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GENDER-BASED PLANNING OF MEALS AT THE HOUSEHOLD LEVEL IN GHANA

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ABSTRACT

Planning is important for the management and sustainable use of resources. To ensure sustainable quality meals, there is the need to plan meals in the home. Planning of meals can best be achieved if gender, especially, women who are the key people responsible for meals in the home, are involved. Therefore, this study was conducted to investigate the determinants of gender-based meal planning and the frequency of meals in Ghana using structured questionnaires and a multistage sampling technique. A total of 3521 households were interviewed across fourteen regions of Ghana, to identify how males and females plan their meals at the household level, and the key players involved in the choice of meals in the home. The country is stratified into regions and the regions further stratified into urban, peri-urban and rural areas. Purposive sampling was used to select households for the survey considering social classes and livelihoods of the people in the communities. Data obtained were entered in Statistical Product and Service Solutions (SPSS) version 16 (IBM SPSS, Armonk, NY) for analysis using the Pearson's chi square at a P-value of 0.05 to determine statistical differences between gender. Associations between factors that influence frequencies of meals were determined by Cramér's V. Findings showed that, women are mostly responsible for meals at the household level. The study also showed that most Ghanaian households eat three times per day, but their meals are often not planned. Furthermore, the findings of the study suggest that educational attainment and income do not have significant impact on the frequency of meals and gender-based planning of meals in the home. The study showed that 67.41% of households involved in the study were headed by men but those responsible for cooking were mostly women (63.71%). Only a few households planned their meals. Of these, women were mostly responsible for the provision of meals. Therefore, it is important to consider gender in the planning of meals to ensure good nutrition and food availability to the household throughout the year.

Key words: food quality, food security, gender, household meal, nutrition, planning, women

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INTRODUCTION

The absence of adequate nutrition may affect the development and future potential of every individual on earth. Therefore, it is important to sensitize households to make efforts to provide appropriate nutrition needed for the proper growth and development of household members. This can best happen if the prevention and management start from the home. Recent studies suggest that there were over 2 billion undernourished people in addition to 164 million children below the age of five years suffering from stunting and cognitive deprivation in the world [1]. The undernourishment is as a result of the absence of adequate macronutrients and micronutrients in diet [2]. The absence of micronutrients is a consequence of poor diet and non-availability of food in the home [3, 4]. The issue of food insecurity and poor nutrition continues to be one of the challenges in the developing world and is most critical in Asia and Africa [2, 5]. For instance, in 2013, the Food and Agricultural Organization (FAO), International Fund for Agricultural Development (IFAD) and World Food Programme (WFP) reported that the highest prevalence of undernourishment was in sub-Saharan Africa [6]. Developing countries are said to experience more food and nutrition related problems than developed countries due to poverty, poor agricultural practices and poor planning [4, 7, 8]. In Africa, the factors that contribute to food insecurity are numerous, varying and complex [6]. Some of such factors are: poor climatic conditions, environmental degradation, rapid population growth, wrong government policies and low productivity from the agricultural sector [9, 10, 11]. In spite of these, women play essential roles including weeding and harvesting in the production of food crops and other agriculture products that contribute to household food security and nutritional quality [12, 13]. In view of the role women play in food production, they also make efforts to diversify the food supply to their households [14]. This is a significant contribution of women to agriculture and enhances food security and nutritional quality in the home. Given the necessary economic and financial support, female farmers will be able to produce more than enough food to support household consumption and sell the surplus to increase household income. Ultimately, this will help reduce poverty at the household level and further improve nutrition in the home.

Findings from a recent study indicate that, where there is gender equity and higher income earning, people consume food rich in micronutrients and of higher caloric value [15]. However, female-headed families are more vulnerable to food insecurity than male-headed families due to the lower income of women compared to men [15]. Even with their lower income levels, women spend more on food and health care than men [15, 16, 17]. This implies that planning of meals

by males at the household may ensure food security but may not necessarily reflect directly on the nutritional quality of the meals. Such compromises on food security and nutritional quality are likely to result in stunting and poor cognitive development in people, which, eventually affect the net productivity and development in developing countries.

In Zimbabwe, Zambia, Malawi and Nigeria, female-headed homes are more vulnerable to food insecurity than the male-headed homes [18, 19]. Rural households headed by women may even be more vulnerable to food insecurity because women in rural communities are poorer than their male counterparts [18]. Therefore, the financial status of women appears to be critical for food security and nutritional quality at the household level, especially in underdeveloped countries where poverty is a key contributor to nutritional quality and food security.

To ensure food security and quality nutrition in underdeveloped countries, there is a need for proper planning of meals. The issue of meal planning in nutrition arose in the 1970s but was not considered at all in the numerous fora that discussed good nutrition and food security across the world. The initial focus of planning in the early discussions on nutrition was based on policy formulation and not food consumption at the household level [20, 21]. It also did not consider the role of gender in nutrition which is key to ensuring quality nutrition in the home [20, 21]. Although food security and nutritional quality have received a lot of attention across the world in recent years, not much emphasis is placed on the planning and involvement of both genders in achieving the policies and planning of meals [20, 21].

It is important to note that planning influences productivity because in the process of planning, one considers resource availability and learns to manage them accordingly. Indeed, planning is one of the keys to success in everything. Therefore, if meals are properly and strategically planned at the household level, taking into account all resources available to the household, it could be possible to achieve the sustainable development goals (SDGs) 1, 2 and 3 which aim at food security and quality nutrition in the world by 2030 [22]. These goals could even be best achieved if gender is placed at the center of the effort at achieving it. In fact, it has been asserted that women are the key to food security [23]. Therefore, the role of gender in the attainment of the first three SDGs cannot be discounted.

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Current literature on the role of gender in planning and frequency of meals at the household level and its association with nutritional quality and food security is limited. Therefore, this study investigates how gender-based planning of meals affects nutrition and food security in the Ghanaian household.

MATERIALS AND METHODS

A field survey was carried out to identify the eating pattern of the people of Ghana and their willingness to plan meals in the household. The country is stratified into regions and the regions stratified into urban, peri-urban and rural areas. Communities within these areas were stratified considering the socio-economic class and livelihood of the people. Purposive sampling was used to select households and respondents that cut across the social classes and livelihoods in the communities. A structures questionnaire was administered to respondents (who were either the heads of the family or members of the family above the age of 18 years) in the selected households. Using multistage sampling technique and Cochran's formula for calculating sample size for unknown populations [24], a total of 3521 households were interviewed in fourteen regions in Ghana.

Data from the interviews were retrieved and entered in SPSS version 16 (IBM SPSS, Armonk, NY) for analysis. Statistical differences were determined by Pearson's Chi Square at a P-value of 0.05. The associations between the factors that determine the frequencies of meals were determined by Cramér's V [25].

RESULTS AND DISCUSSION

Access to food in society is a right that is backed by law [26] and not a privilege, as may be thought. However, just having food is not enough; food should be nutritious and safe to ensure good health and safety of the consumer [26]. To ensure good health and survival, there is also the need to ensure availability, affordability and safety of food to households throughout the year. This calls for careful planning of meals and regular supply of food to households. Women are known to be at the forefront of provision of meals to households than their male counterparts. For instance, in this study, 63.71% of the households had females as the responsible persons for cooking meals whereas 19.10% had males as the responsible persons for cooking. Therefore, women are very important in ensuring food security [3, 23, 26]. Moreover, majority (67.41%) of the households were headed by males. Only 21.78% of the households were headed by females.

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A total of 3521 respondents representing households were interviewed in this study. The highest number of respondents was from the Ashanti Region and the least from the Bono Region (Table 1). About half of the respondents were from rural and cottage communities and a third were from peri-urban communities (Table 1). Findings from this study indicate that the majority of the respondents did not plan their meal. Of those who planned their meals, most were female (Table 2). Moreover, 76% of the people involved in the preparation of meals in the household were between the ages of 25 and 45 years. Sixty-seven percent of the people had been married. Of this number 24% were males and 76% were females. The majority (93%) had household sizes between one and 10, and 62% of the respondents had basic and secondary school education (Table 1). Out of the respondents with basic and secondary school education, 24.3% were males and 75.7% were females. Results from this study show that most of the households interviewed did not plan their meals. Only 23% out of 3521 households involved in the study planned their meals. Among males, 28.1% planned their meals while 71.9% did not plan their meals. In the case of females, 20.8% planned their meals and 71.2% did not plan their meals (Table 2). Analysis of frequency of meals in the household also shows that 67% of the 3521 respondents ate three times per day and 30% ate once or twice daily (Table 2). Respondents depended on pipe borne, well, spring, river, bore hole, sachet and dam for water. In urban areas, 21%, 14%, 58%, 1%, 4%, 26% of households depended on pipe borne, well, spring, river, borehole and sachet water, respectively. No household depended on dams for water in urban areas. In peri urban areas, 51%, 78%, 10%, 8%, 30% and 64% of households depended on pipe borne, well, spring, river, bore hole and sachet water, respectively. None depended on dams for water. In the case of rural households, 27%, 8%, 31%, 91%, 65%, 11% and 100% depended on pipe borne, well, spring, river, bore hole, sachet and dams, respectively, for water.

The income level of females was comparatively lower than that of males. For instance, 17.6% of females earned below GHC 100 (US$ 16.95) compared to 13.3% of males. More than 49% of female respondents earned GHC 101 – 500 (US$ 17- $84.75) compared to 40.5% of male respondent. There were more males in higher income brackets than females. Over 8% of males earned between GHC 1000 – 1500 (US$ 169.66- $254.24) compared to 4.6% of females. Moreover, 7.7% males earned more than GHC 2000 (US$ 338.98) compared to 4.7% of females.

The findings from this study shows that most Ghanaians eat three times per day irrespective of their socio-economic and cultural backgrounds. However, the

quality of the meals is not known because they are mostly not planned. According to Pinstrup-Andersen [27], food security in the household is dependent on social, economic and institutional factors which finally affect the quality, quantity and affordability of food and nutrition. This implies that the planning of meals may also have effect on the quality and quantity of food eaten by the household. It is, therefore, important to plan meals to help with the effective management of the economic resources to enhance good nutrition and food security. However, it is commonly observed in the Ghanaian society that women are generally at the forefront in the provision of meals at the household level. Similar observations have been reported that women are key to food security [3, 23, 26] and spend more on food and health care of the household than their male counterparts [15, 16, 17]. This study revealed that most of the respondents responsible for planning and processing of meals in the household had basic school education, with a handful having secondary and tertiary education (Table 1). This relatively low education level could affect the quality of meals provided to the family because of inadequate knowledge, to determine the nutrient composition of the food given to the household at any time. The nutrition of a household at any time should consider the age composition of the household members, their jobs and other relevant factors. It is, therefore, important to empower the people involved, especially women, on the nutritional composition of foods cooked and consumed in the home. This will help them choose food items based on the kinds and amounts of nutrient they will provide, and will ensure a well-balanced diet for the household. According to Chiputwa and Qaim [15], empowering women and ensuring gender equity in decision-making will contribute to food security and good health in the household. Education of women was originally not important to most households because their “offices” were seen to be the kitchen. It was forgotten that the life of individuals from day one depended on what they were fed on. This makes the education and empowerment of members of the household very important, to ensure proper development of the household for national development.

Contrary to the general belief that people with higher educational attainment eat quality food, Mabuza *et al.* [7] reported that, people with high education do not strategically plan their food resource as compared to their uneducated counterparts. Interviews with most middle-income homes revealed that such households eat twice per day to minimize cost and ensure regular supply of food to the members of the home (Table 3).

The study revealed that as part of planning of meals, respondents ate once, twice, thrice or four times per day. There were significant differences in the

frequency of meals per day and that, there was a weak association between planning of meals and the frequency of meals per day (Table 3). There were also weak associations between frequency of meals and sources of drinking water, age of respondent responsible for planning of meals and administrative regions (Table 3). The association between frequency of meals and educational attainment, household size, marital status, household income and the community structures of the resident communities were very weak (Table 3). However, there were significant differences between the frequency of meals and age of respondents responsible for the planning of meals, household size, marital status, administrative regions and the community structures of the resident communities (Table 3). This supports reports that factors such as household income, household size, educational attainment, marital status, and source of drinking water directly affect nutrition and food security in the household [27, 28].

No significant differences were found between frequency of meals and source of drinking water, educational attainment and household income (Table 3). The study also showed significant association between gender-based meal planning and frequency of meals per day, source of drinking water, age of the one responsible for the planning of meals, the educational attainment of the person responsible for the provision of meals, the household size, marital status, household income, region and the structure of the community in which a household resides. These confirm the report that household food security is dependent on a social, economic and institutional factor [27, 28]. Therefore, there is a need to always consider these factors when planning meals for the household or when designing policies or programmes on meal planning for the household.

In terms of gender-based meal planning, the results showed weak associations between the frequency of meals per day in the home (Table 4), source of drinking water in the home and household income (Table 4). The age of the people responsible for the planning of meals in the household (Table 4), household size and marital status also show very weak associations with gender-based planning of meals in the home.

There was a weak association between educational attainment and gender-based planning of meals. Gender-based meal planning was observed to have association with the frequency of meals, source of drinking water, household size, household income, regional location of the household, the community settings in which the household resides, age and educational attainment of the person responsible for the meals in the home. This is in line with the assertion that the

sex of the head of the family has a great influence on the nutrition of the family [7, 15]. It further suggests that women play very important roles in the provision of food in Ghanaian homes. This affirms the report that women are responsible for the caring, management and provision of food in the home [26]. Women should, therefore, not be left out when discussing the availability and planning of meals in the home.

Non-planning of meals can have a negative impact on the food and nutrition security in the home throughout the year. There is, therefore, the need to educate both males and females on the importance of planning meals for good health in the home. Meal planning will take into account the nutrient composition of the food, age of the family members and the health benefits of what is eaten to ensure growth and prevent possible nutrient deficiencies. A report by Chiputwa and Qaim [15] shows that male-headed families have a high chance of being food secured because of the higher income of males, but the females are known to spend more money on food in the home than their male counterparts. In this regard, it is important to empower females to participate in the planning and management of meals in the home to ensure quality meals and food availability for the family throughout the year. This will help in the maintenance of good health and ensure food security. Additionally, efforts should be made to involve the male counterparts of the family to ensure food security in the home.

There were significant differences between the type of cooking fuel and gender-based meal planning, source of drinking water, planning of meals, age, gender, educational attainment, household size, marital status, region and community of residence. The results on the source of fuel used by the household show weak association between gender-based planning of meals, age of the one responsible for the meals, gender, household size and marital status (Table 5). On the other hand, there was a moderate association between type of cooking fuel and source of the drinking water, planning of meals, educational attainment, household income and the nature of resident community (Table 5). There was a strong association between the regional locations and the source of fuel use by the household.

Also, there were significant differences between the nature of fuel used by a household to cook and gender-based meal planning, source of drinking water, planning of meals, age of the person responsible for the meals, gender, educational attainment, household size, marital status, household income, region and community. The kind of fuel used for cooking in the home reflects the sociocultural and economic situation of the family. In this study, it was observed

that most households used more than one form of fuel for cooking. This was so because some staple foods like 'banku', a local food made from corn dough mixed with cassava dough, cannot be easily prepared on a gas stove. Therefore, families that eat such food use a coal pot, which is fueled by charcoal. Depending on the kind of food being prepared, different households used different fuels for cooking.

It was observed that the households in the study ate between one and four meals daily with the majority eating twice or thrice per day. The number of times that people ate did not depend on the planning of meals by the household, the educational attainments, household income, household size, marital status or source of drinking water to the household (Table 3). Contrary to the above, the location of the family was observed to have an influence on the frequency of meals in the household. This might have resulted from the availability of food and climatic conditions in the region. For instance, the climatic conditions in the Ashanti region support the farming of several food crops than that in the Northern and Central regions of Ghana. This difference in climate among regions creates disparities in food availability, which consequently influences frequency of feeding among the people in the regions. Therefore, non-availability of food could influence food security in the home FAO [3]. However, the educational attainment and income of households do not directly influence gender-based planning of meals.

CONCLUSION, AND RECOMMENDATIONS FOR DEVELOPMENT

The study reveals that most households are headed by males. However, women play important roles in cooking meals for the household. Therefore, both men and women play vital roles in ensuring food security and nutritional quality in the home. Findings from this study suggest that, irrespective of the socioeconomic situation of people, most households eat three times per day although many of the meals are not planned. Therefore, it is important to educate the public on the need to plan meals at the household level. This will help ensure nutritional quality and food security at the household level. It will also help in the prevention of diseases associated with poor nutrition and nutrition related growth defects in children.

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Table 1: Demographic data of respondents involved in gender-based planning of meals

Variable	Frequency	%
Region		
Greater Accra	214	6
Ashanti	668	19
Eastern	295	8
Central	541	15
Upper West	152	4
Upper East	150	4
Volta	243	6.9
Oti	149	4.2
Northern	147	4.2
Savannah	195	5.5
Bono East	200	5.7
Bono	125	3.6
Western North	200	5.7
Western	244	6.9
Community of residence		
Urban	624	18
Peri urban	1,173	33
Rural	1,584	45
Cottage	140	4
Gender		
Male	985	28
Female	2,536	72
Age of Respondent		
Up to 25 years	856	25
26-35 years	1,084	31
36-45 years	690	20
46-55 years	415	12
56-65 years	231	7
More than 65 years	182	5
Marital status		
Single	1,172	33
Married	2,045	58
Divorced	177	5
Widow/Widower	127	4
Educational attainment		
No literacy	692	20
Non-formal	148	4

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Basic Education / Middle School	1,565	44
Secondary/ Technical School	617	18
Tertiary	499	14
Household Size		
1-5 people	2,092	60
6-10 people	1,156	33
11-15 people	181	5
16-20 people	54	2
More than 20 people	22	1

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Table 2: Compositional determinants of gender-based planning of meals at the household level

Variable	Frequency	%
Gender-based meal planning		
Males Plan	277	8
Males Don't Plan	708	20
Females Plan	528	15
Females Don't Plan	2,008	57
Frequency of meals per day		
One	53	2
Two	989	28
Three	2,361	67
Four	118	3
What is your main source of drinking water		
Pipe borne	2,331	66
Well	188	5
Spring	48	1
River	100	3
Bore hole	492	14
Sachet water	351	10
Dam	11	0
Household Income		
Up to GH¢ 100 (US$ 16.95)	492	16
GH¢ 101-500 (US$ 17- $84.75)	1,415	47
GH¢ 501-1000 (US$ 84.92-$169.49)	661	22
GH¢ 1001-1500 (US$ 169.66- $254.24)	168	6
GH¢ 1501-2000 (US$ 254.41 - $338.98)	109	4
Above GH¢ 2000 (US$ 338.98)	165	5

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Table 3: Descriptive statistics of predictors frequency of meals in the household

Variables	Frequency of meals per day (%)				Inferential Statistics
	One	Two	Three	Four	
Gender-based meal planning					Pearson chi^2(9) = 112.3142 P < 0.001
Males Plan	2	19	78	1	Cramér's V = 0.1031
Males Don't Plan	2	39	56	3	
Females Plan	1	17	80	2	
Females Don't Plan	1	28	66	4	
What is your main source of drinking water					Pearson chi^2(18) = 26.1516 Pr = 0.096
Pipe borne	1	27	68	3	Cramér's V = 0.0498
Well	2	29	66	3	
Spring	2	29	65	4	
River	4	32	57	7	
Bore hole	1	33	62	3	
Sachet water	2	26	69	3	
Dam	0	0	100	0	
Age of Respondent					Pearson chi^2(15) = 27.4242 P = 0.025
Up to 25 years	1	25	70	4	Cramér's V = 0.0514
26-35 years	1	28	68	3	
36-45 years	1	30	66	3	
46-55 years	3	29	64	4	
56-65 years	1	35	58	6	
More than 65 years					

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Educational attainment					Pearson chi^2(12) = 19.8449 P = 0.070
No literacy	2	27	67	4	Cramér's V = 0.0433
Non-formal	1	26	68	4	
Basic Education / Middle School	2	30	64	4	
Secondary/ Technical School	1	26	70	3	
Tertiary	1	26	72	1	
Household Size					Pearson chi^2(12) = 30.9097 P = 0.002
1-5 people	1	30	65	3	Cramér's V = 0.0542
6-10 people	1	24	72	3	
11-15 people	1	34	61	4	
16-20 people	6	22	72	0	
more than 20 people	0	41	59	0	
Marital status					Pearson chi^2(9) = 23.1003 P = 0.006
Single	2	28	66	4	Cramér's V = 0.0468
Married	1	27	69	3	
Divorced	3	32	60	5	
Widow/Widower	2	38	54	6	
Household Income					Pearson chi^2(15) = 22.6060 P = 0.093
Up to GH¢ 100 (US$ 16.95)	2	29	66	2	Cramér's V = 0.0500
GH¢ 101-500 (US$ 17- $84.75)	1	27	68	4	
GH¢ 501-1000 (US$ 84.92-$169.49)	2	29	67	2	
GH¢ 1001-1500 (US$ 169.66- $254.24)	0	26	71	3	

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GH¢ 1501-2000 (US$ 254.41 - $338.98)	0	34	66	0	
Above GH¢ 2000 (US$ 338.98)					
Region					
Ashanti	2	35	62	1	Pearson $chi^2(182) = 750.977$ $P < 0.001$
Bone East	3	36	61	0	Cramér's V = 0.128
Bono	3	29	67	1	
Central	0	21	78	1	
Eastern	1	16	84	0	
Greater Accra	2	44	53	0	
Northern	1	10	88	0	
Oti Region	2	16	78	3	
Savannah	0	4	95	1	
Upper East	0	12	88	0	
Upper West	2	62	36	0	
Volta	0	14	86	0	
Western North	5	60	36	0	
Western	4	44	51	0	
Community of residence					
Urban	2	29	66	2	Pearson $chi^2(9) = 23.9855$ $P = 0.004$
Peri urban	1	28	66	4	Cramér's V = 0.0477
Rural	1	26	69	4	
Cottage	3	41	53	3	

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Table 4: Descriptive statistics of predictors of gender-based planning of meals

Variables	Gender-based meal planning (%) Males Plan	Males Don't Plan	Females Plan	Females Don't Plan	Inferential Statistics
Frequency of meals per day					Pearson chi^2(9) = 112.3142 P < 0.001
One	9	28	8	55	Cramér's V = 0.1031
Two	5	28	9	58	
Three	9	17	18	56	
Four	3	18	8	71	
What is your main source of drinking water					Pearson chi^2(18) = 264.8237 P < 0.001
Pipe borne	6	19	13	62	Cramér's V = 0.1583
Well	14	20	20	46	
Spring	4	19	15	63	
River	3	15	10	72	
Bore hole	10	30	10	50	
Sachet water	15	17	35	34	
Dam	36	9	18	36	
Age of Respondent					Pearson chi^2(15) = 58.6915 P = 0.001
Up to 25 years	6	20	18	56	Cramér's V = 0.0752
26-35 years	9	19	17	56	
36-45 years	8	21	15	56	
46-55 years	4	22	11	63	
56-65 years	9	19	10	62	

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More than 65 years	17	21	9	53	
Educational attainment					Pearson chi^2(12) = 461.4760 P < 0.001
No literacy	7	19	9	65	Cramér's V = 0.2090
Non-formal	5	15	11	68	
Basic Education / Middle School	3	17	13	67	
Secondary/ Technical School	10	27	16	48	
Tertiary	23	25	29	23	
Household Size					Pearson chi^2(12) = 76.1455 P < 0.001
1-5 people	7	19	16	58	Cramér's V = 0.0851
6-10 people	8	20	15	57	
11-15 people	14	29	9	48	
16-20 people	19	19	9	54	
More than 20 people	36	45	5	14	
Marital status					Pearson chi^2(9) = 87.7459 P < 0.001
Single	10	24	15	51	Cramér's V = 0.0911
Married	8	20	15	58	
Divorced	3	8	14	75	
Widow/Widower	0	7	12	81	
Household Income					
Up to GH¢ 100 (US$ 16.95)	2	19	9	69	Pearson chi^2(15) = 189.1814 P < 0.001
GH¢ 101-500 (US$ 17- $84.75)	5	19	12	65	Cramér's V = 0.1447
GH¢ 501-1000 (US$ 84.92-$169.49)	11	22	20	47	

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GH¢ 1001-1500 (US$ 169.66- $254.24)	15	24	22	38	
GH¢ 1501-2000 (US$ 254.41 - $338.98)	12	14	29	45	
Above GH¢ 2000 (US$ 338.98)	12	27	20	42	
Community of residence					Pearson chi^2(9) = 92.9013 P < 0.001
Urban	11	19	25	46	Cramér's V = 0.0938
Peri urban	7	19	15	58	
Rural	7	21	11	61	
Cottage	2	22	18	58	

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Table 5: Descriptive statistics of predictors of gender-based planning of meals and cooking fuel

Variable	Main cooking fuel type (%) Firewood only	charcoal only	gas only	Charcoal and gas	Firewood and charcoal	Inferential Statistics
Gender-based meal planning						Pearson $chi^2(12) = 322.9963$ $P < 0.001$
Males Plan	20	18	37	15	10	Cramér's V = 0.1749
Males Don't Plan	24	22	18	18	18	
Females Plan	14	27	36	15	9	
Females Don't Plan	22	30	9	20	19	
What is your main source of drinking water						Pearson $chi^2(24) = 1.0 \times 10^3$ $P < 0.001$
Pipe borne	15	31	14	22	17	Cramér's V = 0.2670
Well	30	27	10	11	23	
Spring	23	17	38	19	4	
River	63	15	5	4	13	
Bore hole	52	20	7	3	18	
Sachet water	2	19	55	21	3	
Dam	18	0	0	0	82	
Do you normally plan your meals						Pearson $chi^2(4) = 276.2132$ $P < 0.001$
Yes	16	24	36	15	9	Cramér's V = 0.2801
No	23	28	11	19	18	

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Age of Respondent						Pearson chi^2(20) = 229.2314 P < 0.001
Up to 25 years	17	27	23	18	15	Cramér's V = 0.1287
26-35 years	17	25	21	21	16	
36-45 years	20	28	15	22	15	
46-55 years	27	33	10	16	14	
56-65 years	41	24	4	12	19	
More than 65 years	30	31	2	7	30	
Gender						Pearson chi^2(4) = 52.6961 P < 0.001
Male	23	21	23	17	15	Cramér's V = 0.1223
Female	20	30	15	19	17	
Educational attainment						Pearson chi^2(16) = 1.1 × 10^3 P < 0.001
No literacy	43	23	1	6	27	Cramér's V = 0.2817
Non-formal	27	49	4	4	16	
Basic Education / Middle School	20	34	11	19	16	
Secondary/ Technical School	10	23	24	31	12	
Tertiary	7	13	53	21	5	
Household Size						Pearson chi^2(16) = 382.1408 P < 0.001
1-5 people	13	29	22	23	13	Cramér's V = 0.1651
6-10 people	30	26	11	14	19	
11-15 people	46	19	4	4	26	
16-20 people	43	15	4	2	37	
more than 20 people	59	14	0	5	23	

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Marital status						Pearson chi^2(12) = 187.0357 P < 0.001
Single	14	26	26	21	14	Cramér's V = 0.1331
Married	25	27	14	17	18	
Divorced	15	42	6	20	17	
Widow/Widower	33	35	2	14	15	
Household Income						Pearson chi^2(20) = 600.4065 P < 0.001
Up to GH¢ 100 (US$ 16.95)	44	26	5	8	16	Cramér's V = 0.2233
GH¢ 101-500 (US$ 17- $84.75)	20	29	12	20	17	
GH¢ 501-1000 (US$ 84.92-$169.49)	11	31	25	23	10	
GH¢ 1001-1500 (US$ 169.66- $254.24)	11	18	35	29	7	
GH¢ 1501-2000 (US$ 254.41 - $338.98)	7	10	61	17	6	
Above GH¢ 2000 (US$ 338.98)	5	19	41	32	2	
Region						
Ashanti	21	32	18	18	11	Pearson chi2(91) = 2005.872 P < 0.001
Bone East	20	29	10	13	28	Cramér's V = 0.285
Bono	23	36	32	2	6	
Central	11	31	38	17	3	
Eastern	3	18	5	40	33	
Greater Accra	0	33	45	20	1	
Northern	12	13	1	4	69	
Oti Region	51	31	5	2	11	
Savannah	19	24	3	7	47	
Upper East	46	31	7	10	6	
Upper West	81	16	1	1	1	

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Volta	4	28	9	30	30	
Western North	6	14	19	50	10	
Western	25	37	11	19	8	
Community of residence						
Urban	4	30	38	22	7	Pearson chi^2(12) = 566.1100 P < 0.001
Peri urban	14	28	18	25	14	Cramér's V = 0.2315
Rural	31	26	10	12	21	
Cottage	41	25	6	11	17	

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