the infant and the mother [1]. Studies have shown that being overweight before pregnancy is considered as a risk factor. During pregnancy, several complications can result such as impaired glucose tolerance, vasculorenal and infectious complications [2]. Childhood obesity is also more prevalent among children born to obese mothers [3]. Chronic energy defi-

cit and micronutrient deficiencies such as calcium, iron, vitamin A and iodine can lead to congenital mal-formation low weight births, mental retardation among children, stunted child growth and increase risk of chronic diseases related to nutrition in adulthood [4].

The nutrition transition underway in developing countries is linked to rapid urbanization and socio-economic development which lead to a Westernization of lifestyle [5]. They are accompanied by an evolution of the diet towards a high energy density content as well as a reduction in physical activity. As a result, many people have a positive energy balance with higher calorie consumption than those with micronutrient deficiencies [6].

In several African countries, overweight (obesity and excess weight) has reached epidemic proportions among adults [7] [8] [9]. The objective of this study was to assess the diet quality and associated factors among women of childbearing age in Comè municipality, located in Benin's southern settings.

2. Methods

2.1. Settings

This study was conducted in Comè municipality located in Benin's southern settings in 2022. Comè municipality is composed of 38 neighborhoods and villages. Fishing and agriculture are the main income-generated activities in the Community. These sole two sectors account for 80% of the population. People's diet in this community is mainly based on the consumption of cereals (especially maize) and tubers (especially cassava). The diet is insignificantly diversified, with insufficient consumption of fruits and vegetables. The vegetables consumed are tomato, onion, okra, pepper and leafy vegetables. This diet is also enriched with palm oil, coconut and peanuts. Farming is very little developed in the community; people consume little beef, mutton, goat meat, pork and poultry. Fruit consumption is also limited. Fish products are present in the diet: fish, smoked or dried shrimp and crabs. Other proteins such as aulacode, rabbit and partridge are also consumed [10] [11].

2.2. Study Design and Population

This study was cross-sectional and analytical study. The targeted population of the study consisted of women of childbearing age (15 to 49 years) living in the Comè municipality.

2.3. Selection of Participants

All women of childbearing age were eligible to participate in this study. Women excluded from the study were pregnant or breastfeeding women and women who did not participate in the second 24-hour food recall.

2.4. Sampling

Sample size

The sample size was calculated by the SCHWARTZ formula ($n = Z\alpha^2 pq/i^2$)

with:

- $p = 54\%$ of households in the municipality of Comè had poor or limited food consumption in 2017 [12].
- $q = 1 - p = 0.46$.
- The error risk α we assumed was 5% for a 95% confidence interval hence $Z\alpha = 1.96$.
- $i = 0.07$ was the desired accuracy for the results (7%).

To cover cases of non-response a margin of 10% was added which makes a final size for the sample of 215 women.

Sampling methods and techniques

The two-stage random sampling technique was used to select women of childbearing age.

The first stage concerned the choice of neighborhoods and villages. Half of the villages and neighborhoods (19) were selected by simple random sampling without remission.

The second stage refers to the choice of women. In each village or neighborhood, women were chosen from the selected households. In this perspective, a pen was thrown up into the air, standing at the centre of the village. The tip of the pen indicated the way to go. All households in the direction of the pen were numbered and then one was randomly selected (simple random draw). It was in that household that the selection of participants began. Once, the first selected household for investigation was determined, the investigation was carried out from one household to the nearest till the number of women of childbearing age by village or district was reached. One woman of childbearing age was investigated in each selected household.

If there are several households in a compound, a simple random draw was made to identify the household in which the data collection will be performed. The number of women to be chosen in each targeted village or city area was proportional to the population of women of childbearing age living in the concerned village or city area according to the population of women of childbearing age. In each selected household, only one woman of childbearing will be surveyed by the household. If there are several eligible women in a compound, a simple random draw was made to determine the one to investigate.

2.5. Study Variables

The dependent variable was the nutritional quality of the diet of women of childbearing age (15 - 49 years). This is a quantitative variable measured by the Diet Quality Index-International (DQI-I) [13]. Nutrient intakes were estimated from data from two 24-hour recalls. The West African Food Composition Table and the Alimetheque[®] database were used to determine nutrient amounts. The DQI-I indexes were calculated for each woman of childbearing age based on the recommendations of the DQI-I. The sum of the points at the level of each woman constituted her DQI-I score. A categorization of the DQI-I was made by

adapting the categorization of Kim *et al.* to our context [13]. With scores under 50, the quality was judged low. Between 50 to 70, the quality was judged to be medium and more than 70 corresponded to good quality.

Independent variables were:

- socio-economic and demographic factors: age, ethnicity, marital status, education level, occupation of the woman, household size, place of residence, level of household possessions, and occupation of the spouse.
- dietary factors: food security, number of meals per day, dietary prohibitions, nutrient intakes of food and knowledge of the woman's diet.
- health factors: illness, medication, nutritional advice in healthcare facilities

2.6. Data Collection

Data were collected in interviews using questionnaires. Dietary data were collected using a 24-hour food recall questionnaire by trained teams of dietitians. The investigator conducted one-day training to orientate the interviewers on data collection and to standardize the whole process. Questionnaires were pre-tested in Ouidah municipality checking the answerability and the appropriateness of questions. The duration of the interview was quantified to not make uncomfortable participants. The result of the pre-test informed the investigator of the required adjustments in the questionnaire. The interviews were conducted in the local language and in French by interviewers.

Members A questionnaire was used to collect data socio-economic and demographic, health and dietary 24-hour food recall.

2.7. Data Analysis

Multiple Source Methods software was used to correct intra- and inter-individual variations in nutrient intakes. Data analysis was done by using STATA software

The normally distributed quantitative variables were presented with their average and standard deviation. Qualitative variables were presented as proportions.

Bivariate analyses between the dependent variable «nutritional quality of the diet of women of childbearing age and each of the variables independent by simple linear regression were performed to look for the association between these independent and dependent variables. Variables that were associated with the dependent variable by the linear regression coefficient Beta with p-value < 0.20 were introduced in the multiple linear regression model. In the multivariate analysis, the variables for which the linear regression coefficient Beta p-value < 0.05 were retained in the final model.

2.7. Ethics Consideration

The objectives of the study were explained to participants. Free and informed oral consent was obtained before starting the interview. This consent claims that participants were not at risk by refusing to participate in the survey or stopping

their collaboration during the study. The confidentiality and anonymity of the information collected were respected. After the interview, nutritional advice was provided to participants.

3. Results

A total of 215 women of childbearing age were surveyed, three of them were excluded from the sample for non-completeness of the two 24-hour food recalls.

3.1. Socio-Demographic Characteristics of Respondents

Table 1 describes the socio-demographic characteristics of the respondents.

Women of childbearing age aged 40 to 49 were the most represented in the sample (29.25%). Within the sample, there were more urban residents (52.36%), married women (68.87%), retailers (25.94%), non-literate (45.28%), and poor (34.43%). The women's spouses were often craftsmen (24.66%).

3.2. Nutritional Quality of Women's Diet

The mean DQI-I score was 64.17 ± 0.41 . Among 212 women, 175(82.55%) had fair nutritional quality of their diet and 14.62% showed a good nutritional quality of their diet (**Table 2** and **Table 3**).

Table 1. Socio-economic and demographic characteristics of women of childbearing age, Comé, Benin, (n = 212).

| | n | % | 95% IC |
|---------------------------|-----|-------|-----------------|
| Age (year) | 212 | | |
| [15 - 19] | 40 | 18.87 | [13.83 - 24.79] |
| [20 - 29] | 53 | 25.00 | [19.32 - 31.39] |
| [30 - 39] | 57 | 26.89 | [21.04 - 33.39] |
| [40 - 49] | 62 | 29.25 | [23.22 - 35.87] |
| Place of residence | 212 | | |
| Rural | 101 | 47.64 | [40.76 - 54.59] |
| Urban | 111 | 52.36 | [45.41 - 59.24] |
| Marital status | 212 | | |
| Married | 146 | 68.87 | [62.17 - 75.03] |
| Single | 59 | 27.83 | [21.91 - 34.38] |
| Divorced | 5 | 2.36 | [00.77 - 05.42] |
| Widowed | 2 | 0.94 | [00.11 - 03.37] |
| Profession | 212 | | |
| Farmer | 10 | 4.72 | [02.28 - 08.50] |
| Shopkeeper | 33 | 15.57 | [10.96 - 21.16] |
| Public worker | 4 | 1.89 | [00.52 - 04.76] |

Continued

| | | | |
|--------------------------------------|-----|-------|-----------------|
| Retailer | 55 | 25.94 | [20.18 - 32.39] |
| Fisherwomen | 2 | 0.94 | [00.11 - 03.37] |
| Housewife | 40 | 18.87 | [13.83 - 24.79] |
| Craftswomen | 23 | 10.85 | [07.00 - 15.83] |
| Pupil/Student | 42 | 19.81 | [14.67 - 25.82] |
| Other | 3 | 1.42 | [00.29 - 04.08] |
| Level of education | 212 | | |
| Non - literate | 96 | 45.28 | [38.45 - 52.25] |
| Literate | 2 | 0.94 | [00.11 - 03.37] |
| Primary school | 51 | 24.06 | [18.47 - 30.39] |
| High school | 59 | 27.83 | [21.91 - 34.38] |
| University | 4 | 1.89 | [00.52 - 04.76] |
| Spouse's profession (n = 146) | 146 | | |
| Public servants | 23 | 15.75 | [10.26 - 22.69] |
| Craftsman | 36 | 24.66 | [17.91 - 32.47] |
| Shopkeeper | 17 | 11.64 | [06.93 - 17.99] |
| Farmer | 21 | 14.38 | [09.13 - 21.14] |
| Fisherman | 28 | 19.18 | [13.14 - 26.51] |
| Taxi - moto driver | 21 | 14.38 | [09.13 - 21.14] |
| Household possession | 212 | | |
| Poor | 73 | 34.43 | [28.06 - 41.25] |
| Fair | 72 | 33.96 | [27.62 - 40.76] |
| High | 67 | 31.60 | [25.41 - 38.32] |

As shown in **Table 2**, more than two out of five women of childbearing age were missing two food groups every day. The variety of protein sources was also low as almost seven in ten women had only one source per day. The adequacy of the recommendations on vegetables was 100% for 54.25% of them. The fruits consumed daily often came from a single source (68.87%). For cereals (69.34%), fibers (79.72%) and proteins (88.21%), the recommendations were often respected adequately.

Table 2 (followed) shows that the recommendations on iron and calcium are less adequate than for other products. The lipid intake is less than 20% in 71.70% of women of childbearing age while 98.59% of them had a daily intake of 300mg cholesterol. The addition of sugar to food representing 3 to 10% of energy intake per day was noted in 79.72% of women.

Overall, it was noted (**Table 3**) in our sample that more than eight out of ten women of childbearing age had an average Diet Quality Index [50 - 70]. Except

Table 2. Distribution of women of childbearing age by components of the Diet Quality Index-International, Comé, Benin (n = 212).

| Components | Criteria | n | % | 95% IC |
|---|---------------------------------|-----|-------|-----------------|
| Diversity | | | | |
| Variety between food groups (Meat/poultry/fish/eggs; dairy products/legumes; cereals; fruit, vegetables) | ≥1 portion of each food group/d | 14 | 7.41 | [04.11 - 12.12] |
| | Absence of any 1 food group/d | 39 | 20.63 | [15.10 - 27.11] |
| | Absence of any 2 food group/d | 83 | 43.92 | [36.72 - 51.30] |
| | Absence of any 3 food group/d | 53 | 28.04 | [21.76 - 35.02] |
| | Absence of ≥4 food groups/d | 0 | 0 | |
| | No food group | 0 | 0 | |
| Variety of protein sources (meat, poultry, fish, dairy products, legums, eggs) | ≥3 different sources/d | 32 | 15.09 | [10.56 - 20.64] |
| | 2 different sources/d | 19 | 8.96 | [05.48 - 13.64] |
| | 1 source/d | 146 | 68.87 | [62.17 - 75.03] |
| | No | 15 | 7.08 | [04.01 - 11.40] |
| Adequation | | | | |
| Vegetables | >100% of recommendations | 115 | 54.25 | [47.28 - 61.09] |
| | 50% - 100% of recommendations | 40 | 18.87 | [13.83 - 24.79] |
| | <50% of recommendations | 48 | 22.64 | [17.19 - 28.87] |
| | 0% of recommendations | 9 | 4.25 | [01.96 - 07.91] |
| Fruits | >100% of recommendations | 24 | 11.32 | [07.39 - 16.37] |
| | 50% - 100% of recommendations | 0 | 0 | |
| | ≥3 different sources/d | 32 | 15.09 | [10.56 - 20.64] |
| | 2 different sources/d | 19 | 8.96 | [05.48 - 13.64] |
| | 1 source/d | 146 | 68.87 | [62.17 - 75.03] |
| | No source | 15 | 7.08 | [04.01 - 11.40] |
| | <50% of recommendations | 19 | 8.96 | [05.48 - 13.64] |
| | 0% of recommendations | 169 | 79.72 | [73.67 - 84.91] |
| Cereals | >100% of recommendations | 147 | 69.34 | [62.66 - 75.47] |
| | 50% - 100% of recommendations | 65 | 30.66 | [24.53 - 37.34] |
| | <50% of recommendations | 0 | 0 | |
| | 0% of recommendations | 0 | 0 | |
| Fibers | >100% of recommendations | 169 | 79.72 | [73.67 - 84.91] |
| | 50% - 100% of recommendations | 43 | 20.28 | [15.09 - 26.33] |
| | < 50% of recommendations | 0 | 0 | |
| | 0% of recommendations | 0 | 0 | |
| Proteins | >100% of recommendations | 187 | 88.21 | [83.09 - 92.22] |
| | 50% - 100% of recommendations | 24 | 11.32 | [07.39 - 16.37] |
| | <50% of recommendations | 1 | 0.47 | [00.01 - 02.60] |

Continued

| | | | | |
|---|--------------------------------|-----|-------|-----------------|
| | 0% of recommendations | 0 | 0 | |
| Iron | >100% of recommendations | 3 | 1.42 | [00.29 - 04.08] |
| | 50% - 100% of recommendations | 62 | 29.25 | [23.22 - 35.87] |
| | <50% of recommendations | 147 | 69.34 | [62.66 - 75.47] |
| | 0% of recommendations | 0 | 0 | |
| Calcium | >100% of recommendations | 51 | 24.06 | [18.47 - 30.39] |
| | 50% - 100% of recommendations | 133 | 62.74 | [55.85 - 69.26] |
| | <50% of recommendations | 28 | 13.21 | [08.96 - 18.52] |
| | 0% of recommendations | 0 | 0 | |
| Vitamin C | >100% of recommendations | 210 | 99.06 | [96.63 - 99.89] |
| | 50% - 100% of recommendations | 2 | 0.94 | [00.11 - 03.37] |
| | <50% of recommendations | 0 | 0 | |
| Moderation | | 212 | | |
| Lipids | ≤20% of total energy/d | 152 | 71.70 | [65.12 - 77.66] |
| | >20% et ≤30% of total energy/d | 55 | 25.94 | [20.18 - 32.39] |
| | >30% of total energy/d | 5 | 2.36 | [00.77 - 05.42] |
| Saturated fatty acids | ≤ 7% of total energy/d | 145 | 68.40 | [61.68 - 74.59] |
| | >7 et ≤10% of total energy/d | 47 | 22.17 | [16.77 - 28.37] |
| | >10% of total energy/d | 20 | 9.43 | [05.86 - 14.19] |
| Cholesterol | ≤ 300 mg/d | 209 | 98.59 | [95.92 - 99.71] |
| | >300 et ≤400 mg/d | 1 | 0.47 | [00.01 - 02.60] |
| | >400 mg/d | 2 | 0.94 | [00.11 - 03.37] |
| Sugar added food | ≤3% of total energy/d | 26 | 12.26 | [08.17 - 17.45] |
| | >3% - 10% of total energy/d | 169 | 79.72 | [73.67 - 84.91] |
| | >10% of total energy/d | 17 | 8.02 | [04.74 - 12.53] |
| Sodium | ≤2400 mg/d | 196 | 92.45 | [88.03 - 95.62] |
| | >2400 - 3400 mg/d | 16 | 7.55 | [04.38 - 11.97] |
| General balance | | 212 | | |
| Macronutrient ratio (CHO: Proteins: Lipids) | 55 - 65:10 - 15:15 - 25 | 13 | 6.13 | [02.96 - 09.68] |
| | 52 - 68:9 - 16:13 - 27 | 28 | 13.21 | [08.96 - 18.52] |
| | 50 - 70:8 - 17:12 - 30 | 35 | 16.51 | [11.78 - 22.21] |
| | None of above | 136 | 64.15 | [57.30 - 70.60] |
| Fatty acid ratio | P/S = 1 - 1.5; M/S = 1 - 1.5 | 145 | 68.40 | [61.68 - 74.59] |
| | P/S = 0.8 - 1.7; M/S = 0.8-1.7 | 47 | 22.17 | [16.77 - 28.37] |
| | None of above | 20 | 9.43 | [05.86 - 14.19] |

P/S: Poly-unsaturated/saturated; M/S: mono-unsaturated/saturated.

Table 3. Distribution of women of childbearing age according to diet quality measured by the Diet Quality Index-International, Comé, Benin, (n = 212).

| DQI-I score | n | % | 95% IC |
|--------------------------|-----|--------------|-----------------|
| [0 - 50]: poor quality | 6 | 2.83 | [01.05 - 06.06] |
|]50 - 70]: fair quality | 175 | 82.55 | [76.76 - 87.40] |
|]70 - 100]: good quality | 31 | 14.62 | [10.16 - 20.11] |

the thirty-one women who had good quality, the food quality must be improved in this community.

3.3. Factors Associated with Diet Quality

Bivariate analysis

Socio-demographic characteristics and nutritional diet quality

Place of residence, education level, spouse occupation and household possessions were associated with the quality of diet of women of childbearing age (Table 4). No significant link has been established with the age, the marital status and the profession of women of childbearing age.

Food security and health characteristics and diet quality

Level of food security, number of meals consumed daily, health status of women and exposure of women to nutritional advice were positively associated with the quality of the diet of women of childbearing age (Table 5).

Multivariate analysis

In the final multiple linear regression model, the level of property possession in the household, the health status of the women and the exposure to nutritional advice in the healthcare facilities were positively associated with the nutritional quality of the diet (Table 6).

4. Discussion

This study examined the nutritional quality of the diet of women of childbearing age in the Comé municipality in Benin and found that only 14.62% of them had good quality diet which is influenced by socio-economic and health factors.

4.1. Nutritional Quality of the Diet of Women of Childbearing Age

The results of this study showed that the average diet quality score measured by DQI-I was greater than 50. However, it was below the average score reported in Ouidah by Ntandou *et al.* in 2009 (67.6 out of 100) [14]. This difference could be explained by the fact that the sample from Ntandou *et al.* included both men and women aged 25 to 60 years. But the average total DQI-I score in our study (64.17 out of 100) is higher than that reported by Kim *et al.* in China (60.5 out of 100) and in the United States (59.1 out of 100) [15]. This difference could be explained by the fact that Kim *et al.* included in their sample pregnant and lactating women aged 20 years and more. The distribution in class of the DQI-I showed in our study that 82.55% of women of childbearing age in the Comé municipality had a

Table 4. Association between women's socioeconomic and demographic characteristics and the International Food Quality Index Comè, Benin, bivariate analysis, linear regression.

| | β | 95% IC | p-value |
|--------------------------------------|---------|-------------------|---------|
| Age (n = 212) | | | |
| [15 - 19] | - | - | - |
| [20 - 29] | 1.09 | [-1.39 - 3.57] | 0.38 |
| [30 - 39] | -1.55 | [-3.99 - 0.89] | 0.21 |
| [40 - 49] | -0.77 | [-3.17 - 1.62] | 0.52 |
| Place of residence (n = 212) | | | |
| Rural | - | - | - |
| Urban | 4.55 | [3.03 - 6.08] | <0.01 |
| Marital status (n = 212) | | | |
| Married | - | - | - |
| Single | 1.51 | [-00.32 - 3.35] | 0.10 |
| Divorced | -1.62 | [-07.03 - 3.79] | 0.55 |
| Widowed | -2.82 | [-11.29 - 5.65] | 0.51 |
| Profession (n = 212) | | | |
| Farmer | - | - | - |
| Shopkeeper | -0.56 | [-04.81 - 03.73] | 0.79 |
| Public worker | 6.15 | [-00.89 - 13.19] | 0.08 |
| Retailer | 0.63 | [-03.46 - 04.73] | 0.76 |
| Fisherwomen | -2.60 | [-11.83 - 06.63] | 0.57 |
| Housewife | 0.55 | [-03.66 - 04.76] | 0.79 |
| Craftswomen | 1.79 | [-02.72 - 06.30] | 0.43 |
| Pupil/Student | 5.73 | [-02.11 - 13.57] | 0.15 |
| Other | 0.16 | [-04.03 - 04.35] | 0.93 |
| Level of education (n = 212) | | | |
| Non-literate | - | - | - |
| Literate | 1.68 | [-06.66 - 10.04] | 0.69 |
| Primary school | 3.50 | [01.47 - 05.52] | <0.01 |
| High school | 1.54 | [-01.39 - 03.47] | 0.11 |
| University | 4.18 | [-01.77 - 10.15] | 0.16 |
| Spouse's profession (n = 146) | | | |
| Public worker | - | - | - |
| Craftsman | -4.51 | [-07.64 - -01.38] | <0.01 |
| Shopkeeper | -4.79 | [-08.54 - -01.04] | 0.01 |

Continued

| | | | |
|---------------------------------------|-------|-------------------|-------|
| Farmer | -4.02 | [-07.56 - -00.48] | 0.02 |
| Fisherman | -1.02 | [-04.56 - 02.51] | 0.56 |
| Taxi-moto driver | -2.70 | [-06.00 - 00.59] | 0.10 |
| Household possession (n = 212) | | | |
| Poor | - | - | - |
| Fair | 1.73 | [-00.15 - 03.62] | 0.07 |
| High | 4.63 | [02.71 - 06.56] | <0.01 |

Table 5. Association between dietary and health characteristics of women of childbearing age and the International Food Quality Index Comè, Benin, bivariate analysis, linear regression.

| | β | 95% IC | p-value |
|---|---------|------------------|---------|
| Dietary characteristics | | | |
| Food security | | | |
| Food insecurity | - | - | - |
| A risk of food insecurity | 1.76 | [-01.61 - 05.13] | 0.30 |
| Food security | 4.40 | [01.65 - 07.16] | <0.01 |
| Basic knowledge in nutrition | | | |
| poor | - | - | - |
| fair | 0.36 | [-01.63 - 02.36] | 0.72 |
| good | 2.70 | [-03.35 - 08.75] | 0.38 |
| Existence of food bans | | | |
| Yes | - | - | - |
| No | 0.01 | [-01.64 - 01.67] | 0.98 |
| Number of meals per day | | | |
| <3 | - | - | - |
| ≥3 | 3.98 | [59.24 - 62.75] | <0.01 |
| Health characteristics | | | |
| Illness with loss of appetite | | | |
| Yes | - | - | - |
| No | 2.79 | [00.95 - 04.64] | <0.01 |
| Consumption of drugs that causes loss of appetite | | | |
| Yes | - | - | - |
| No | -2.21 | [-07.16 - 02.72] | 0.37 |
| Consumption of drugs that increases appetite | | | |
| Yes | - | - | - |

Continued

| | | | |
|--|-------|------------------|--------|
| No | -3.07 | [-06.75 - 00.60] | 0.10 |
| Nutritional advice in health care facilities | | | |
| Yes | - | - | - |
| No | 5.50 | [03.40 - 07.60] | <0.001 |

Table 6. Association between the socioeconomic, demographic, dietary and health characteristics of women of childbearing age with diet quality, multivariate analysis, in Comè, Benin (n = 212)

| | β | 95% IC | P-value |
|---|---------|------------------|---------|
| Household possessions | | | |
| Poor [0 - 5] | - | - | - |
| Fair]5 - 9] | 1.78 | [-00.61 - 03.63] | 0.05 |
| High]9 - 23] | 3.87 | [01.92 - 05.82] | <0.001 |
| Illness with loss of appetite | | | |
| Yes | - | - | - |
| No | 2.77 | [01.00 - 04.54] | <0.01 |
| Nutritional advice in health care facilities | | | |
| Yes | - | - | - |
| No | 1.39 | [00.20 - 02.57] | 0.02 |

fair nutritional quality of their diet as compared to 14.62% who showed a good diet quality.

These results confirm the difference between our results and those of Kim *et al.* who found that in the United States 51.13% of women had a fair diet quality compared to 23.92% who had a good diet quality. In China, 89.45% of women had a fair diet quality compared to 06.08% who had a good diet quality. This difference could also be explained by the fact that availability and affordability of food and nutritional knowledge vary from one country to the other. The same applies to the food guide, which is specific to each country.

4.2. Factors Associated with the Diet Quality

The level of household possession was positively associated with the DQI-I adjusted to the health status of women and nutritional advice received at the healthcare facilities. Household possession is a proxy of a household's socio-economic status. Concerning women, the composition of micronutrients in the diet becomes more favorable with an increase in their income. Thus socio-economic status influences the nutritional quality of the diet. These results are similar to those of Huot *et al.* who, in a study carried out on the Quebec population, found that women with a family income of more than \$60,000 Canadian had a better quality of nutrition than those with a family income of

less than \$20,000 Canadian [15]. These results are also similar to those of Irz *et al.* who reported that adults with good financial resources had a better food quality score ($\beta = 0.01$; $p < 0.05$) [8]. Besides, several epidemiological studies including those of Darmon and Drewnowski in 2008 found that the nutritional quality of the diet of individuals was quite better so far as their socio-economic position is high [16].

The health status of women was positively associated with the DQI-I scores adjusted to the level of owned property and nutritional advice received in healthcare facilities. The health status of the woman can change her diet and consequently reduce or increase intake of macro and micronutrients. A Quebec study conducted by Huot *et al.* found that people who reported having health problems were more likely to have poor diets.

Nutritional advice in healthcare facilities was positively associated with the DQI-I score adjusted to the level of owned property and the women's health status. Nutritional advice provided by healthcare workers improve the level of knowledge of women and motivates their food choice. As an illustration, a systematic review of publications, in which prenatal dietary advice was given in order to increase protein and energy intake, reported that nutritional advice alone was sufficient to improve protein intake during pregnancy, reduce the risk of prematurity by 54% and increase cranial circumference at birth [17].

4.3. Limitation of the Study

This study has concerned 212 women. This size of the sample is not so large. Biases linked to the selection of targets and the quality of the information provided could influence the quality of the results obtained. Likewise, the study was carried out in a community whose economic activities are quite varied and concern fishing, agriculture, and crafts. This context as well as the resulting eating and cooking habits and standard of living of the populations could cause the results to vary in other regions of the country.

5. Conclusion

The study showed that few women of childbearing age in the Comè municipality had a diet of good nutritional quality according to the DQI-I. Factors associated with the nutritional quality of the diet of women of childbearing age in the Comè municipality were socioeconomic position, the state of women's health and their exposure to nutritional advice in healthcare facilities. Interventions in nutritional education and improvement of women's incomes will help improve the nutritional quality of the diet of women of childbearing age in the Comè community.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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