International Archives of
Public Health and Community Medicine

Food Preferences of Women during Pregnancy in Lake Areas of the City of Cotonou-Benin

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Abstract

Introduction: Pregnancy is a period of physiological and psychological changes that leads pregnant women to modify their diet, often until delivery. This study aimed to investigate the food preferences of women during pregnancy.

Methods: This cross-sectional study involved 230 women, conveniently identified in two public and two private health centers in the lake areas of Cotonou. Pregnant women of at least 12 weeks gestation and women who had given birth less than 12 weeks previously were included and completed a digital questionnaire to collect sociodemographic and dietary data. Simple logistic regression analysis assessed associations between food preference and sociodemographic and cultural variables.

Results: Pregnant women were more likely to have food preferences than postpartum women (OR = 1.76; CI: 1.020-3.069). The majority of women during pregnancy (62.2%) had food preferences, particularly for meat products (37.8%), porridge (30.8%), and fruit juices (26.6%). Nearly 60% had food allergies, such as peanut allergies, and aversions to certain foods, such as mustard.

Conclusion: This study supported the hypothesis that pregnancy alters the relationship of pregnant women with certain foods. Support interventions for women during pregnancy should focus on meat products, fruit juices, and enriched porridge, preferably instant porridge.

Keywords

Pregnant woman, Pregnancy, Food preference, Lake areas, Cotonou

Introduction

Pregnancy marks a transformative period for all women, regardless of their backgrounds. This journey is characterized by a multitude of physical and psychological changes that accompany the expectant mother. These profound alterations can significantly impact a woman's body image and relationship with food during pregnancy [1]. Notably, women with a history of eating disorders (EDs) are particularly vulnerable to these upheavals, increasing the likelihood of their eating behaviors reverting to pathological patterns [2]. Certain signs and symptoms, often attributed to pregnancy, have historically been used to confirm a woman's pregnant state. These include intense cravings for specific foods, aversions to previously enjoyed items, sudden nausea, and vomiting, particularly prevalent during the first trimester [3].

Extensive research has established a compelling link between the prenatal environment and the development of pathologies later in life. Baker and Hales proposed that nutritional restriction during pregnancy triggers an adaptive response in the fetal organism, favoring the growth of vital organs (e.g., brain and kidneys) over others, potentially leading to impaired development of these structures [4].

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Nutrition plays a pivotal role during this critical period of fetal development. As a determinant of non-communicable disease risk, maternal nutrition is a potentially modifiable factor that can significantly impact health outcomes. Comprehensive improvements in women's nutrition and overall health status, both preconceptually and during pregnancy, contribute to optimal fetal growth, favorable obstetric outcomes, improved perinatal survival, and the potential for long-term health benefits for both mother and offspring [5].

Animal models and human studies have suggested maternal nutrition and metabolic state before pregnancy regulate fetal-placental gene expression, organ structures, metabolism, and growth during critical developmental periods. These factors influence the risk of cardiovascular, metabolic, respiratory, immunological, neuropsychiatric, and other chronic diseases that can originate during childhood development and persist into adulthood, with or without low birth weight [6,7].

Women who report having "prudent" or "health-conscious" eating habits before and/or during pregnancy exhibit a lower risk of obstetric complications and adverse birth outcomes. In malnourished women, comprehensive nutritional supplementation (multiple micronutrients plus balanced protein energy) has been associated with a reduced incidence of adverse birth outcomes, including low birth weight [8].

The latter has become a pressing public health concern in the lacustrine areas of Cotonou, where the prevalence of low birth weight has increased from 12.5% in 2018 to 17.4%, Compared to the national prevalence of 8.9% in 2020. These alarming figures highlight the urgent need for targeted nutritional interventions to support pregnant women in these communities.

The present study aims to investigate the food preferences of pregnant women in the lacustrine areas of Cotonou. The findings will be utilized to develop tailored corrective actions and specific nutritional recommendations, ultimately contributing to the reduction of fetal and maternal health risks in these vulnerable populations.

Methods

Study type and population

A cross-sectional descriptive study was conducted among women at the Ahouansori, Aïdjedo, John Holt, and Confiance health centers. These centers are health facilities that have recorded the highest number of low-birth-weight infants and therefore represent the intervention area for this study. Women with at least twelve weeks of pregnancy and women who had given birth less than twelve weeks ago who had come for prenatal or postnatal care were selected by convenience. Women with less than six months of residence and those who came for occasional consultations and did not intend to deliver in the study centers were not included. A sample size of 209 women was estimated using Dagnélie's formula, which took into account the expected number of pregnancies and increased by 10% for a total of 230 women included.

Data collection technique and tool

A questionnaire survey was conducted among eligible women. The selected women were administered a digital questionnaire digitized on the Kobocollect platform and deployed on Android smartphones. This tool allowed for the collection of socio-professional, demographic, and obstetrical information, and data on women's food preferences during pregnancy.

Data analysis

The survey data were analyzed using SPSS software version 21. Quantitative variables were presented as means. Qualitative variables were presented as proportions or figures. Some quantitative variables were categorized and presented as proportions. Simple logistic regression was performed to investigate possible associations and their directions between food preference and women's status (pregnant/delivered), age, occupation, and education level. All results were assessed at a significance level of 5%.

Ethical aspects

This work was approved and registered under decision number 003-2023/CER-SS by the health sciences research ethics committee. Consent from the women surveyed was obtained before administering the data collection tool. We respected data confidentiality by anonymizing the data of the women included.

Results

Sociodemographic characteristics

Of the 230 women, 63.5% were pregnant and 36.5% were breastfeeding, of whom 11.3% had a history of miscarriage. Their mean age was 27.8 ± 5.5 years, with a predominance of women aged 26 to 35 years (48.7%). The majority of the women had a secondary education level (37.8%) and were employed in priority professions, such as traders (31.7%), craftswomen (28.7%), and housewives (23%) (Table 1).

Dietary preferences

Dietary data collected from women revealed that 62.2% of women had dietary preferences during pregnancy. Women who reported at least one food prohibition accounted for 14.8%. Over ¾th of women consumed porridge while pregnant. Among these, more than half (54.91%) purchased their porridge from street vendors while the others cooked it at home (Table 2).

The dietary preferences of pregnant women were primarily porridge (30.8%), fruit juices (26.6%), rice

Table 1: Distribution of women according to socio-demographic data.

Variables	Effective	Percentage
Status of women		
Woman giving birth	84	36.5
Pregnant woman	146	63.5
History of miscarriage		
No	204	88.7
Yes	26	11.3
Age (years)		
18-25	94	40.9
26-35	112	48.7
36-48	24	10.4
Educational level		
Out of school	51	22.2
Primary	57	24.8
Secondary	87	37.8
University	35	15.2
Occupation		
Artisan	66	28.7
Shopkeeper/Saleswoman	73	31.7
Student	22	9.6
Official	16	7
Household	53	23

Table 2: Reparation of women according to dietary data.

Variables	Effective	Percentage
Food preferences (n = 230)		
No	87	37.8
Yes	143	62.2
Food bans (n = 230)		
No	196	85.2
Yes	34	14.8
Food allergy (n=230)		
No	134	58.3
Yes	96	41.7
Consumption of porridge (n = 230)		
No	57	24.8
Yes	173	75.2
Source of porridge (n = 173)		
Purchase	95	54.91
Home cooking	78	45.08

(18.9%), shawarma (16.1%), biscuits (13.3%), vegetable sauce (12.5%), chocolate milk mix (Milo) (11.9%), salad (11.9%), pizza (7%), and yogurt (7%), as shown in Figure 1.

Amongst women who prepared their porridge at home, 20.8% utilized pharmacy-bought flour, while 79.2% produced their flour. On average, those who produced their flour used 1.54 ± 0.57 of cereals,

primarily maize (82.1%) and/or sorghum (39.7%), as illustrated in Figure 2. Despite utilizing only these cereals for their porridge, as shown in Figure 3, they would have preferred to have additional ingredients, including rice (64.30%), sorghum (59.60%), soybean (57%), cassava (20.40%), millet (13%), beans (10.9%), fish (10.0%), and peanuts (9.1%). As for those who purchased porridge, 61.05% preferred sorghum-based porridge, while 38.94% preferred maize-based porridge (Figure 4).

Food aversions and allergies during pregnancy

Food aversions, allergies, and intolerances were reported by 41.7% of respondents during pregnancy. The most common food aversions were mustard (17.7%), salt (11.57%), nuts (10.41%), and milk (10.41%). Mustard was associated with nausea and vomiting, while nuts, milk, and wheat caused constipation in women. Excess table salt was implicated in the occurrence of maternal edema. Peanut allergy was reported in 17.7% of respondents (Figure 5).

Discussion

This work aims to study the food preferences of women during pregnancy. The results obtained revealed that more than half of women have a food preference during pregnancy. Women prefer meat products, juices, and porridge during pregnancy. Among the women who took porridge, at least half preferred to buy it from street vendors. Among those who cook their porridge at home, very few use at least two food products to produce the flour for the porridge. Corn, rice, and sorghum were the cereals most used in the staple diet and for making porridge flour at home. Peanuts and mustard were respectively the main sources of allergy and aversion among the pregnant women investigated. These results justify the existence of food preferences and therefore specific diets among women during pregnancy.

The validity of this study is justified by the pretest of the collection tool carried out, the use of a digital tool, the scientific rigor imposed during the investigation as well as the 10% increase in the size of the 'sample. However, not assessing women's food consumption would constitute the main limitation of the work. Food consumption would make it possible to compare preferences with eating habits to propose specific interventions.

According to our results, more than 60% of women reported having particular preferences for a specific food when they were pregnant. This result is contrary to that obtained by Kebbe and colleagues in the United States. According to this research team, the majority of women has not tried (84.9%) and was not willing to try (66.6 to 81%) specific diets during pregnancy [9]. This difference would be because our study had studied the preference for a specific food product while Kebbe's team had studied the adoption of a specific diet

which consists of opting for a set of foods representing the Eating habits of women during pregnancy. It emerges from this analysis that women may have food preferences but find it difficult to choose a diet during pregnancy. Indeed, some women find it difficult to apply nutritional recommendations and consequently an inadequate diet low in micronutrients [10,11]. In the study by Samano and colleagues, the lowest frequency of adequate intake corresponded to micronutrient-rich foods such as vegetables [12].

According to a study assessing the dietary diversity of women in southern Benin, it was found that the dietary diversity score of women at preconception was low and did not change during pregnancy and was also low every quarter. The diet consisted mainly of cereals, oils, vegetables, and fish in very small proportions [13,14]. These results corroborate those obtained in the present study. Grains, in this case, cereals (processed in several forms) were the products widely consumed compared to vegetables. Although meat products are highly demanded by the women in our study, not all are lucky enough to have them [15]. For some women, preferences remain a food dream or wish during pregnancy. Alongside favorite foods, our study revealed some allergenic and aversion products, the most frequently encountered of which were peanut, mustard, salt, nuts, milk, wheat, egg, and sugary products. Our results related to sugar consumption are consistent with those obtained by Moradi, et al. who observed that pregnant women, regardless of the trimester, reported not liking sugar as well as products that were too sweet [16]. On the other hand, the study by Perrin, et al. obtained a contrary result according to which sweet products were appreciated by women [17]. These observed differences could be circumstantial and linked to women's sensory perceptions which vary depending on foods (raw sugar and sweet products). As supporting information, the women in the present work declared that they preferred fruit juices but avoided sugar during pregnancy. The allergic effect of milk proteins, eggs, peanuts, and nuts was confirmed by the results of Kok, et al. [18]. The most reported aversions were nausea, vomiting, constipation, diarrhea, bloating, and headaches. According to the results of Yalew, et al., vomiting was the most reported aversion [19]. The identified aversions and allergies depend on the allergens consumed. For example, wheat was implicated in constipation in women in this study while eggs and salts were respectively responsible for vomiting and maternal edema.

Women's food preferences during pregnancy often do not match the specific diets of pregnant women [12]. Inadequate dietary intake, nutrients, and eating habits can potentially affect maternal weight and child health [20]. Pregnant women who consumed foods from the Mediterranean diet (legumes, vegetables, nuts, olive oil, and whole grains) had a high chance of having an adequate weight [21,22] and a lower risk of having a new baby. Born small for gestational age while eating fruits and vegetables [23,24]. The food choices or preferences of pregnant women during pregnancy could influence the eating habits of children later in life and consequently their health about diet-related chronic diseases. The sensory stimulations to which the child was exposed during pregnancy will shape his sensory and cognitive systems and can generate expectations, desires, and preferences until adulthood so that he is guided in research and appreciation of certain foods [25].

Conclusion

This study made it possible to highlight the food preferences of pregnant women and allergenic products as well as foods responsible for aversions such as peanuts and mustard. Eating behaviors during pregnancy will influence the food choices of children later. The Mediterranean diet has been seen as the ideal diet to avoid adverse birth outcomes. Interventions to support women during pregnancy should best target meat products, fruit juices, and enriched porridges, preferably instant porridges. Communication is inherent to all nutritional interventions and must be aimed at as a transversal intervention through nutritional education. A national-scale study would be useful and would allow the data to be generalized to the entire beninese population.

Conflicts of Interest

The authors declare no conflict of interest regarding this work.

Contribution of the Authors

Gbèmahon Roger Houssou:

- Research design: Proposed the research question, hypotheses, and objectives of the study.

- Data collection: Designed and implemented data collection tools (questionnaires, interviews, etc.).

- Data analysis: Carried out the statistical analysis of the collected data.

Colette Sylvie Azandjeme:

- Contribution of expertise: Contributed expertise in the research area of the article.

- Proof reading and Proof reading: Proofreaded and reread the article to ensure accuracy and clarity of content.

Opportune Akpo Djènontin:

- Contribution of expertise: Contributed expertise in the research area of the article.

- Data analysis: Assisted in the statistical analysis of the collected data.

Nadia Fanou:

- Research design: Contributed to research design and hypothesis development.

- Participant Recruitment: Assisted in the recruitment of study participants.

Clémence Germaine Metonnou:

- Research supervision: Supervised the research and provided advice to other authors.

Charles Jérôme Sossa:

- Data analysis: Contributed to the statistical analysis of the collected data.

- Critical review of the article: Provided a critical review of the article, commenting on the clarity, coherence, and scientific soundness of the content.

Ella Compaoré:

- Contribution of expertise: Provided expertise in a specific methodology or research area relevant to the study.

Roch Mongbo:

- Obtaining permissions: Has obtained the necessary permissions for data collection.

- Critical review of the article: Provided a critical review of the article, commenting on the clarity, coherence, and scientific soundness of the content.

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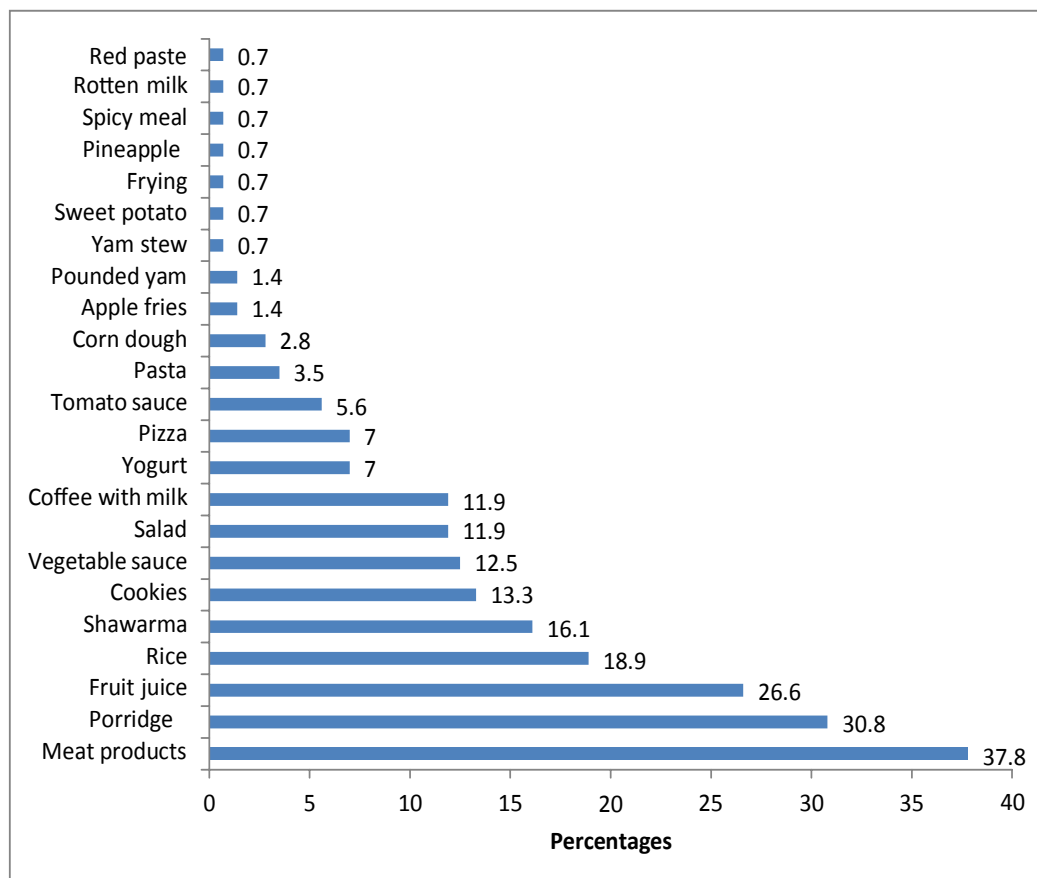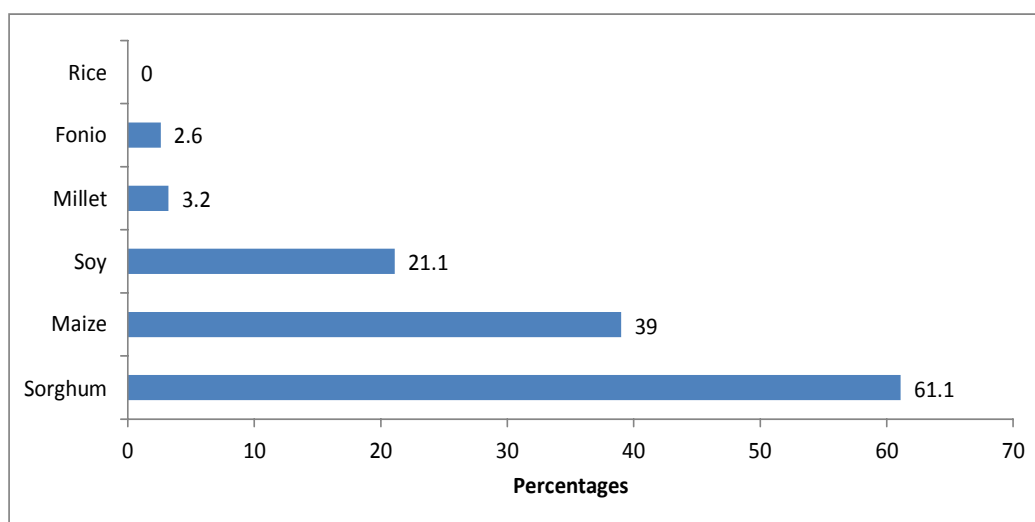
Figure 1: Distribution of preferred foods among pregnant women (n = 143).
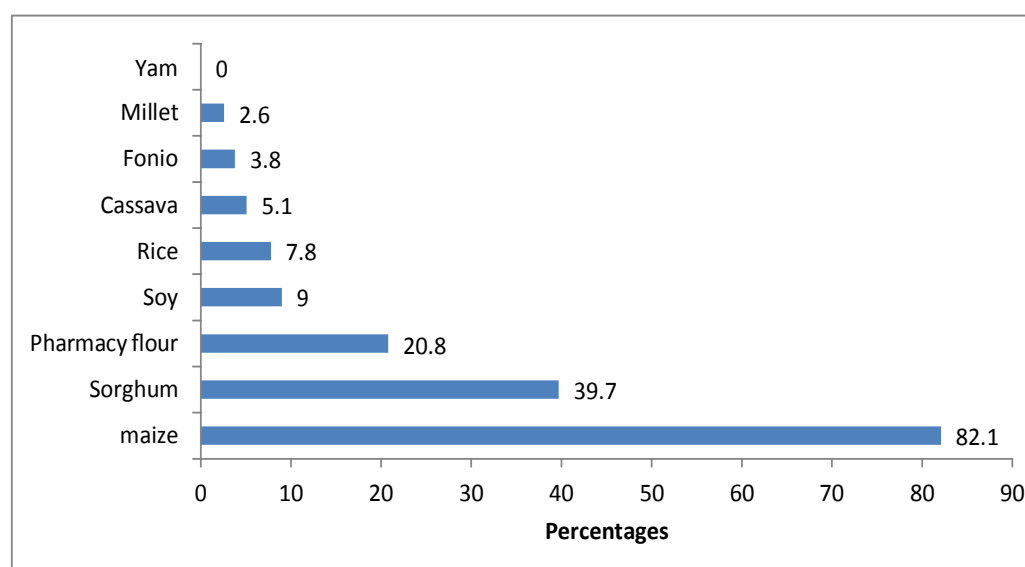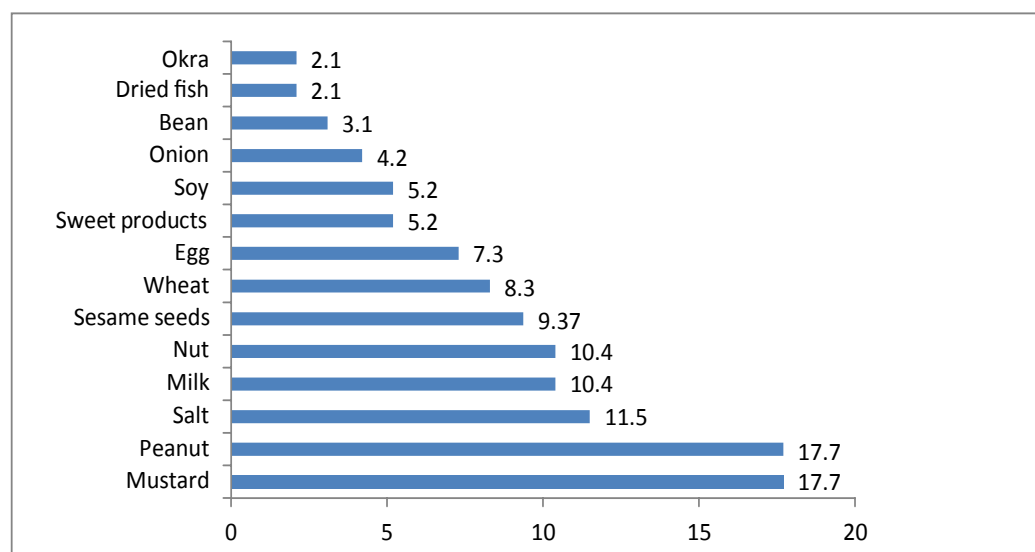

Figure 2: Frequency distribution of food items used by women for home porridge preparation.
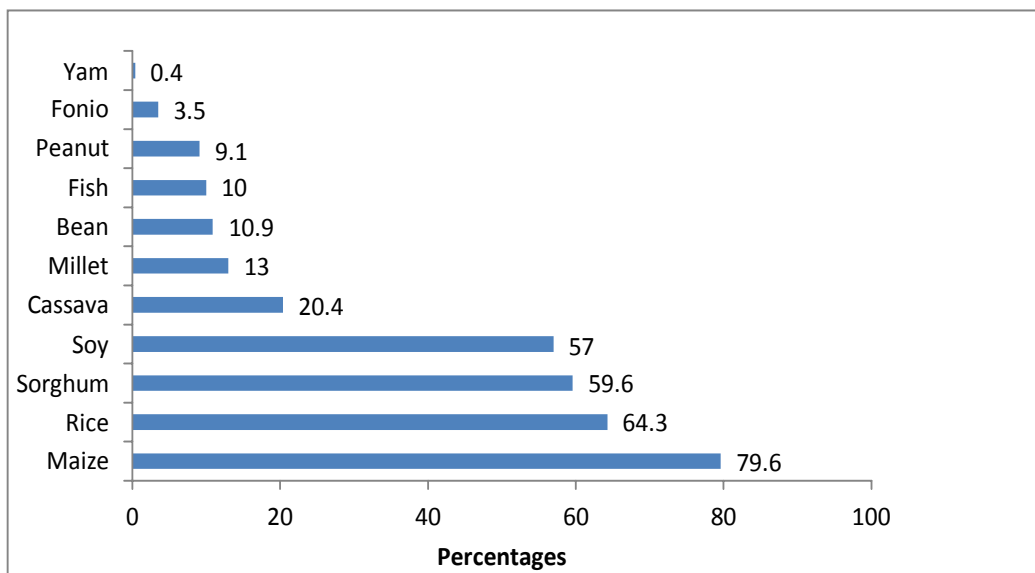
Figure 3: Distribution of women based on their food choices for the production of porridge flour from multiple ingredients.

Figure 4: Distribution of women by purchased porridge preference.

Figure 5: Distribution of women by self-reported food allergens.