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CULTURAL BELIEFS AND DIETARY PATTERNS: UNDERSTANDING WOMEN'S FOOD CHOICES IN RURAL NORTHERN GHANA

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ABSTRACT

Low dietary quality represents a significant global public health challenge, particularly affecting children and women of reproductive age (WRA). It is a well-established risk factor for several major diseases, including maternal and child malnutrition, and non-communicable diseases. The dietary habits of women, especially during critical periods such as adolescence, conception, and lactation, directly influence both their own health and the well-being of their families. Consuming suboptimal diets compromises women's health and their ability to nourish their households, notably the nutritional needs of young children. Maternal nutrition plays a crucial role in the health outcomes of children, making it vital to ensure women, particularly those in reproductive ages, have access to nutritious and balanced diets. Improving the dietary quality of women, especially in resource-limited settings, not only enhances their health status but also contributes to the broader improvement of household nutrition. This paper highlights the significance of enhancing women's dietary quality, offering insight into the broader public health implications of addressing low dietary quality among women of reproductive age, with a particular focus on strategies that can optimize maternal health and nutrition in diverse settings.

Keywords: Dietary Quality, Women's Health, Maternal Nutrition, Reproductive Health, Public Health

INTRODUCTION

Low dietary quality is a global public health challenge that exerts adverse consequences on human health and well-being with children and women of reproductive age (WRA) being the most vulnerable [1-3]. Consuming low-quality diets is a known risk factor for six of the top eleven risk factors driving the global burden of diseases including child and maternal malnutrition and other noncommunicable diseases [1]. The importance of ensuring optimum quality diets for women, particularly during adolescence, conception, and lactation for their general well-being and reproductive health outcomes can, therefore, not be overemphasized [4-6]. Consumption of low-quality diets reduces women's ability to keep healthy and to meet the dietary needs of their households, especially those of young children [7]. Thus, optimizing maternal diets improves their health and nutritional statuses as well as those of their households in general and children in particular [8].

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In low-income countries, however, women's dietary quality remains sub-optimal [6]. Consuming low-quality diets by majority of women may have translated into the poor nutritional indicators reported; for instance, in sub-Saharan Africa (SSA), at least 10% of WRA are under-nourished and over 40% are iron deficient [9]. It is further estimated that 43% and 27% of children under 5 years of age in Africa are stunted and wasted respectively [10]. In Ghana, prevalence levels of undernutrition and anaemia among WRA are estimated at 6% and 41%, respectively while those among rural women are estimated at 12% and 43% respectively. Northern Region, where the study took place, has one of the highest prevalence levels of anaemia (48.4%) and undernutrition (12.2%) among WRA in the country [11-13]. A study conducted in northern Ghana estimated the mean dietary diversity score (DDS) for WRA as 3.7 and less than one-half (40.4%) of the same cohort of women attained the Minimum Dietary Diversity of women (MDD-W) [13].

Consumption of quality diets among WRA is necessary to achieve key indicators of the Sustainable Development Goals (SDGs), particularly SDG2, which focuses on "ending hunger, achieving food security and improving nutrition and promoting sustainable agriculture" [7, 14]. This is because women are critical to achieving household food security; they are often responsible for providing the dietary needs of their households [7]. Women's participation in the food system is therefore critical to enable them care for themselves and their households; women are involved in the entire food system: production, processing, distribution, preparation, and consumption of food [15-17].

Socio-cultural norms related to women's social status, access to productive resources, and decision-making power are, however, linked with their ability to effectively leverage the food system to provide optimal diets [1, 18-20]. Identifying, understanding, and characterising the basic socio-cultural norms that shape women's dietary behaviour is, therefore, crucial to the design and implementation of culturally-appropriate dietary interventions that are more likely to effectively address the high burden of malnutrition [21].

Socio-cultural norms are beliefs, attitudes, and practices that influence the way of life of a community and serve as criteria to determine what is appropriate or otherwise. Existing policies have not prioritized socio-cultural norms in addressing women's dietary and nutritional challenges in Ghana. Existing nutrition-related interventions in Ghana include women's empowerment programmes to address food security, where women receive financial services and advanced farming practices to improve productivity [22]. Ghana's flagship programme, investing for food and jobs, is another intervention aimed at transforming Ghana's food system to enable it to offer opportunities for job creation and increase incomes for all, including women [23]. However, the role of socio-cultural norms in the food system is often ignored [24]. Prioritizing socio-cultural norms is particularly relevant in rural Northern Ghana, where women play multiple critical roles in the food system [25], particularly in providing services such as planting, harvesting, and processing in subsistence farming [5, 18]. Findings of this study will lead to action that can lead to policy changes through multi-stakeholder participation in the dissemination of the findings, which would create awareness and advocacy, leading to policy change and the affected and similar communities.

As part of a larger study, this article describes the findings of the socio-cultural context in which women's lives and roles are constructed within local food systems. The study aimed to identify and describe socio-cultural perceptions and practices and how they influence the food system and diets of WRA. The findings related to these socio-cultural norms can guide the design of behaviour change interventions towards improved women's diets.

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Study design

This study adopted a qualitative approach where focus group discussions (FGDs), key informant interviews (KIIs) and 24-hour qualitative dietary recall through indepth interviews were conducted with participants between May and July 2016. The approach, which was used to explore practices within the local food system and socio-cultural norms that shaped women's interactions with the system, enabled the research team to delve into how some of the norms may potentially constitute barriers to women achieving optimal diets. Additionally, women's dietary information was gathered through a qualitative 24-hour recall assessing their dietary quality.

Study location

The study was conducted in two rural communities, Yilkpene and Kpachelo, in Savelugu-Nanton District in Northern Region, Ghana. The district, which is predominantly rural, had a total population of 166,529, in 2016, when the study was being conducted. Savelugu, the administrative capital of the district, is predominantly an agrarian economy with crop farming as the main livelihood source. It has a patriarchal orientation with authority traditionally invested in male chiefs, religious leaders and clan/family heads. Only 3.1% of households are headed by females (GHS 2014). The district experiences Hamattan - the dry and dusty North-East Trade Winds- from about October to March and has an annual rainfall of about 600mm which is not only low, but also irregular with negative implications for crop yields and food security. Less than 50% of the population have access to portable tap water; the majority source their drinking water from boreholes, hand-dug wells and dams [12].

Previous interactions with the two communities yielded information on the socioecological context of women's nutrition [26]. This information was useful for conceptualizing the current study. The two communities were chosen because the study was part of a larger intervention study with a control and an intervention arm to assess the impact of behaviour change communication activities on sociocultural norms within the food system with potential adverse effects on women's diets. One community hence, served as the control community while the other received the intervention. This paper, however, reports on only the food system common to both communities and the potential implications on their dietary quality. Subsequent papers will report on the outcome of the intervention. Additionally, the two communities are similar in population size, dietary practices, and availability of and access to social and health services, hence, their inclusion in the study.

Study population and participants selection

The study population included diverse participant groups of both male and female community members. Men included traditional and religious leaders, husbands/heads of households and farmers. Women's groups included traditional birth attendants (TBAs), in-school and out-of-school unmarried adolescent girls (15-19 years old), other WRA and older women (50 years and above). There were also representatives of government and non-government institutions that worked in the communities to promote health and nutrition in the district – district nutrition offices, agricultural extension officers and representatives of non-governmental organizations (NGOs). Using the purposive sampling technique, participants were selected based on their knowledge of the local food and health system, their experiences with it and their willingness to contribute to the issues at stake. Women were particularly selected to share their experiences since they were the primary focus of the study. The selection process was facilitated by the two local community health volunteers.

Data collection: Sixteen KII were held with traditional leaders, community health volunteers, and traditional birth attendants (TBAs), and public agricultural, nutritional and health officers. Eleven separate FGDs were held with 87 men, inschool and out-of-school unmarried adolescent girls, other WRA and older women. In-depth interviews with 40 WRA were used for a qualitative 24-hour dietary recall. Interview guides for KII, FGD and IDI were developed, tested, and used to facilitate data collection. The KII and FGD guides were informed by the

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components of the food system - production, processing, distribution, food preparation and consumption - which served as a framework for the study [16]. Data gathered included participants' socio-demographic characteristics and their perceptions and practices related to each component of the local food system. The 24-hour recall gathered information on all foods and snacks consumed by the 40 women engaged in the 24-hour dietary recall. Data collection was done, mostly, using Dagbani- the local language. Interview notes from each day's interviews were coded to identify relevant questions that required further exploration during subsequent interviews.

Data management and analysis

All interviews were audio recorded and transcribed verbatim into English. Preliminary analysis was done simultaneously with data collection, enabling the opportunity to refine the questions in response to findings, to summarize what was said during the interviews and to determine data saturation. The study utilized thematic content analysis to explore how gender issues across the food system influenced women's dietary quality [27]. Both *a priori* themes and emerging codes from the data facilitated the analysis process. The components of the food system constituted the *a priori* or pre-determined themes. Six steps were followed in the thematic analysis process – familiarization with data by reading the transcripts thoroughly and taking note of expressions and key issues relevant to the objective of the study. The next stage was generating initial codes as they emerged from the data. Using these initial codes, all transcripts were systematically coded, and, subsequently, the codes were collated into sub-themes. The sub-themes were then reviewed and similar sub-themes were pulled under the appropriate *a priori* themes. Finally, the themes became the basis for reporting the findings as a narrative and supported by verbatim quotations from a cross-section of participants. In all, five theme and nine sub-themes emerged.

The 24-hour dietary recall data was analysed based on 10-food groups to ascertain the proportion of women who attained the Women's Minimum Dietary Diversity (MDD-W). To achieve MDD-W threshold, each of the 40 women had to consume foods from at least 5 of the 10 food groups in the 24 hours prior to data collection [13, 28, 29].

To ensure results of the study are trustworthy and reflect participants' views of issues, preliminary findings were presented to the study communities through a durbar to reach consensus. Also, themes and codes generated were reviewed by other authors (RA and MAK).

Ethical issues

Noguchi Memorial Institute for Medical Research (NMIMR), University of Ghana, Legon, granted ethical clearance for the study (Reference No. (CPN): 077/15-16). Permission to carry out the study was obtained from Savelugu-Nanton District Assembly and the chiefs of the two study communities. Their support for the study was solicited after they were informed about the purpose and procedures. Ethical issues addressed during data collection included obtaining informed consent from participants and informing them of possible risks and discomfort their participation may cause, their right to leave the study and possible benefits to them and the whole community. The majority of participants gave their consent by thumb-printing on the agreement section of the consent form. Assent was obtained from adolescent girls who were below 18 years of age as well as from their parents or guardians.

RESULTS AND DISCUSSION

Participants' socio-demographic characteristics

Females (72.7%) dominated the sample of 143 participants. Most (74%) of the female participants were between 20 to 49 years old. Most participants were married (83.2%) and about 65% (93) had no formal education. Most participants worked in the informal sector as farmers and petty traders (107%). Being polygamous communities, few men (3.5%) had between 10 and 15 children. Almost half of women (43.2%) had between 1-4 children while

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most men, about half (46.2%) of them had between 5 and 9 children). Most households had between 10 and 24 members (84.4%).

Access to productive resources

Low agricultural productivity among women was common. This practice derives from socio-cultural factors that systematically limits their access to land, labour and capital for procuring inputs such as seeds, farming implements, chemical fertilizers, transport facilities, pesticides and herbicides. Key informants indicated that household landholdings, which were generally small, ranged between 10 and 15 acres in size and were usually shared only among male members of the household. They explained that women were not considered part of their fathers' households, hence, allowing them inheritance to husband/family land would deprive the fathers' households of land once they get married. This explanation was supported by older women:

"It's because if a woman inherits the land from her father, it'll not benefit his household because once she gets married, the produce from the farm will be sent to the husband's" (FDG Yilkpene, Older women).

Participants agreed that a married woman could, however, have access to a portion of her husband's farmland or borrow from neighbouring communities if she could afford the expenses on farming activities.

"If a woman needs land, she'll have to speak to her husband or the head of household to give her a portion of his land to farm" (KII, Y21).

"Apart from going to other communities, women with the financial resources to undertake farming activities may also borrow land from other families in their communities if those families wouldn't be farming on their land for a particular farming season" (KII Y22).

Women's limited access to farmland contributes to their inability to grow a variety of food crops in appreciable quantities to meet their household food needs. A female participant expressed the predicament women go through in this regard: "If women had large tracks of land like the men, they wouldn't be struggling to put food on the table...but how can we produce large quantities of food when we lack the resources? So, we use smaller parcels of land and manage them" (KII, Female, K09).

Patriarchy, a system of male dominance, limits access to land to male descendants [30, 31]. This is because it considers married women to belong to their husbands' rather than their fathers' household [18, 32]. Other factors of low productivity include women's non-entitlement to their male household members' labour (that is, where women traditionally lack the right to their husbands' and other male household members' labour), excessive demands on women's time for domestic chores including childcare, cooking and fetching firewood and water [33]. Physical environmental factors including climate change, degradation, deforestation and bush burning have further limited the sizes of land available to women [5]. Further, women lack spousal support to engage in other land and financial transactions with external parties. Similar findings have been reported in sub-Saharan Africa including other parts of Ghana [18, 34, 35]. A recent study in Southern Ghana, however, found that women, through matrilineal inheritance, had more access to and custody of land than their counterparts in Northern Ghana through patrilineal lineage [25]. The study, nevertheless, added that owing to gender-role stereotyping, land, initially vested in women, is reverted to their men leaving the former with very small parcels of land since the latter are perceived to be stronger and more able at utilizing large parcels of land. The paper further observed that family land is shared equally among siblings; a practice that is in contrast to findings in the current study. Regarding labour and other factors of production, other findings resonate with the current findings that compared to men, women have limited access to hiring labour in low-income countries [36-38].

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Women's disadvantaged status hinders their productivity. This disadvantage relates particularly to the production of labour-intensive root crops and legumes, which are important for alleviating poverty and malnutrition among WRA and children [37].

Roles in farming activities

Women in the study communities help their husbands to plant crops, cook for hired workers, harvest produce, and carry it home. These mandatory roles which benefit their husbands' farms are, however, not reciprocated. The tradition is that:

"It's a must for her to come to the farm and help. If she doesn't come, who else can come? The only reason your wife can't come to help you harvest is ill health. In that case, she wouldn't be at fault and her portion will be reserved" (FGD, K 31 Men).

Patriarchy accounts for the mandatory, non-reciprocal labour women render on men's farms [30]. It also accounts for payment for women's hired labour in kind – that is, a fraction of crops harvested in place of cash - but for men's labour, cash. Other farming activities such as preparation of land for planting and raising of beds and mounds for the planting of yam and cassava are reserved for men because such activities are perceived to be beyond women's physical strength. The differential roles in farming activities may be attributed to gender-role stereotyping and negative attribute-stereotyping of women [39]. Lack of reciprocal labour and gender-role stereotyping which limit women to the cultivation of certain crops may deprive them the ability to cultivate bigger parcels of land and variety of crops needed to augment household diets. Lack of payment in cash could also limit women's ability to purchase other essential food items needed to enhance the quality of their diets.

Types and uses of foods produced

In the study communities, food crops are produced mainly for home consumption. Livestock farming is a supplementary livelihood activity. Types of crops produced depend on gender-based factors such as differential access to productive resources and perceived energy expended on their production. Men typically produce and control staple crops for home consumption; however, large quantities of nutrient-rich legumes like groundnut, cowpea, Bambara beans, and pigeon pea are produced for sale. Men also dominate the production of crops with high-market value such as tomato, pepper, rice, and cashew-nut. A few women produce cash crops such as rice, soyabean, and okro.

Seasonal nutrient-rich vegetables and fruits harvested from the wild, mainly by women, are rarely cultivated because men perceive it unnecessary to devote effort and resources to cultivating foods already available in the wild:

"One doesn't look for what one already has but rather puts efforts into finding what one lacks" (KII Y14).

Although men and women produce livestock, men control its utilization. A key informant indicated that:

"In this community, men have total control over everything concerning livestock... She can't sell her livestock without the man's consent... The way a woman is, if you allow her too much authority today, tomorrow she'll ride on your back..." (KII Y24 Male).

Livestock is reared mainly for cash savings, and used as food typically on festive occasions, like naming ceremonies, marriages, funerals, and welcoming special guests. Male participants particularly shared this observation:

"These animals you see around are investment for us just like the bank accounts you have. You don't just withdraw money until the need arises" (FGD, Men, K28).

"We hardly kill any livestock for personal consumption. We usually kill livestock during occasionsand when we get important visitors. Besides these occasions, we rear these livestock so that when we run out of money or foodstuff, by selling them, we can afford food" (KII Y23).

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This finding resonates with previous findings where the occasional consumption of animal-source foods is associated with their high market value and limited market accessibility [40, 41]. Patriarchy and negative attribute-stereotyping of women are both at work in men's control of utilization of household livestock, restricting women's access to foods for their special dietary challenges and needs in their reproductive cycle. This finding contrasts with other findings where women control the income from their poultry production [40]. Women's dominance of harvesting of foods from the wild relates to their roles as home-managers and providers of food who would do anything to feed their families [42, 43].

Processing, preservation and storage of food

Gender-based roles are performed in post-harvest activities. Women have primary responsibility for all primary food processing activities such as boiling and milling rice, and sun-drying vegetables (such as pepper, okro and leafy vegetables) to extend the shelf-lives. Storing produce in sacks offers inadequate protection against infestation by fungi, insects, and other pests, making women's produce more prone to post-harvest losses and deterioration in quality. A female key informant explained these predicaments of women:

"After husking, we dry the maize and then shell it. Women bag their produce and store it in rooms, but most men store their produce in silos. What you should know is that, once the maize is put into silos, there's no need to add chemicals to prevent weevils because the silos are air-tight; however, with the bags, you have to spray the produce with chemicals to keep off weevils and other insects, but women can't afford such chemicals" (KII Y22).

Activities that are, however, performed jointly include preserving and storing produce and drying of grains, legumes, and some root crops (particularly cassava). Some studies have showed that even though men and women may play different roles within the food system, these roles are complementary [33].

Constraints faced by women as key actors in the food system including productive resources and technology for food preservation has been reported elsewhere [44]. The implication is that women, who are traditionally responsible for producing food mainly for home consumption, are unable to meet household food needs adequately and, by extension, their dietary needs.

Channels of distribution

Men and women determine prices of produce, which they sell at farm gates and markets. Women carry their produce on their heads to local markets, requiring expending of a lot of energy. Men, however, typically transport their produce by bicycles or motorized vehicles to larger urban markets. A male participants shed more light on how farm produce is distributed after harvest:

"Anyone who plants and harvests sells it personally. Sometimes, people (traders) come from elsewhere to the community to buy but other times I send it to Savelugu Market by means of a 'motor king' to sell" (KII, Male, Y22).

Even though women tend to make more complex and multiple trips than men, walking remains the predominant mode of transport/travel for many in SubSaharan Africa [45]. Partly responsible for women's poor access to and use of other means of transport include availability, cost and inconvenient locations of means of transport (long distance), cultural acceptability, personal safety and avoidance of harassment [45].

Women may sell their produce at farm gates at lower prices in response to factors such as non-access to transportation and excessive demands on their time for childcare, cooking, fetching water and firewood and other domestic and genderbased roles, which are usually unpaid for [32, 46]. Such transactions perpetuate poverty among women, which, in turn, deprives them access to quality diets. Over the years, women's access to productive resources, which are key to improving their productivity and nutrition, continuous to lag behind man's partly owing to social norms which have been slow to change. Even though government policies may have identified

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the constraints facing women, much has yet to be done in terms of legal framework specific to addressing them [46].

Intra-household allocation and provisioning of food

Traditionally, men control food resources at the household level. They provide weekly grain allocations to their wives for food preparation. In polygamous households, grains are allocated to only the wife whose turn it is to prepare meals for the entire family. The tradition that forbids women to enter storage barns to access grains is socially entrenched partly because men regard women as inept stewards of food stores:

“Even without granting them the freedom to go into our food barns, some women hide and go there for more grains when we aren’t around. Some do it to the extent of carrying the grains to their parents’ homes. They’ll mismanage the grains and, in no time, nothing will be left for us to survive on for the rest of the year” (FGD, Community Elders, Yilkpene).

A female participant defended the “no entry for women” tradition on grounds that it makes men responsible for replenishing stocks:

“It’s to our mutual benefit. This tradition prevents us from misusing the grains. If women are allowed to manage the barns and the foodstuffs get finished and the man can’t provide any, then she’ll have to provide the grains. That’s what we don’t want; hence, accord them the respect to fetch the grains for us” (FGD K27 Females).

Some women opposed the ‘no entry’ tradition partly because women are traditionally required to acquire ingredients such as fish and salt for soup to complement grains allocated to them. Mixed cropping, such as planting okro alongside groundnut, is among the strategies women adopt to cope with this tradition on food provisioning as explained by a participant:

“The piece of land apportioned to us is where they expect us to get money for ingredients. When we plant groundnut, we also plant okro so that we can sell some and consume the rest at home” (KII Y26 Female).

This finding is consistent with findings from other populations. Earlier studies reported that incomes controlled by women are used for household-related needs including food items [40].

Food insecurity and coping strategies

Women’s access to optimal diets is affected by seasonal food shortages, especially regarding vegetables and fruits during the period between April and August. Coping strategies men adopt include decreased meal frequency and portion sizes, buying more staples from the market and borrowing grains from neighbours. Women cope by using more bouillon seasoning to enhance the palatability of dishes, selling items like shea-nuts, firewood and their personal effects and migrating to southern Ghana to work as head porters. Remittances from family, relatives and donations from non-governmental organizations are other sources to acquire food.

Strategies adopted by women to mitigate the effects of food shortage have been reported elsewhere including Ghana [47-49]. The strategies relate to gender-role stereotyping, which the United Nations Human Rights division recognizes as an obstacle to women’s development, including their health and nutrition [50]. The report stresses that stereotyping women’s role within the family produces division of labour, which, ultimately, engenders poverty and lower educational attainment among women.

Food preparation

A typical local meal comprises Tuo Zaafi (TZ) – a thick porridge-like dish prepared from maize flour, eaten with a soup prepared from various vegetables and or legumes. Food preparation is subjected to a hierarchical system of power among women. Older wives are responsible for preparing lunch, dinner, and other major meals while younger wives are responsible for preparing breakfast:

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“It’s the first wife and her co-wives who are responsible for cooking. If they’re three or four wives, the first two or three will alternate in preparing food but the last wife will be responsible for preparing “koko” (breakfast meal) in the morning” (KII, K22).

Gender-role stereotyping accounts for the tradition that makes food preparation the responsibility of women. Cooking for large families could exert a heavy toll on women financially, physically, and psychologically – with potentially adverse effects on their diets and health and those of their children and families [15]. The burden relates partially to women’s relatively low incomes for acquiring meal ingredients which are more expensive than grains [51].

Decision-making on food consumption

According to female participants, men and women jointly decide the dish to eat depending exclusively on the kinds of food stuffs allocated by men. A female participant expressed:

“If the man gives you maize all the time, then it’s TZ that you can prepare. It’s just the soup to go with the TZ which is entirely decided by women because they provide the soup ingredients” (KII, Female, Y03).

Women, thus, determine the quality of food consumed since they decide what to combine with allocated staples and how to also make meals nutritious. Mothers-in-law may be involved in deciding what to eat owing to the status of their sons as heads of households and in the absence of their sons.

This finding, again, reflects the influence of patriarchy on women’s dietary quality. Women can only contribute to improved dietary quality at the household level if they have the resources to supplement their household food needs; but, as indicated earlier, they are limited financially and many ways in carrying out this duty effectively. Studies suggest that women’s participation in household decision-making on consumption contributes to improved dietary quality and that in some parts of Ghana, both men and women jointly take decisions [52].

Food sharing arrangements

Women who prepare food serve their portions first. Thereafter, portions of the head of household, elderly women, young men, young women and children are served in that order. Male heads of households or elderly men share out animal source food components of the meal at both household and community levels. According to a female participant:

“The thighs and breasts of the fowl go to the elderly men. The neck and wings go to the young men. The back and waist go to the women and the legs and head go to the children. The bony parts are given to us because we need stronger bones to carry the next generation of children.” (FGD, Y34 Females).

Patriarchy is conspicuous in the food-sharing tradition. Pro-male sharing of food has been reported in other parts of the world [48, 53, 54]. This practice has potential adverse effects on women’s dietary quality [20]. Similarly, negative stereotyping that restricts women’s dietary quality include the following three perceptions about women: first, they cannot be trusted to share meat fairly; second, that they are ignorant of specific animal parts that should go to the various groups of members of households and, third, they deserve bony parts of animals to enhance their performance of their reproductive roles. Prioritizing men in the sharing of food and meat, as found in this study, is in contrast to the practices found in other rural settings where food and meat are shared according to need [40].

Food Consumption Meal pattern and dietary diversity

Women’s diets consist mainly of grain-based foods. Tuo-Zaafi (T.Z) - a thick porridge-like meal - and a variety of porridges usually made from maize and guinea-corn are the main staple foods. Tuo-Zaafi (T.Z) is usually accompanied with vegetable soups in which small quantities of pounded anchovies (small herrings) is a common feature. Dishes prepared with fresh dark green-leafy vegetables, groundnut, cowpea, yam and rice are consumed when in season, but meat and fruits are less frequently consumed. Dry vegetables such as okro and pepper are a common feature in the diets throughout the year. Some women, particularly pregnant and lactating women,

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reported consuming beverages such as tea and chocolate drink with or without sugar and milk during the early morning hours. Most women (29/40) reported consuming up to 4 meals daily namely, early morning, mid-morning, afternoon and evening meals. Snacking is uncommon among most women and the few who reporting snacking or eating between meals usually consumed roasted groundnut and fried pastries at the marketplace. About half (22/40) of women reported achieving the MDD-W of 5 food groups or more in their diets. The five commonly reported food groups from which food was consumed were cereals/grains, green-leafy vegetables, fish (small herrings), legumes (cowpea) and seeds and nuts (groundnut). Use of Maggi (bouillon cube) to enhance taste and palatability was a common feature.

Dominance of cereal-based foods in the diets of the study population has been reported in studies of other populations groups including Ghana [24, 26, 49, 55]. Previous studies reported that the Ghanaian diet relies heavily on cereals and starchy roots which supplies about three-quarters of dietary energy- thus, meeting the energy requirements of the population. Their protein and vitamin intakes were, however, lower than recommended, which partly explains their poor dietary quality. The present findings also confirm earlier findings that more than 40% of women in northern Ghana could not meet their MDD-W – that is, they consumed diets characterise by low diversity and nutrient densities as reported by other findings conducted in the northern Ghana [6, 56, 57]. Even though the majority of participants (22/40) consumed foods belonging to 5 or more food groups, the quantities of anchovies (the main source of protein), green-leafy vegetables, groundnuts and other legumes were observed to be low in their diets resulting in sub-optimal quality. Affordability, owing to their low levels of incomes, cultivation of legumes including groundnut mainly for cash purposes and men's dislike for soyabased foods could explain the low consumption of nutrient-dense foods.

Social interaction during mealtime

Patterns of social interactions during mealtime depends on age, status and gender. Wives usually eat together and so do older women, young women or girls, young men and children. Male heads of households eat alone. If there is only one elderly woman, she also eats alone. Usually, women are the last to eat after everybody else is satisfied and would not need additional food. Furthermore, if visitors arrive unexpectedly at mealtime, the woman's food is often offered to them - thus, leaving her with little or no food at all. One female participant, however, explained the tactics adopted by woman after sharing of food:

“The fact that we serve our bowls before other household members’ doesn’t imply we get bigger shares or are the first to eat... We only put a little into our bowls to ensure the food is good to be consumed by the rest. After everyone else is served, whatever is left is added to what’s in our bowls. If nothing is left, then we resort to other people’s leftovers. Sometimes, we add our portions to the children. Also, if we get unexpected visitors, our food is sacrificed for them, we can always manage to survive” (FGD Women, Y34).

The tradition of being the last to eat is not peculiar to women in rural Northern Ghana. Similar patterns of consumptions or eating arrangements have been reported in India and other African countries [58]. Among the factors identified as responsible for women eating last in India included the perception that women and girls are second-class citizens, show of respect for men and the perception that men are leaders and decision makers in the family. Men, thus, deserved to be accorded more important social status than women. The question then is whether these reasons could explain the current findings in Northern Ghana. Although the study did not set out to explore the drivers of women's eating patterns, the practice of women eating last is likely to have negative implications for their dietary quality. Perhaps, this finding could partly explain the high prevalence of anaemia reported among women in northern Ghana [55]. In India, for instance, women eating last was associated with worse mental health among them; poor physical health and less autonomy were the possible explanations for their findings [58].

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CONCLUSION, AND RECOMMENDATIONS FOR DEVELOPMENT

The main socio-cultural norms within the food system identified as potential barriers to women's dietary quality in rural northern Ghana are patriarchy, genderrole stereotyping, negative-attribute stereotyping of women and women's socioeconomic background. These barriers adversely affect all the five components of the food system, in which women participate actively, and, thus, have potential adverse implications for their dietary quality. These practices that are inimical to women need to be deliberately dismantled through participatory community-based social behaviour change communication intervention, rather than nation-wide efforts. This approach may be particularly relevant to similar patriarchal settings where agriculture is their main livelihood source. Addressing these barriers could reduce levels of malnutrition and ill health among women and their families. Such interventions could contribute to improved, sustainable quality diets for all.

The barriers related to patriarchy may be the most difficult to address because of the close integration between cultural perceptions and practices of authority, power and control. Additionally, property rights are linked with religious practices, making it difficult to alter behaviour. Context-appropriate cultural negotiations with various stakeholders, including roles by the State, custodians of tradition and culture and legislation like the Intestate Succession Law (PNDC 111) may be useful to give women equitable rights to land. Autonomy for women may be enhanced through enhancing their educational and income levels. Socio-economic empowerment programmes that target women deliberately are needed to reduce their dependence, promote their education and create awareness on issues of health and nutrition.

Results of the study, should, however, be interpreted cautiously bearing in mind that there may exist subtle differences in the levels of women's participation in the food system in the selected region which may affect women's dietary quality differently from what is reported in the current study. There is, therefore, the need to carry out similar studies in other communities to ascertain transferability to other ethnic groups in northern Ghana.

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Table 1: Participants' socio-demographic characteristics

Variables	Male n=39 (27.3%)	Female n=104 (72.7%)	Total N=143 (%)
1. Age (years)			
15-19	0 (0)	19 (18.3)	19 (13.3)
20-49	27 (69.2)	77 (74.0)	104 (72.7)
50+	12(30.8)	8 (7.8)	20 (14)
Mean age	43.7	33.9	37.6
2. Marital status			
Single	2 (5.1)	22 (21.2)	24 (16.8)
Married	37 (94.9)	82 (78.8)	119 (83.2)
3. Women's groups			
Pregnant		18 (17.3)	18 (17.3)
Lactating		33 (31.7)	33 (31.7)
NPNL ¹		26 (25.0)	26 (25.0)
Adolescent girls		19 (18.3)	19 (18.3)
Elderly		8 (7.7)	8 (7.7)
4. Education			
None	17(43.6)	76(73.1)	93(65.0)
Non-formal	2(5.1)	1(1.0)	3(2.1)
Primary	1(2.6)	11(10.6)	12(8.4)
JHS ² /Middle	2(5.1)	11(10.6)	13(9.1)
Arabic	10(25.6)	2(1.9)	12(8.4)
Secondary +	7(17.9)	3(2.9)	10(7.0)
5. Occupation			
None	0	30 (28.8)	30 (20.9)
Informal Sector	35(89.7)	72 (69.2)	107 (74.8)
Formal sector	4(10.3)	2 (1.9)	6 (4.2)
6. Mean Monthly income			
a) Informal sector (GHC)	201.98	55.88	103.66
b) Formal sector	1400	1350	1383.34
Number of children			
None	3(7.7)	25 (24.1)	28 (19.6)
1 – 4	13(33.3)	45 (43.2)	58 (40.6)
5 – 9	18 (46.2)	34 (32.7)	52(36.3)
10 -15	5 (12.8)	0	5 (3.5)
7. Sizes of households			
5-9	5 (12.8)	22 (21.2)	27 (18.9)
10-14	5 (12.8)	30 (28.8)	35 (24.5)
15-19	7 (17.9)	26 (25.0)	33 (23.1)
20-24	10 (25.6)	10 (9.6)	20 (13.9)

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25-29	4 (10.3)	8 (7.7)	12 (8.4)
30-35	8 (20.5)	8 (7.7)	16 (11.2)

Note: The exchange rate in 2017 was 1US\$ to 4.2 GHC

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