

Assessment of Dietary Intake Among Pregnant Women In Migratory Community, Narok County, Kenya.

ViolahChepkorir, Wesley Bor.

*Department of Health, Narok County and Department of Human Nutrition and Dietetics, Kabarak University.
Correspondence: ViolahChepkorir;*

Abstract

Globally, Iron Deficiency Anaemia (IDA) has been known to have negative effects on the lives of more than 2 billion people. Currently, pregnant women are the most vulnerable population corresponding to 24.8% of 3.7 billion people. The highest prevalence of anaemia exists in the developing world which is thought to be associated with the following factors; socio-economic factors, inadequate dietary intake, cultural taboos that hinder intake of certain foods known to be good sources of iron, infections, multiple pregnancies and low contraceptive prevalence use among others. This study sought to assess dietary intake of pregnant women in the migratory community in Narok County. It was a Cross-sectional study, which was conducted in Ewaso Ng'iro Health centre, at Maji-Moto Naroosura ward in Narok County, Kenya. The study participants were women who tested positive for pregnancy and documented in maternal child health card, and were enrolled at antenatal clinic at Ewaso Ng'iro Health centre. The study included 192 pregnant women aged 15-49 years who actively attended their antenatal clinic and were willing to voluntarily participate in the study. 24-hour recall was used to assess dietary intake, where the Pregnant women were required to recall what they had eaten for the last 24 hours. The data was cleaned, edited, coded and checked for completeness using Microsoft excel. The 24-hour recall data analysis was carried out using Nutri-survey 2007 statistical software to check for key nutrient consumption. Data was analysed using Statistical Packages for Social Sciences (SPSS version 25.0). The findings revealed that, most of the macronutrient requirements; Energy, Protein, Fat, Dietary fibre and PUFA were not adequately consumed by pregnant women. In addition, it was noted that the pregnant women did not consume the Micronutrients like Phosphorus, Iron, Calcium, Potassium, Sodium, Vitamin C, B6, B2, B1 and E in sufficient amounts. This depicted that poor dietary intake is a major concern among pregnant women in Migratory Community, and there is a great need to address it. The County Ministry of Health should strengthen the policies for combating micronutrient deficiencies through integration of programmes and services at the community levels. In addition, review of the IFA policy should be done to incorporate early screening and management of IDA in order to prevent Micronutrient deficiencies.

Key words: Assess, Dietary Intake, Pregnant Women, Migratory Community

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I. INTRODUCTION

Globally, pregnancy is often associated with increased nutritional needs due to the physiologic changes of the woman and the metabolic demands of the embryo/fetus. Therefore, proper maternal nutrition during pregnancy is imperative for the health of both the woman and the foetus. Maternal malnutrition during pregnancy has been associated with adverse outcomes, including increased risk of maternal and infant mortality, as well as low birth weight newborns, a measure that accounts for both preterm birth and intrauterine growth restriction of the fetus. Therefore, adequate nutrition is vital, in order to prevent nutrient deficiencies which have been linked to congenital anomalies and birth defects.

However, studies exploring the effects of the nutrition transition on pregnant women are limited. Simultaneous under and overnutrition have been found among women in developing/low-income societies. While this has been determined primarily by anthropometric measurements, the evaluation of nutrient intake is also important, since during pregnancy adequate micronutrient intake and overall diet quality are essential for optimizing the intra-uterine environment and preventing adverse outcomes. Studies that accurately evaluate nutritional status and the adequacy of nutrient intakes among pregnant women are essential for the formulation of public health policy to improve maternal nutritional status during this critical life stage. This study sought to assess dietary intake of pregnant women among migratory community in Narok County.

In Africa, a study, showed that a higher prevalence of anaemia was attributed to differences in dietary habits of the study participants, in which fermented Enset (kocho) contributed more amount of vitamin B12, compared with the maize diet group which was the main staple food in the study area (Gedefaw Lealem, Asrat Ayele, 2013). In addition, the study participants who took tea after meals were found to be 7.8 times more anaemic than those who took tea once or none per day (Gedefaw Lealem, Asrat Ayele, 2013). I would like to agree with the study because; the effect of tea on the absorption of non-heme iron is believed to have been ascribed to the formation of insoluble iron tannate complexes.

On the other hand, another study in Ethiopia revealed that, regarding the feeding habit of the respondents, most 166 (59.5%) of the respondents reported that they modified their food when they became pregnant (Ante et al., 2014). It is believed that the modification and the decrease of food during pregnancy could have contributed to anaemia. This is because modification of food reported by majority 123 (69.1%) of the respondents was by changing the type of food while the least 12 (6.7%) reported modifying their food by decreasing the quantity of food. The type of food items preferred by the majority 57 (44.2%) of the respondents was vegetables. In the study, 9.4% of pregnant mothers were found to be anaemic out of which 64.3%, 32.1% and 3.6% were with mild, moderate and severe Anaemia respectively (Ante et al., 2014).

However, another study done in Nigeria revealed that traditional beliefs regarding foods to be avoided during pregnancy were considered as a major factor limiting the quality of dietary intake among the Nigerian pregnant women (Lindsay, Gibney, & McAuliffe, 2012). The most common foods reported to be avoided in pregnancy were 'energy-giving foods', such as cassava, rice and yam, followed by 'body-building foods' (e.g. meat, egg, liver) and various types of fruits (Lindsay et al., 2012). The variety of meats avoided denied pregnant women of some of the cheapest sources of high-quality protein, which may have contributed to Iron deficiency anaemia, as well as malnutrition.

In Kenya, there are targeted recommendations that have been provided in order to guide pregnant women in their food choices so that they may obtain adequate nutritional status and meet the increased need for nutrients. However, most of the Maasai people practice semi-nomadic kind of life whereby, the movement of livestock is based on seasonal rotation to greener pastures (Lennox, Petrucka, & Bassendowski, 2017). In addition, Livestock such as cattle, goats and sheep are the primary source of income to them and therefore may not be utilized for food even when they are rich sources of iron especially for pregnant mothers. The cultural practices such as pregnant mothers being not allowed to consume, milk, eggs and green leafy vegetables because it is believed that the baby will grow huge and delivery will be a problem worsen the access of iron in food believed to be good sources of iron (Lennox et al., 2017).

Furthermore, traditions and cultural beliefs surrounding nutritional practices during pregnancy have advanced iron deficiency anaemia. In addition, a pregnant woman is only supposed to eat after all the members of the family have eaten in order to reduce on the amount of food she will consume so that the baby does not grow bigger forcing the woman to deliver in a health facility or even go for a caesarean section. All the aforementioned practices have contributed highly by posing negative impacts on pregnant women. Besides, dietary taboos are most often enforced by the elders and mothers-in-law, and there is a wide range of foods that should be eaten and those that should not be eaten during pregnancy, which are indigenously-informed (Lennox et al., 2017).

Traditionally, during pregnancy Maasai women consumed a modified diet that included restricting caloric consumption during and after 6 months of pregnancy (Brady, Suksiri, Tan, Dodds, & Aine, 2008). The dietary restrictions in the community are believed to guarantee smaller babies, thereby facilitating safe delivery and limiting medical interventions during childbirth (Brady et al., 2008).

The main reasons reported for avoiding certain foods during pregnancy in Nigeria were taboo, stomach pains, nausea/vomiting and the effect on the baby's size because of fear that the birth of large babies increased the risk for caesarean section (Abrehet Abriha, 2015). Strong aversion to surgical delivery is common in developing countries as a result of social misconception, religious views, and fear of surgical complications and cost, even in the context of obstetric emergencies (Lindsay et al., 2012).

The above results were in agreement with a study that was done in Kenya, at Pumwani Maternity hospital, whereby, one third 86 (33.3%) of the women avoided certain foods such as red meat 28 (32.6%) and green vegetables 26 (30.2%) with the reason of reducing the size of the baby and due to vomiting, while 37 (43.0%) avoided certain foods due to heartburn. Majority of the participants, i.e. 241 (93.4%) of the pregnant women reported to drink beverages (tea, cocoa or coffee) and 66.0% of them drank these beverages in less than 20 minutes before/after meals. More than half 143 (55.4%) of pregnant women ate meals three times per day (Okube et al., 2016).

Further, all women reported that they never smoked cigarettes, and almost all (98.4%) of the women said they never took alcohol. However, the overall prevalence of anaemia (Hb< 11 g/dl) was 57.0%, and in terms of severity, mild anaemia was 26.5%, moderate anaemia was 70.7%, and severe anaemia was 2.7%

(Okube et al., 2016). This showed that the dietary habits of pregnant women might have contributed to Iron deficiency anaemia.

(Lennox et al., 2017), reveals that in a study conducted in southern Tanzania, nearly two-thirds (69%) of the pregnant women avoided fish and farm meats. Further, avoiding eating eggs in parts of Tanzania and in some parts of Africa was related to the animal's characteristics being transferred to the child or causing sterility. Many culturally informed prenatal food restrictions were related to ensuring that the 'baby will not be too big', the head would be normal size, or to avert 'a difficult labour'. Dietary taboos were most often enforced by the elders, mothers-in-law, or husbands and other family members (Lennox et al., 2017).

The Maasai people emphasised on a theme; 'Eating less food lets baby come easier' this theme, was derived from a direct quotation (Lennox et al., 2017). It reflects the belief that a pregnant woman's food intake must be decreased to prevent a large baby. This belief seemed to relate to a number of factors such as the risk of death due to a large infant, concern for lack of specialised care if the baby did not pass naturally, and concern over the health of a big infant (Lennox et al., 2017).

Furthermore, a majority of the pregnant women among the Maasai community travel long distances to clinics and value the tradition of giving birth at home under the supervision of a traditional birth attendant. Thus, delivering at home makes it necessary for women to avoid big babies, which, they believe, increases the risk for a caesarean delivery (Lennox et al., 2017). The use of local herbs and medicine at some point during pregnancy is seen as a means to cleanse or cure the woman of sickness (i.e., nausea and vomiting), fever, or from consumption of 'prohibited foods' (i.e., foods high in fat or sugar). Primarily, mother-in-law or Elders monitor pregnant mothers' diets (Lennox et al., 2017).

Also, the presence of cultural practices and taboos that restricts pregnant women from taking foodlike; meat, eggs, green leafy vegetables and even milk, due to the perception of the baby growing huge and the mother being unable to deliver normally at home, is a great problem. In addition, during the 3rd trimester, if a pregnant woman is believed to have overfed, induced vomiting is done by giving plenty of warm water. This is done with the need of making the woman vomits much of what she had already taken, so as to control the growth of the unborn baby. All these practices deny the mother and the baby the right to quality food which may result in severe Iron Deficiency Anaemia and underweight babies.

According to the Kenyan Demographic and Health Survey (KDHS, 2014) maternal deaths are approximately 14% among women of reproductive age, and about 1 in 67 women are likely to die during pregnancy, during childbirth, or within two months of childbirth because of iron deficiency anaemia even with iron and folic acid intervention by the government of Kenya.

Narok County is mostly inhabited by the Maasai community who occupy both Arid and Semi-arid land. The Maasai communities are people who migrate from one place to another in search of greener pasture because of seasonal weather changes and attempt to optimise their livelihood. This migration pattern encourages the mothers to miss their antenatal clinic appointments with associated services such as iron and folic acid supplementation. The migration patterns make it difficult to diagnose iron-deficiency anaemia because of lack of access to health facilities in some regions of the county.

Most of the Maasai people practice semi-nomadic kind of life whereby, the movement of livestock is based on seasonal rotation to greener pastures (Lennox, Petrucka, & Bassendowski, 2017). In addition, Livestock such as cattle, goats and sheep are the primary source of income to them and therefore may not be utilised for food even when they are rich sources of iron especially for pregnant mothers. The cultural practices such as pregnant mothers being not allowed to consume, milk, eggs and green leafy vegetables because it is believed that the baby will grow huge and delivery will be a problem worsen the access of iron in food believed to be good sources of iron (Lennox et al., 2017).

II. MATERIALS AND METHODS

24-hour dietary recall, being a retrospective method was used to assess dietary intake. A random number of (384/2, n=192) were purposively selected for the 24-hour recall interview, basing on the criteria of their availability to come back for the dietary assessment whereby; they were to recall and give the details of the food and beverages consumed during the last 24 hours. The interview was carried out in person in chronological order of consumption. The Multiple Pass Recall (MPR) was used as a staged approach to the dietary recall.

The study participants were not interrupted as they recalled, and afterwards probing was done on the quantities, ingredients and method of food preparation with a review of everything that was previously recalled. For each item of food or drink in the questionnaire list, the respondents were also asked to provide additional details, including; the time at which the food or drink was consumed, a full description of the food or drink, including the foods or beverages that were taken in combination like milk in tea. The study participants were then asked to give the food frequency, i.e. how many times the food or beverages were taken in the last 24 hours. Food frequency was combined with the 24-hour recall in order to improve the data on food estimation.

III. RESULTS

Dietary Intake among Pregnant Women in Migratory Community

Distribution of Maternal Dietary Macronutrients Consumption

Element	Mean SD	RDA*	% Consumption per RDA**	95% CI
Energy	1597.6 ± 612.9	2500kcal	63.9	2569.4-3461.3
Water	1141.9 ± 352.1	3000mL	38.1	1838.8 -2446.7
Protein	56.7 ± 31.2	71g	79.6	109.1-160.6
Fat	14.2 ± 20.3	20g	71.0	64.1-131.6
Carbohydrates	281.9 ± 119.8	175	160.0	454.6-683.1
Dietary Fibre	22.8 ± 13.8	28g	81.0	58.2-82.3
PUFA	4.0 ± 2.4	6.5g	61.5	8.7-15.9

*Recommended Dietary Allowance (RDA) as per WHO/FAO

**% Consumption in reference to RD

From the findings, most of the macronutrient requirements; Energy, Protein, Fat, Dietary fibre and PUFA were not adequately consumed by pregnant women, apart from the carbohydrates which exceeded the RDA by 60% consumption. On the other hand, water consumption was way below 50% of RDA.

Distribution of Maternal Dietary Micronutrients Consumption

Element	Mean SD	RDA*	% CONSUMPTION OF RDA**	95% CI
Vit A	1195.54 ± 862.15	800mg	149.4	2594.59 - 4407.00
Zinc	11.80 ± 5.81	11mg	107.2	21.85 - 26.09
Iron	12.81±6.69	30mg	42.7	25.47 - 30.77
Phosphorus	1179.23±454.18	1250mg	94.3	2005.80 - 2445.50
Magnesium	421.96±198.49	220mg	191.8	705.90 - 1228.80
Calcium	512.36±225.97	1200mg	42.7	1020.20 - 1173.00
Potassium	2427.22±856.79	4700mg	51.6	4035.60 - 5090.35
Sodium	1300.03±991.64	1500mg	86.7	2821.10 - 5102.43
Vit C	76.81±62.10	85mg	90.4	146.23 - 440.75
Folic Acid	228.20±105.72	600mg	38.0	435.20 - 678.88
Vit B6	1.65±0.59	1.9mg	86.8	2.70- 3.67
Vit B2	1.26±0.75	1.4mg	90.0	2.01 - 5.69
Vit B1	1.11±0.50	1.4mg	79.3	2.07 - 3.31
Vit E	6.72±2.83	7.5mg	89.6	12.05 - 16.53

*Recommended Dietary Allowance (RDA) as per WHO/FAO

**% Consumption in reference to RDA

From the above findings, it was noted that the pregnant women did not consume Phosphorus, Calcium, Potassium, Sodium, Vitamin C, B6, B2, B1 and E in sufficient amounts. However, Vitamin A, Zinc and Magnesium consumption exceeded the RDA, while severe insufficiency was noted in the consumption of Iron and Folic Acid, which was way below 50% of the RDA. Therefore, these could have been one of the contributing factors of Iron deficiency anaemia among pregnant women in the migratory community.

IV. DISCUSSION

From the findings, the pregnant women, apart from carbohydrates, which exceeded the RDA, did not meet most of the macronutrient requirements. This might have been attributed to diet restriction, reduction of food intake and induced vomiting practices that were mainly practised by pregnant women. This meant that the intake of macronutrients like Energy, Fat, Dietary fibre, PUFAs and water was not adequate enough and hence leading to Iron deficiency anaemia. This however differed with a study conducted in rural area Sri Lanka, which reported that dietary nutrient intake showed that only intake of energy and protein consumption met the RDA values (Adikari et al., 2016).

Further, it was noted that the pregnant women did not consume Phosphorus, Calcium, Potassium, Sodium, Vitamin C, B6, B2, B1 and E in sufficient amounts. Vitamin A, Zinc and Magnesium consumption exceeded the RDA, while severe insufficiency was noted in the consumption of Iron and Folic Acid, which was

way below 50% of the RDA. Therefore, these could have been some of the contributing factors of Iron deficiency anaemia among pregnant women in the migratory community. Ideally, the most natural way of getting enough iron is through a diet with adequate iron content and good bioavailability of the iron, especially animal source foods. However, in Narok county, dietary iron intake in pregnant women in migratory community was too low to maintain a good iron status.

Nevertheless, insufficiency of folic acid could also be another cause of anaemia, since folate is always required for the normal production of Red Blood Cells of which its deficiency can cause megaloblastic anaemia, low levels of white blood cell and platelets. It can also cause serious birth defects in the spinal cord and brain development of a developing foetus. Also, from the study findings, the intake of Vitamin C is worrying, since it's necessary for the growth, development and repair of all body tissues. It is also involved in enhancing Iron absorption. Therefore, the current study findings reported multiple macro and micronutrient deficiency, which could have aggravated the problem of Iron deficiency anaemia among pregnant women in the migratory community. Moreover, a study in India also revealed dietary Iron intake among pregnant women was low and did not meet the Recommended Daily Allowances (RDA) (Little et al., 2018).

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