

# **Dietary Diversity and Nutritional Status among 18-49 Years Expectant Mothers in Maforki Chiefdom, Port Loko City North-West Region.**

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## **Abstract:**

This study aimed to assess the dietary diversity and nutritional status of 120 expectant mothers in Maforki chiefdom, Port-Loko City, Sierra Leone. A researcher administered questionnaire was used to collect information on demographic and socio-economic, dietary diversity, nutritional status and morbidity. Anthropometric data and hemoglobin level were used to assess the nutritional status. Dietary diversity information was used to find out the diverse diets consumed by each respondent. Software Package for Social Scientist (SPSS) was used to enter and verify data. 29% (the highest) were within ages 18-24 years showing evidence of teenage and young expectant mothers. 58.3% respondents were trimesters and 42% single. 63% attained some education and involved in trading, most used communal well water, firewood and kerosene as fuel for cooking and lighting. Maternal morbidity pattern was high with 24.2% respondents ill. 93.3% received and consumed Folic Acid micronutrient supplements. The study showed 20% of the respondents having high dietary diversity. Out of the 14 food groups, cereals, dark green leafy vegetables, legumes, oil and fats were most commonly consumed, eggs being the least consumed. 20% undernourished, 35.8 % anaemic. Findings revealed prevalence of under-nutritional status and poor dietary diversity practice in Maforki. To improve the nutritional status of expectant mother through dietary diversity in the study area, the MCH Clinics should modify and promote the diets through demonstration.

Key words: dietary, diversity, nutritional, maternal, morbidity

## **1. Introduction**

Nutrition plays an important role in the health and development of an individual [UNICEF 2011]. Good maternal nutrition is an important component of health and development. Adequate dietary intake during pregnancy is needed to ensure satisfactory birth outcome and good health for the mother. This is so because maternal nutrition has been shown to have a critical role in foetal development. The adequate nutritional needs of an individual ensure tissue renewal, maintaining a good physical and mental health, but also reduce the risk of non-communicable diseases related to food [CDU, 2009].

Dietary diversity has been defined as the amount of different food groups or foods that are consumed over a specific reference period. Different foods and food group are good sources for various macro and micro nutrients, so a diverse diet best ensure nutrient adequacy. The principle of dietary diversity is embedded in evidence-base diet and the “Dash” diet [Dietary Approaches to stop Hypertension), and is affirmed in all national food-based dietary guidelines. The World Health Organization notes that a healthy diet contains fruits, vegetables, legumes, nuts and whole grains.

Unfortunately, in most developing countries micronutrient malnutrition is still a major threat of public health attention. The problem has been attributed to the intake of monotonous cereal based diet that are lacking in diversity. Diets in these countries lack fruits, vegetables and animal source foods. Regrettably, expectant mothers and other mothers of reproductive age are most vulnerable due to their increased nutrients needs. Due to this inadequate nutrient intake among expectant mothers, iron deficiency anemia and other micronutrient deficiencies has remained prevalent in developing countries. To get over this problem, food-based ways such as dietary diversification has been recommended and appears in most dietary guidelines. In most developing countries dietary diversity among the vulnerable groups has received little attention therefore, there is a need for further research. Similarly, in Sierra Leone there is paucity of scientific data on dietary diversity and nutritional status among expectant mothers. This study was therefore, conducted to assess dietary diversity, nutritional and food security status among expectant mothers in Maforki community, Sierra Leone.

## **2. Materials and Methods**

The study was conducted in Maforki community, a locality in Port Loko, Northwest region in Sierra Leone. An interview and pre-quoted questionnaire were used to collect data on socio-economic and demographic characteristics, maternal health profile, dietary diversity, nutritional status and hemoglobin level of the expectant mothers aged 18 to 49 years.

The socio-economic and demographic data collected was age, party, gestation in weeks, marital status, level of education, occupation of the respondents, source of drinking water, sources of cooking and lighting fuel, marital health profile [antenatal attendance and micronutrient supplementation intake of respondents]. Dietary diversity data was collected using a modified individual dietary questionnaire as recommended by FAO. The oral interview was conducted and questionnaire were also administered to 120 respondents in krio and complied in English. The anthropometric measurements weight and standing height were also done on the day of the interview.

A pre-test study was performed with 24 respondents [10% of the sample size]. The pre-test was conducted at Mantem village. The data from the pre-test study were not included in further analysis of the study. The pre-coded questionnaire was checked, screened, edited before entry into Software Package for Social Scientist [SPSS] and excel 2007 worksheet [for windows] for subsequent analysis. The information collected was analyzed using simple statistical techniques. This involves the use of pie charts and tables. The figures were interpreted into frequency and results express into percentages.

### **Results**

Socio-demographic characteristics: A total of hundred and twenty expectant mothers were approached and all of them consented and accepted to participated in the study, thus giving a response rate of 100%. Figure 1, showed the map of Port Loko city; the mean age of expectant mothers was 29% years which ranged from 18 – 24 years [Figure 2].

The gestation in weeks were collected from the antenatal care book, more than half of the 58.3% [70] respondents were in their third trimester, also more half were already at the 36<sup>th</sup> weeks or above [Figure3]. Occupation (Figure 4), indicated that more than half of the respondents

68[52%] were traders. Figure 5, showed that 50.8% [61] of the expectant mothers were in their first pregnancy; 48% of the respondent were single, while 41% were married [Figure6]. Regarding educational level, 24% respondents were illiterate [figure 7]. Figure 8, showed that 59% used communal water, followed by 28% used water from the stream.

As stated in table1, 38.3% respondent used firewood as source of cooking fuel and 63.3% used kerosene as the main source of lighting. Table 2, indicated that 57 [47.5%] respondents do attend antenatal clinic once, and followed by 23.4% respectively. 18.3% attended clinic third time and only 10.8% were in their fourth visit.

Table 3, revealed that 43.3% respondents were unwell, in the immediate two weeks and half of the respondents [56.7%] reported six in the lasted two weeks. Anaemic, 24.2% was the main disorder reported by the expectant mothers; sexually transmitted illnesses [STIs] 13.3% seek medical attention from government hospital and malaria 5.8% respectively.

From the study, micronutrient supplement revealed that93.3% [112] of the mothers had received and were consuming micronutrient with 6.7% [8] having not received. 78.6% [88] of the respondents consumed iron and folic acids pills. Supplement health facility had the highest percentage of 91.1% [102]. For those not having any micronutrient supplementation, 25% [2] said it was in their first ANC visit and thesestarted not taking the supplements. Additionally, 25% [2] reported that supplements made them sick and thus could not take them; 25% [2] said the did not see the need to take the supplement. None of them reported that they were unaware of the supplement.

Table 4, indicated that 63.3% [76]of the respondents had medium dietary diversity; 20% [24] had high dietary diversity and 16.7% [20] consumed 3 food groups or less and they were concerned to have low dietary diversity.

Table 5, 99% of the study population consumed cereals in the previous 24 hours which considered staple food in the community. 93.3% consumed vegetables; with 90.8% dark green leafy vegetables; 87.5 consumed other vegetables. 96.6% respondents consumed fats and oil, while tubers and roots 16.6% were consumed. Consumption of second-class protein was reported by 37.5% respondents. From the study, 52.1% of expectant mothers having not consumed from this food groups. Despite the high intake of iron during pregnancy, 1% consumed organ meat

[offal]; 94% consumed milk; 1% consumed flesh meat [steak]; 2.5% reported to be eaten eggs and 2.5% consumed fish. In terms of vitamin A rich vegetables 19% [22] was reported while other vitamin A rich fruits was 12.5% [15] consumed by respondents. Vitamin <rich fruits consumption was low with 29% [35].

Table 6, showed the nutritional status based on MUAC, 20% [24] of the respondents was found undernourished while 80% [96] of the respondents had adequate nutritional status. In the survey, respondents with hemoglobin of less than 11g/dl were considered anaemic. Main hemoglobin level of the respondents was 12.52g/dl. 35.8% [45] of the respondents were found to be anaemic [Tab17].

In the study, findings confirmed that there is no difference between dietary diversity score as their ill counterpart, so the fin ding revealed that illness can affects dietary diversity. Also, there was no significant relationship between morbidity pattern and nutritional status of respondents based on the MUAC values and hemoglobin levels.

Table 9;further showed a significant difference on dietary diversity score, 20% [24] with poor nutritional status had low dietary diversity score were undernourished as compared with 80% [96] respondents had a normal nutritional status.

**Table 1: Source of cooking and lighting fuels of respondent. (N=120)**

| <b>Source of cooking fuel</b> | <b>Frequency</b> | <b>Percentage (%)</b> |
|-------------------------------|------------------|-----------------------|
| Firewood                      | 46               | 38.3                  |
| Charcoal                      | 35               | 29.2                  |
| Kerosene                      | 31               | 25.8                  |
| Gas                           | 8                | 6.7                   |
| <b>Source of lighting</b>     | <b>Frequency</b> | <b>Percentage (%)</b> |
| Kerosene                      | 76               | 63.3                  |
| Solar                         | 24               | 20.0                  |
| Electricity                   | 20               | 16.7                  |
|                               |                  |                       |

**Table 2: Antenatal clinic attendance of respondents (N=120)**

| <b>Attendance</b> | <b>Respondent</b> | <b>Percentage (%)</b> |
|-------------------|-------------------|-----------------------|
| Once              | 57                | 47.5                  |
| Twice             | 28                | 23.4                  |
| Three times       | 22                | 18.3                  |
| Four times        | 13                | 10.8                  |

**Table 3: Maternal Morbidity of the respondents in the past two weeks (N=120)**

| <b>Types of illness</b>            | <b>Respondent</b> | <b>Percentage (%)</b> |
|------------------------------------|-------------------|-----------------------|
| Anemia                             | 29                | 24.2                  |
| Sexually Transmitted Illness (STI) | 16                | 13.3                  |
| Malaria                            | 07                | 5.8                   |
| Not sick in the two last week's    | 68                | 56.7                  |
| <b>Total</b>                       | <b>120</b>        | <b>100</b>            |

**Table 4: Dietary Diversity result of respondents (N=120)**

| <b>Dietary Diversity</b> | <b>Respondent</b> | <b>Percentage (%)</b> |
|--------------------------|-------------------|-----------------------|
| Low dietary diversity    | 20                | 16.7                  |
| Medium dietary diversity | 76                | 63.3                  |
| High dietary diversity   | 24                | 20                    |
| <b>Total</b>             | <b>120</b>        | <b>100</b>            |

**Table 5: Number of respondents who consumed each food groups**

| <b>Food group</b>           | <b>Frequency (120)</b> | <b>Percentage (%)</b> |
|-----------------------------|------------------------|-----------------------|
| Cereal                      | 119                    | 99.0                  |
| Oil and fat                 | 116                    | 96.6                  |
| Milk and Milk product       | 113                    | 94.0                  |
| Dark green leafy vegetables | 109                    | 90.8                  |
| Other vegetables            | 105                    | 87.5                  |
| Legumes, nuts and seeds     | 45                     | 37.5                  |
| Other fruits                | 35                     | 29.0                  |
| Vitamin A rich vegetables   | 23                     | 19.0                  |
| White tubers and roots      | 20                     | 16.6                  |
| Vitamin A rich fruits       | 15                     | 12.5                  |
| Fish                        | 3                      | 2.5                   |
| Egg                         | 3                      | 2.5                   |
| Organ meat (iron rich)      | 1                      | 1.0                   |
| Flesh meats                 | 1                      | 1.0                   |

**Table 6: Nutritional status based on the MUAC of the respondents (N=120)**

| <b>MAUC</b> | <b>Frequency</b> | <b>Percentage (%)</b> |
|-------------|------------------|-----------------------|
| < 23.0cm    | 20               | <b>80</b>             |
| 23.0cm      | 96               | <b>80</b>             |

**Table 7: Nutrition status hemoglobin levels of the respondents**

| <b>MAUC</b> | <b>Frequency</b> | <b>Percentage (%)</b> |
|-------------|------------------|-----------------------|
| < 11.0g/dl  | 43               | 35.8                  |
| 11.0g/dl    | 77               | 64.2                  |

**Discussion:**

This study was set out assessing the dietary diversity and nutritional status of expectant mother aged 18 – 49 years, in Maforki community, Port Loko city, Sierra Leone. Specifically, it was to assess the dietary diversity of expectant mothers; assess the nutritional status of expectant mothers; to establish the relationship between dietary diversity, morbidity patterns, and nutritional status of expectant mothers.

**Table 8: Relationship between dietary diversity and nutritional status of respondents (MUAC).**

| Score    | MUAC Status    | Frequency | Percentage |
|----------|----------------|-----------|------------|
| DD Score | Undernourished | 24        | 20         |
|          | Normal         | 96        | 80         |

The result showed that most of the respondents were fairly young [18 – 24] years. A consideration in pregnancy is very important because pregnancy complication may occur if the mothers are too young or at advanced age.

The parity was found to be risk factor for pregnancy. Expectant mothers from their fourth pregnancy are at risk nutritionally due to their previous pregnancies.

Majority of the respondents in the study were single. Single status of a person may affect issues of access to resources and in turn will affect the dietary diversity and nutrition status.

Most of the respondent mothers had primary school education. Both junior and senior secondary school education of the expectant mother was generally low while those who had tertiary education. The low level of education observed may be due to the early marriages of girls, low literacy level in the chiefdom and also the fact that girl child education until recent time has not been given much importance in this community. The number of employment person in Maforki is relatively high those that are employed. Occupation affects the economic status directly. Expectant mothers who may access a diversified diet by virtue of their socio – economic status based on occupation was relatively low.



A source of drinking water by respondents indicated that majority of respondents used communal well water, which is not pure and caused water borne diseases like diarrhea which can affect the expectant mothers and their babies in the womb.

The used of solid fuels was greater than the used of kerosene and gas in this study. The type of fuel used for lighting was indicative status of the expectant mothers which in turn affects their food choices. Cooking and heating with solid fuels can leads to high level of indoor smoke, a complex mix of health damaging pollutants that could increase the risk of acute respiratory diseases.

Based on various food groups, consumption of cereals was the highest at 90% closely followed by consumption of fat, milk product and vegetables with 87.5%. The staple food in the community is rice and is mainly consumed with leafy vegetables. There was an exceptionally low frequency of egg and organ meat consumption. Low frequency of egg consumption has been identified as one of the risk consumptions has be identified as one of risk factors for iron deficiency anaemia. Generally, it was found that the expectant mothers that consumed a diet with a high dietary diversity, however, consumed most significant food groups such as organ meats [offal's], other animal-based proteins such as eggs, fish, and vitamins was significantly low.

Antenatal clinic care during pregnancy is to identify and treat maternal health problems such as anaemia, malaria, infection and other diseases. Expectant mothers should attend antenatal clinic at least four times in the entire period of pregnancy. Though the mothers were at difference gestational ages, the study revealed that only 10.8% [22] had attended their ANC more than three by the time of data collection. In respect to the gestational age, vast majority of mothers sought their first ANC visit in their third trimester. ANCA visit from the first trimester are very crucial for both mothers and un born child. This is because early visits can enable timely detection and treatment of any complication that might caused maternal and infant mortality.

Morbidity in an individual affect's dietary diversity and ultimately nutrient intake. This is because it affects food intake due to the loss of appetite associated with the illness. As it emerged in the in this study half proportion of respondents reported being unwell two weeks prior to the date of date collection.

The present study results pinpointed that disorders such as anaemia, malaria, sexually transmitted infections and others as the most common type of illnesses and disorders among expectant mothers in Maforki community.

Iron deficiency anaemia is still very common in developing countries. To overcome this, deficiency iron supplements are usually prescribed to prevent mothers. In this study, majority of the respondents reported to be taking iron folate supplements. Due to anaemia during pregnancy; increase the changes of mortality especially during pregnancy.

**Limitations.** This work had some limitations. The number of some expectant mothers in the study area were very reluctant to give the necessary information. Securing finance to carry out the whole exercise was very difficult. However, this does not in any diminish or affect the credibility of data collection.

## **Conclusion**

In order to improve the dietary diversity and nutritional status of expectant mothers in study area and Sierra Leone as a whole however, implementation of certain polices should be introduce in communities and involve the people. The following polices should introduce:

There is need to awareness in the community and especially among the women in reproductive age on the problem of high prevention. High rates of anaemia may be reduced by diversification of diets through diet modifications and use of locally available food.

There is need to promote community nutrition and awareness programmes. This should promote behavioral changes among expectant mothers with regards to intake of certain foods such as eggs and avocado which are nutritious.

There is need for further investigation into the major causes of anaemia, so as to know the proportion of each cause thus put mechanism in place to address the cause.

Further research on the impact of anaemia on infants born of anaemic mothers in Maforki is needed. More status needs to be done to compare the dietary diversity status and nutritional status of expectant mothers in other areas in order to construct locally standardized

methodologies of assessing the same. The researcher recommended a study to be conducted on the dietary diversity and nutritional status of HIV, Infected pregnant women.

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