International Journal of Academic and Applied Research (IJAAR)
ISSN: 2643-9603
Vol. 5 Issue 2, February - 2021, Pages: 13-30

Food Taboos and Common Beliefs Associated with Pregnant Women in Kasoa Zongo Community in the Central Region of Ghana

Amidatu Yakubu

Ghana Education Service
Email: amidatuyakubu8@gmail.com

Abstract*: The purpose of the study was to investigate the prevalence and adherence to food taboos associated with pregnancy in the Kasoa-Zongo community. The study employed descriptive cross-sectional survey, specifically, mixed-methods and combination of purposive, snowballing, and convenience sampling methods were used to select 106 respondents for the study. A structured questionnaire, with both closed- and open-ended items were used for data collection and analysed using SPSS version 20 by descriptive and inferential analyses. The results were presented by tables and frequencies. Key findings were that snails, ripe plantains, mushrooms, pork, eggs, mudfish, groundnuts, python, and tortoise formed some of the pregnancy-related tabooed foods avoided by the pregnant women in the study area. Religious belief, foods being spiritually unwholesome, ancestral taboo prevention of miscarriage, deformity, prolonged labour, allergies and depression were some of the major reasons for adhering to food taboos during pregnancy.*

Keywords: Food taboos, Nutritional knowledge, Malnutrition, Pregnant women, Adherence, Maternal health, Miscarriage

1 INTRODUCTION

The prevalence of Malnutrition among pregnant women in the rural community of Ghana poses a great challenge to nutritionist and the health sector as well as to the Government of Ghana (Ghana Health Service, 2015). Besides, there is more to be done in terms of achieving the sustainable development Goals 3, which target reducing the global maternal mortality ratio to less than 70 per 100,000 live births by 2030 (United Nations, 2019). Malnutrition has ranked high as the major cause of maternal mortality, and it is a major determinant of a successful pregnancy and a healthy well-nourished baby (Yetunde & Olubukunola, 2015). Indeed, malnutrition of the mother does not just affect the pregnant woman only, but also has a devastating effect on the foetus (unborn child) (State of the World's Mothers, 2012). A casual discussion with the health personnel of the Kasoa Polyclinic revealed from the home units and Outpatient reports that most pregnant women do not eat adequate food, whereas others avoid foods that would improve their nutritional status, and this has predisposed most pregnant women and foetuses to poor foetal formation, miscarriage and anaemic conditions in pregnancy.

Over the years, it has also been observed that pregnant woman of developing countries (including Ghana) have been losing their pregnancy, having birth defects and even losing their lives. In most cases the women are said to be bewitched by the old women in the families. Their trusts and beliefs are rooted in culture, traditions and fetishism (Malla, Giri, Karki & Chaudhary, 2011). This has become a worrying threat which affects the women in the various countries when they are pregnant (Yetunde & Olubukunola, 2015). That notwithstanding, the Government has shown commitments by putting in resources to improve health infrastructure and a number of interventions to improve maternal healthcare within the country. This includes the following: The implementation of free maternal health services, repositioning family planning and training as well as repositioning reproductive and child health staff; the intensive training for midwives on the specific use of partograph. Knowledge in the use of partograph promotes confidence, reduces prolonged labour, caesarean sections and intrapartum still births; The High Impact Rapid Delivery (HIRD) approach is also being implemented as a complementary strategy to reduce maternal and child mortality. Several districts including Awutu Senya East- Kasoa have indicated progress in service indicators achieved and innovative strategies implemented with regard to improving maternal health; Other interventions also include Ghana VAST Survival Programme, Prevention of Maternal Mortality Programme (PMMP), and Safe-Motherhood Initiative. There are also projects such as Making Pregnancy Safer Initiative, Prevention and Management of Safe Abortion Programme, Maternal and Neonatal Health Programme and Roll Back Malaria Programme, Intermittent Preventive Treatment (IPT); and Emergency Obstetric and Neonatal Care (EMONC) that are being implemented in all 10 regions of Ghana, but not yet with full complement of required resources (midwives, equipment) (Ghana Health Service, 2015).

Despite these numerous health interventions and the educational activities on nutrition and healthy living given to pregnant women at ante-natal care clinics in Ghana, some pregnant women have still been battling nutritional problems regardless of age, marital status, economic and educational backgrounds (Edusei, Bentum & Nkum, 2014). Even though pregnant women are given antenatal and post-natal clinics education, the problems associated with pregnancy food-related taboos challenges still persist (Ugwa, 2016). A situation where education is given yet the problem persists leaves a lot of questions unanswered. It is for this reason that an investigation into food taboos and common beliefs associated with pregnant women in Kasoa Zongo community in the central region of Ghana was conducted.

Purpose of the Study

The purpose of this study was to investigate the prevalence and adherence to food taboos associated with pregnancy in the Kasoa-Zongo community.

2 LITERATURE REVIEW

Theoretical Framework

A theory is defined as a set of interrelated concepts, assumptions and generalizations that systematically describes and explains behaviour (Watts, & Stenner, 2012). Therefore, a theory attempts to fit relevant facts into a logical explanation and also serves as a framework for collecting more information. Three theoretical approaches underpin this study in attempts to explain dietary habits: Maslow's (1943) hierarchy of needs, Theory of Planned Behaviour (TPB) by Ajzen (1991), and the Theory of Reasoned Action (TRA) by Ajzen and Fishbein (1980).

Maslow's hierarchy are physiological needs, safety needs, belongingness and love needs, esteem needs, and the need for self-actualization (Reid-Cunningham, 2008). Maslow (1943) described the body's physiological need for food, especially in terms of maintaining homeostasis of water, salt, macronutrients, vitamins, minerals, and temperature within the bloodstream. He elaborated, "*Undoubtedly these physiological needs are the most pre-potent of all needs…If all the needs are unsatisfied, and the organism is then dominated by the physiological needs, all other needs may become simply non-existent or be pushed into the background…for consciousness is almost completely pre-empted by hunger. For the chronically and extremely hungry man…life itself tends to be defined in terms of eating, and anything else will be defined as unimportant*" (pp. 373-374). While Maslow's hierarchy offers an exposition on food, it also raises some fundamental questions: What must be consumed to meet basic physiological needs? and how do food taboos conflict with the food needs of a pregnant woman?

According to Ajzen (2011), the Theory of Planned Behaviour (TPB) was developed in 1991, based on the Theory of Reasoned Action. The theory of planned behaviour is often used to explain behaviour in general (Fielding, McDonald, & Louis, 2008; Sommer, 2011). It has to be noted that the TPB is not a behavioural change theory, but was developed to predict and understand behaviour. These theories were adopted because of their influence on human behaviour and attitude vis-à-vis food consumption.

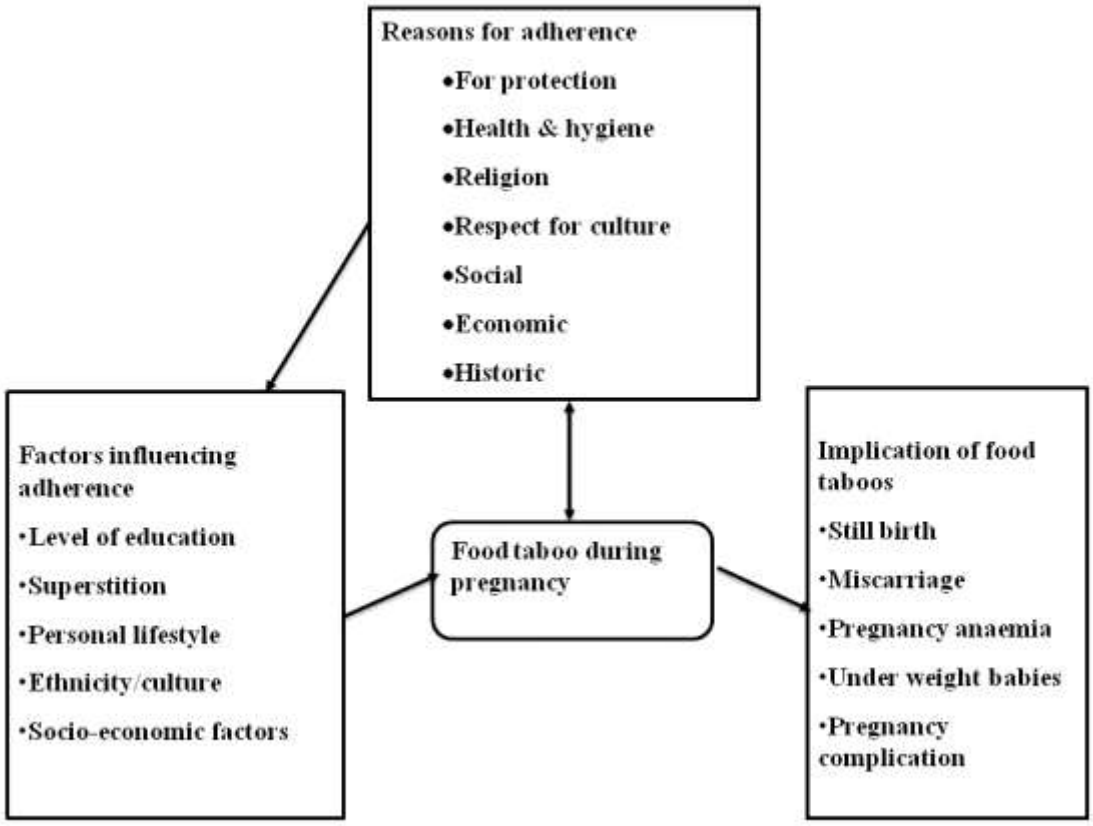
According to Ajzen (2011), a behavioural intention is the most proximal determinant of behaviour; this intention, in turn, is shaped by a person's evaluation of the behaviour (attitude), their perception of social pressure to perform the behaviour (subjective norm), and their perceived controllability of the behaviour, that is Perceived Behavioural Control (PBC). These motivational factors, Ajzen's theory suggests, are themselves a function of behavioural beliefs, or expected outcomes of the behaviour; normative beliefs, which reflect the perceived extent of close referents' approval of the behaviour; and control beliefs. Morris (2011) suggested that the Control beliefs represent factors that facilitate or inhibit the performance of the behaviour, which are generally external to the person (Fielding, McDonald, & Louis, 2008). Cameron, Ginsburg, Westhoff, and Mendez (2012) stated that self-efficacy is distinct from Perceived Behavioural Control (PBC) insofar as self-efficacy reflects a person's perception of internal control over behaviour. Concerning its relationship with food taboos and eating habits of pregnant women practices, these scholars considered that intentions might be affected not only by external, uncontrollable factors (PBC), but also by a person's perception of their expected benefits from compliance or adherence to food taboos (self-efficacy). That notwithstanding, Armitage and Conner (2001) outlined six constructs that collectively represent a person's actual control over the behaviour.

a. Attitudes - This refers to the degree to which a person has a favourable or unfavourable evaluation of the behaviour of interest. It entails a consideration of the outcomes of performing the behaviour.
b. Behavioural intention - This refers to the motivational factors that influence a given behaviour where the stronger the intention to perform the behaviour, the more likely the behaviour will be performed.
c. Subjective norms - This refers to the belief about whether most people approve or disapprove of the behaviour. It relates to a person's beliefs about whether peers and people of importance to the person think he or she should engage in the behaviour.
d. Social norms - This refers to the customary codes of behaviour in a group or people or larger cultural context. Social norms are considered normative, or standard, in a group of people.
e. Perceived power - This refers to the perceived presence of factors that may facilitate or impede the performance of a behaviour. Perceived power contributes to a person's perceived behavioural control over each of those factors.
f. Perceived behavioural control - This refers to a person's perception of the ease or difficulty of performing the behaviour of interest. Perceived behavioural control varies across situations and actions, which results in a person having varying perceptions of behavioural control depending on the situation. This construct of the theory was added later, and created the shift from the Theory of Reasoned Action to the Theory of Planned Behaviour.

The theory of planned behaviour (TPB) is intended to explain all behaviours over which people have the ability to exert self-control. The key component to this model is behavioural intent; behavioural intentions are influenced by the attitude about the likelihood that the behaviour will have the expected outcome and the subjective evaluation of the risks and benefits of that outcome (Xiao, Bai & Huang, 2014). The TPB has been used successfully to predict and explain a wide range of health behaviours and intentions including smoking, drinking, health services utilization, breastfeeding, and substance use, among others like HIV/STD-prevention behaviours and use of contraceptives, mammography, safety helmets, and seatbelts (Abedi, 2014).

The TPB has shown more utility in public health than the health belief model, but it is still limiting in its inability to consider environmental and economic influences. Over the past several years, researchers have used some constructs of the TPB and added other components from behavioural theory to make it a more integrated model. This has been in response to some of the limitations of the TPB in addressing public health problems (Taylor, Bury, Campling, Carter, Garfied, Newbould & Rennie, 2007; McDermott, Oliver, Simnadis, Beck, Coltman, Iverson, & Sharma, 2015).

2.3 Conceptual Framework



Source: Author's Construct (2019)

Figure 1: Conceptual Framework

Figure 1 is a diagrammatic representation of food taboos, the motives or intentions underlying adherence to pregnancy-related food taboos and the resultant effects. Several studies have unearthed the factors that influence compliance or adherence to food taboos during pregnancy. The studies have revealed that the factors are linked to a woman's level of education, superstition, personal lifestyle, ethnicity or cultural background, socioeconomic, and other socio-demographic factors (Ekwochi, Osuorah, Ikenna, Ifediora, Asinobi & Eke 2015; Ugwa, 2016; Ali & Azim, 2016; Arzoaquoi, Essuman, Gbagbo, Tenkorang, Soyiri & Laar, 2015). These studies have again revealed that people adhere to food prohibitions either for health reasons, religion, for protection or as a result of their respect for culture. Superstition, socio economic factors, level of education of the individual (pregnant woman), personal lifestyle and religious beliefs also influence the rate of adherence to food taboos (Ugwa, 2016). In the views of Oni and Tukur (2012), these factors might supposedly predispose pregnant women to adhere to food taboos. For instance, the level of education of the pregnant women will also influence the rate of adherence to food taboos. The ignorance about nutritional needs during pregnancy worsens the outcome of pregnancy therefore an educated person may be exposed to nutrition information and can make informed decision than someone who is not educated. Food taboos are adhered to during pregnancy for various reasons

such as for protection, health and hygiene motives, religious beliefs, cultural reasons, social, economic and historic reasons. The assumption is that non-adherence to food taboos has negative implications during pregnancy. It is perceived that non-compliance to these taboos might result to still birth, miscarriage, pregnancy anaemia, underweight or low birth weight babies, and pregnancy (Golden & Comaroff 2015; Meyer-Rochow, 2009).

Meyer-Rochow (2009) posited that pronouncing certain foods as taboo because they are perceived or thought to make a person sick, is the basis for the many food taboos affecting pregnant women. Largely linked with the realms of mind and 'psyche', most taboos are actually meant to protect the health of the pregnant woman and her offspring and thought to ease the process of birth-giving, even if modern nutritionists completely disagree. Nevertheless, Santos-Tores and Vasquez-Garibay (2003) believe that it is frequently the pregnant and lactating women in various parts of the world that are forced to abstain from especially nutritious and beneficial foods (Masuku & Lan, 2014).

According to some school of thought, food taboos whether scientifically correct or not are often meant to protect the human individual and the observation, for example, that certain allergies and depression are associated with each other could have led to declaring food items taboo that were identified as causal agents for the allergies. Moreover, any food taboo, acknowledged by a particular group of people as part of its ways, aids in the cohesion of this group, helps that particular group maintain its identity in the face of others, and therefore creates a feeling of "belonging" (Meyer-Rochow, 2009).

Food Taboos and Beliefs Associated with Pregnant Women

A dietary practice, lifestyle or habit covers the typical behaviours of specific groups of persons or an individual in relation to food intake. It cuts across food choices, eating times, number of meals, size of portions, method of food preparation and service among others (Amoako-Kwakye, 2010). Dietary practices could be positive or negative depending on the impact it has on one's state of health. Positive or healthy dietary practices involve eating a variety of foods with all the needed nutrients in their correct proportions to meet the body's requirements. It also covers preparing, serving and eating the food in a hygienic environment with regular drinking of safe or potable water. It involves the eating of more complex carbohydrates, piling on of more fruits and vegetables while reducing the intake of high fatty, salty and sugary foods (Pamplona-Roger, 2009). Healthy dietary behaviour is essential for growth and development (Telljohann, Symons & Pateman, 2004).

Dietary practice or habit, as defined by Bediako (2012), is the habitual decisions an individual or a group of people make when selecting foods to consume. The scope of dietary practice spreads over the typical behaviours of specific groups of persons or an individual in relation to food intake. It cuts across food choices, eating times, number of meals eaten, size of portions per meal, method of food preparation and service among others. Food habit also known as dietary practice or lifestyle is explained by Adigbo and Maddah (2011), as the way in which any group of people select, prepare, serve and eat food as well as the number of times meals are eaten in a day. From another perspective, the term dietary practice can also refer to why and how people eat, which foods they eat, and with whom they eat, as well as the ways people obtain, store, use, and discard food. Individual, social, cultural, religious, economic, environmental, and political factors all influence people's eating habits (Amoako-Kwakye, 2010).

Meaning and common beliefs of food taboos

Before looking into the meaning of food taboos, it is appropriate to define a taboo which would set the tone for a thorough explanation of the concept "food taboo". According to Merriam-Webster online Dictionary (2009), a taboo is defined as a social or religious custom prohibiting or restricting a particular practice or forbidden association with a particular person, place, or thing. From this definition, Maduforo, Nwosu, Ndiokwelu, and Obiakor-Okeke (2013) suggested that food taboos could be rules, codified or otherwise, about which foods, or combinations of foods may not be eaten, and how animals are to be slaughtered in some cases. The origins of these prohibitions and commandments are varied. Hence, in some cases, these taboos are a result of health considerations or other practical reasons. In others, they are a result of human symbolic systems. In the words of Purnamasari (2010), food taboos can be said to be actions to avoid certain foods based on causal explanation which may be supernatural, logical or sometimes difficult to explain rationally. Similarly, Arzoaquo, Essuman, Gbagbo, Tenkorang, Soyiri and Laar (2015) posited that food taboo refers to a codified set of rules about which foods or combinations of foods that may not be eaten. Contributing to the discussion, Whitehead (2010) intimated that food taboos are part of a complex of attitudes relating to the sense of taste, feelings and abstentions which are concerned in the creation and maintenance of culture differences, male authority and gender inequalities.

Taboos are known from almost all human societies. Probably, food taboos as unwritten social laws exist in one form or another in every society on earth. It is a fact that perhaps nowhere in the world, a people, a tribe, or an ethnic group, makes use of the full potential of edible items in its surroundings (Biza-Zepro, 2015). They further explained that it is the regular avoidance of a food that turns into a tradition which ends up eventually as a food taboo. Taboos food and drinks are food and beverages; which people abstain from consuming because of a religious or cultural prohibition. Many food taboos forbid the meat of a particular animal,

including meat, fish, eggs, and snails. Some taboos are specific to a particular part of an animal, while other taboos forgo the consumption of plants or fungi such as mushrooms. Food taboos have a long history and one ought to expect a sound explanation for the existence (and persistence) of certain dietary customs in a given culture. Yet, this is a highly debated view and no single theory may explain why people employ special food taboos (Biza-Zepro, 2015).

According to some school of thought, food taboos whether scientifically correct or not, is habitually meant to shield the human from certain observation, therefore, certain allergies and depression could have led to declaring some food items as taboo. Moreover, Meyer-Rochow (2009) opined that any food taboo acknowledged by a particular group of people as part of its customs, helps in the cohesion of this group, helps that particular group maintain its identity in the face of others, and therefore creates a feeling of "belonging". Meyer-Rochow (2009) again stated that food taboos appear to serve a double-purpose: the spiritual well-being of individuals and resource partitioning. He explained that an ecological or medical background is apparent for many, including some that are seen as religious or spiritual in origin. On the one hand, food taboos may help in utilizing a resource more efficiently; on the other food taboos can lead to the protection of a resource. Food taboo, whether scientifically correct or not, is often meant to protect the human individual.

Whitehead (2010) established that food taboos are part of a complex of gustatory behaviours, feelings, attitudes and abstentions which are implicated in the creation and maintenance of social boundaries, masculine authority and gender inequalities. Nevertheless, she argued that at least two issues stand in the way of anthropological (or social scientific) understanding of such "food complexes".

Pregnancy related food taboos

Dove (2010) conducted a study in rural Northern Ghana and found that in addition to herbal medications, pregnant women were taught about taboos by their immediate families, extended families, and communities. Dove (2010) identified the following food taboos:

a. Bambara beans causes respiratory and skin problems for the child at birth.
b. Honey which causes respiratory problems for the child at birth.
c. Shea butter can cause difficulty in delivery.
d. Corn flour is linked to heavy bleeding at delivery.
e. Eggs, fresh meat, fresh milk, and cold and sugary foods make the unborn baby large, contributing to a difficult delivery and possible death of the mother.

More so, a study by Nti, Larweh and Gyemfua-Yeboah (2002) at Legon (a suburb of Accra) and Dodowa (a rural community), both in the Greater Accra Region of Ghana, revealed that a number of foods were avoided by some expectant mothers during pregnancy for various reasons. These foods included fufu, gari, kokonte (all cassava based foods), fresh fish, corn dough porridge, eggs, banana, crabs and ripe plantain. A related study at Yilo Krobo District by Arzoaqoi *et al* (2015) identified rats, snails, snake, hot food and animal lung as prohibited foods during pregnancy.

Reasons or motives for adherence to food taboos

There may be reason for prohibiting certain food items while allowing others. These reasons can neither be refuted nor accepted scientifically**.** Foods are avoided for various reasons including: historic, hygienic, social, health, logical, economic, ecological, and cultural, as an expression of empathy and a factor in group cohesion and group identity (Gardner, 2009; Meyer-Rochow, 2009; Katz & Weaver, 2010).

The study of Arzoaquoi *et al* (2015) revealed that the condition for non-adherence is just absent in some communities. On the other hand, in rare situation, Krobos who may be compelled to touch snails, for example, will rather do so with their left hands. The right hand is mostly used for eating. It is therefore, believed that touching snail with the right hand will get it contaminated with snail which will be passed on during eating. Their reasons for obeying these taboos were based on health reasons, respect for the ancestors and respect for parents and community elders.

Cultural or religious dietary practices are frequently observed because of a belief that non-observance will cause physical or mental illness, slow down recovery from illness, lead to malformations or result in unfavourable characteristics such as stuttering or baldness (Odebiyi, 1989, cited in Alonso (2015). These fears are especially prevalent during the reproduction cycle. In many societies mothers fear that non-observance of dietary and health practices during pregnancy will lead to miscarriage, malformation of the baby or illness of the mother or baby (Lee *et al*., 2009 cited in Alonso, 2015). One common belief has established that infants will acquire the characteristics of the proscribed animal or plant when it is eaten by the mother during pregnancy (Martínez, Guillermo & García, 2013; Onuorah & Ayo, 2003; Piperata, 2008).

Meyer-Rochow (2009), contributing to the reasons why people adhere to food taboos, pointed out that food taboos contribute to biodiversity and resource conservation by protecting certain species or areas from overexploitation. He continued that food taboos may also protect the community from health hazards. Masuku and Lan (2014) on their part argued that protection of species can occur indirectly. They maintained that by tabooing vulnerable or rare animals and plants that are used in local medicine, the species is sure to remain available for medicinal purposes when the need arises. Food taboos may also serve to protect human health directly. Anthropological studies have argued that food taboos regarding animals that have died from sickness may serve to prevent diseases from spreading to humans (Alonso (2015). Taboos may also prevent people from eating poisonous or otherwise potentially dangerous animals (Meyer-Rochow, 2009; Henrich & Henrich, 2010).

Adding to this discussion, Okunaiya, Fadupin and Oladeji (2016) postulated that a common dietary practice during pregnancy is so-called 'eating down'. They argued that women eat less because of the belief that plentiful eating will result in a large infant and cause difficulties during childbirth, or because they believe that food takes up space from the baby. Stressing further, they maintain that given the increased energy and nutrition needs during pregnancy, eating down is likely to undermine the food and nutrition security status of the mother and fetus. Christian *et al.* (2006), cited in Alonso (2015), found that these beliefs do not necessarily translate into the practice of eating down. The authors show that the practice of eating down is uncommon among women in rural Nepal, even though women share the belief that the baby shares space with food in the mother's body. Most women in fact maintain that the diet is not restricted during pregnancy and that a pregnant woman is encouraged to eat nutritious foods such as fruits, vegetables, dairy products, meat and fish. Among some Nigerian tribes, for instance, there is an absolute taboo regarding the killing and eating of animals that are believed to have aided the tribe in wars in the past (Meyer-Rochow, 2009). Martínez, Guillermo and García (2013) found that among the Fullas in The Gambia, boys and girls should not eat certain foods such as pepper after circumcision because of the belief that eating pepper will result in pain during urination and slower recovery.

Cultural Reasons

Various forms of taboos, misconceptions, and cultural beliefs towards certain foods exist in various countries. According to Amoako-Kwakye (2010), each culture has a number of acceptable and unacceptable foods, though this is not determined by the foods being edible or not. For many cultures, alligators are unacceptable as food. But, horses, turtles, and dogs are eaten and even considered a delicacy. Amoako-Kwakye (2010) emphasised that the *'Krobos'*, an ethnic group in the Eastern Region of Ghana consider the eating of snails as a taboo while the same food commodity, snail, is a delicacy of the *'Akuapims'* of the same region in Ghana. There are also rules concerning whom it is appropriate to eat (Amoako-Kwakye, 2010; Story *et al*., 2002).

Bediako (2012) suggested that a cultural or ethnic group provides guidelines regarding acceptable/avoidable foods, food combinations, eating patterns, and dietary practices for its people. Compliance with these guidelines creates a sense of identity and belonging for the individual. For every cultural or ethnic group, there exist subgroups, and these subgroups may practice variations of eating behaviours, though they are still considered part of the larger group. Someone who is repeatedly exposed to certain foods is less hesitant to eat them (Bediako, 2012). However, the extent to which such food taboos and misconceptions exist and how they affect pregnancy outcomes remain largely unknown (Amoako-Kwakye, 2010).

Religion Reasons

Food is an essential part of religious observance and spiritual ritual for many faiths. Religious proscriptions may range from a few to many and from relaxed to highly restrictive and whatever the case may be, these will affect a follower's food choices and dietary practice (Davies & Thate, 2017). For example, in some religions specific foods are prohibited as they are regarded to be unclean, such as pork among Jewish and Muslim adherents.

The Islamic jurisprudence specifies which foods are lawful (Halal) and which are unlawful or forbidden (Haram) (Devriese, 2016). This is derived from the Qur'an (the Holy book of Islam) as well as the Hadith and Sunnah libraries cataloguing things the Islamic prophet Muhammad is reported to have said and done (Nurdeng, 2009). According to Fadzlillah, Che Man, Jamaludin, Rahman, and Al-Kahtani (2011), the only foods that are unambiguously forbidden are meat from dead animals, drinking of blood, the meat of swine (porcine animals, pigs), and animals dedicated to other than God (Allah). Nonetheless, in the views of Nurdeng (2009), animals that are vegetarian are allowed, including cattle, sheep, goats, deer, bison, camel, and rabbit. Birds that eat seeds and vegetables are permitted (chicken, duck, pigeon sparrow, etc.) The slaughtering of these animals must be done by a Muslim while invoking the name of Allah in accordance with the Islamic law (Zabihah) (Devriese, 2016). However, there is debate as to whether animals slaughtered by Christians and Jews are lawful for Muslims (Khattak, *et al.*, 2011; Al-Qaradawi, 1993).

Specific foods that are forbidden in Islam include; pigs, mules, donkeys, dogs, monkeys, elephant, cats, mouse, rat, wild animals and all predators (animals with fangs), birds that hunt with talons (hawks, eagles, etc.) and prey on animals (Rahman, *et al.*, 2011; Al-Qaradawi, 1993). However, there are disagreements regarding the consumptions of fishes. Some school of thought follow the same strict rules as Kashrut (Jewish dietary law). Others permit all fish but not shellfish (Al-Qaradawi, 1993). A few classify

shrimp and prawns as "fish", while still others consider all seafood permitted (Nurdeng, 2009). Whatever the case may be, dead fishes in the water before they are caught are forbidden. Nevertheless, fishes that are killed by removal from water or by a blow are permitted according to the school of thought to which one subscribe (Al-Qaradawi, 1993).

With regards to Christianity, the Seventh-day Adventists discourage "stimulating" beverages such as alcohol, which is not forbidden among Catholics faith. Some Christians forbid pork and all animals that do not chew cud. The traditionalists on the other hand do not consume any foods that might slow down their spiritual or physical growth. The eating of pork, fowl, ducks, snails, crabs, and camels are avoided based on one's traditional belief (Wardlaw & Smith, 2009).

Implications of food taboos on maternal health

Food taboos have been identified as one of the factors contributing to maternal under nutrition in pregnancy, especially in rural African communities (Otoo, Habib, & Ankomah, 2015). For social and biological reasons, women of the reproductive age are amongst the most vulnerable to malnutrition, a common consequence of food taboos in rural communities (Biza Zepro, 2015). According to the World Health Organization report on "Development of a Strategy towards Promoting Optimal Foetal Growth" (2002), there is growing evidence that improving the quality of the diet of the mother during the first half of pregnancy can have as big an effect on birth weight as providing food supplements later in pregnancy (WHO, 2007). Certainly, the risk of delivering a low-birth-weight baby can be determined very early in pregnancy (Naeem, Zill-E-Huma & Afridi, 2013), and the influence of maternal nutritional status on pregnancy outcomes is more important in early rather than late pregnancy (Elhassan *et al.,* 2010). However, low birth weight is a major determinant of mortality, morbidity and disability in infancy and childhood and also has a long-term impact on health outcomes in adult life (Ribeiro, de Carvalho Lima, de Lira, & da Silva, 2015).

The GSS *et al.* (2009) cited in Arzoaquoi *et al.* (2015) also highlighted that a woman's nutritional status has important implications for her health as well as the health of her children. Malnutrition in women results in reduced immunity and an increased susceptibility to infections, slow recovery from illness, reduced productivity and heightened risks of adverse pregnancy outcome. More so, contributing to the discussion on the implication of food taboos on pregnant women, Piperata (2008) pointed out that the problem of malnutrition is particularly pressing during pregnancy and lactation, when energy and nutritional needs of the pregnant and nursing mother are higher. Piperata (2008) intimated that the nutrition and health status of a child are strongly dependent on the nutrition and health status of the mother before, during, and after pregnancy. Confirming this, Muthayya, (2009) established that "maternal malnutrition has been linked to low birth weight, which in turn results in high infant morbidity and mortality. Foetal malnutrition harms health status in later life, and in fact predisposes one to increased incidence of non-communicable diseases". Corroborating this Naeem, Zill-E-Huma, and Afridi (2013) believed that increased perinatal and neonatal mortality, a higher risk of low birth weight babies, stillbirths, and miscarriage are some of the consequences of malnutrition in women.

Demelash *et al.,* (2015) also stated that without adequate nutrition during pregnancy, foetal growth and infant health are compromised. In general, consequences of malnutrition during pregnancy include foetal growth retardation, congenital malformations (birth defects), spontaneous abortion and stillbirth, preterm birth and low infant birth weight. Preterm birth and low infant birth weight, in turn, predict the risk of stillbirth in a subsequent pregnancy (Demelash *et al.,* 2015). Furthermore, Ellie and Sharon (2008) said that malnutrition, coupled with low birth weight, is a factor in more than half of all deaths of children under four years of age worldwide.

A study by Shafir, Angulo-Barroso, Jing, Y, Angelilli, Jacobson, and Lozoff, (2008), on "Iron deficiency and infant motor development" in Tanzania, revealed that eating fish was believed to hurt the mother's abdomen and also cause late delivery; eating farm meat would make the child take on characteristics of farm animals. The high prevalence of severe anaemia during pregnancy in that district was linked to food taboos among other factors (Gebre & Mulugeta, 2015; Worku Takele, Tariku, Wagnew Shiferaw, Demsie, Alemu, & Zelalem Anlay, 2018; Lebso, Anato & Loha, 2017). In a related study by Riffat and Khan (2008), they demonstrated a causal relationship between severe anaemia and various maternal and perinatal complications. The underlying cause was claimed to be iron deficiency. Iron deficiency anaemia results in impaired transport of haemoglobin and thus oxygen to uterus, placenta and foetus. It also causes tissue enzyme and cellular dysfunction. This mechanism can explain impaired myometrial contractility resulting in atonic uterus, as well as placental dysfunction leading to preterm birth, low birth weight and growth restricted babies and perinatal deaths. All this is as a result of certain vital nutrients lacking in pregnant women's diet as a result of food taboos.

Nutritional needs of pregnant mothers

Evidence suggests a strong association between maternal nutrition and foetal growth (Ali, Thaver & Khan, 2014). Poor nutritional status of the mother leads to adverse birth outcomes like preterm delivery, low birth weight babies and intrauterine growth retardation. Correspondingly, good nutritional status of mothers results in a healthy birth outcome, therefore, the diet consumed by

pregnant women should be balanced and diverse (Ali, *et al*., 2014). Pregnancy compels the need for significant extra calorie and nutrient requirements. An adequate balanced diet is therefore, of utmost importance during pregnancy and lactation to meet the increased needs of the mother, and to prevent "nutritional stress (Park & Park's, 2007). Many studies found that pregnant women in various parts of the world are forced to abstain from nutritious foods as a part of their traditional food habits (Ugwa, 2016). The lack of knowledge about nutritional needs during pregnancy worsens the outcome of pregnancy. Arzoaquoi *et al.* (2015) on their part asserted that an adequate availability of nutrients during gestation is probably the single most important environmental factor influencing pregnancy outcome. Ugwa (2016) suggested that a sufficient supply of nutrients is required to maintain the delicate balance between the needs of the expectant mother and those of the foetus. King (2003) also established that an inadequate supply will cause a state of biological competition between the mother and the foetus in which the well-being of both organisms is at serious risk. According to Arzoaquoi *et al.* (2015), the ignorance about nutritional needs during pregnancy worsens the outcome of pregnancy.

However, The GSS *et al*. (2009) also highlighted that a woman's nutritional status has important implications for her health as well as the health of her children. Malnutrition in women results in reduced immunity and an increased susceptibility to infections, slow recovery from illness, reduced productivity and heightened risks of adverse pregnancy outcomes. GSS *et al*. (2009) maintained that a woman who has poor nutritional status as indicated by a low body mass index (BMI), short stature, or other micronutrient deficiencies has a greater risk of obstructed labour, of having a baby with low birth weight, of producing lower quality breast milk, of dying from post-partum haemorrhage, and of contracting diseases along with her baby.

A balanced diet is a basic part of good health at all times in one's life. During pregnancy, the diet is even more important. Asma, Asma-Ul-Hosna and Ashraful (2012) assert that a woman's nutrient needs increase tremendously in pregnancy but her energy (calorie) needs increase just a little. According to them, from conception to birth, all parts of the infant- bones, muscles, organs, blood, cell, skin and other tissues are made from nutrients in foods which the mother eats. Asma, Asma-Ul-Hosna and Ashraful (2012) further argued that most women have higher needs of nutrient during pregnancy and lactation than any other time. Therefore, to meet the high nutrient demand of pregnancy, a woman would need to carefully make food choices, but her body would also help by maximizing absorption and minimizing losses (Asma, Asma-Ul-Hosna & Ashraful, 2012; Webb *et al*., 2005).

Proper dietary balance is necessary to ensure sufficient energy intake for adequate growth of foetus without drawing on mother's own tissues to maintain her pregnancy (Mridula, Mishra & Chakravorty, 2003; Yetunde, & Olubukunola, 2015). Improved maternal nutrition has been associated with increased Foetal growth and a reduction in adverse birth outcomes in developing countries and in population with nutrient deficiencies (Morrison, & Regnault, 2016; Marangoni, Cetin, Verduci, Canzone, Giovannini, Scollo & Poli, 2016).
A study conducted Meyer-Rochow (2009) stated that food taboos appear to serve a double-purpose: the spiritual well-being of individuals and resource partitioning. He explained that an ecological or medical background is apparent for many, including some that are seen as religious or spiritual in origin. On the one hand, food taboos can help utilization of a resource more efficiently; food taboos can lead to the protection of a resource (Meyer-Rochow, 2009).

3. METHODOLOGY

Research Design

Research design refers to the overall plan employed by the researcher to obtain answers to the research questions and for testing the hypotheses formulated (Agyedu, Donkor & Obeng, 2011). Taking into consideration the purpose and objectives of the study, this study is of descriptive cross-sectional survey. Specifically, it employed the mixed-methods approach with a sequential explanatory design.

According to Agyedu, Donkor and Obeng (2011), a descriptive study seeks to gather information so that a description of what is going on can be made. It may be designed to discover whether there is any relationship between two variables (but not causal relationship). According to Olsen (2012), a cross sectional study design is used when the purpose of the study is to find the prevalence of the outcome of interest for the population or subgroups within the population at a given time. The use of a cross-sectional study enabled the researcher to include various ethnic groups with variations or differences in food taboos. With the findings, the researcher is then able to draw the differences and similarities in food taboos among the different ethnic groups.

Creswell (2013) defined the mixed methods research approach as an approach in which the inquirer or researcher collects and analyses data, integrates the findings, and draws inferences using both qualitative and quantitative approaches and methods in a single study or a programme of study. The mixed method gives greater strength to a study and makes it more credible than just using one approach. It also helps to research a process or a problem from all sides (Creswell & Clark, 2007). The mixed-methods sequential explanatory design consists of two distinct phases: quantitative followed by qualitative (Marvasti. 2018; Creswell, 2013).

Study Area

This study investigated Food taboos and common beliefs associated with pregnant women in Kasoa Zongo community in the Central Region of Ghana. Kasoa, formerly known as Odupongkpehe, is a peri-urban town in the Awutu Senya East Municipal District of the Central Region of Ghana. Kasoa is traditionally home to the Gomoa and Awutu tribes who belong to the Akan ethnic group. Today, it is home to other ethnic groups such as Hausa, Gas, Chambas, Ewes, Walas/Dagartis, Kotokolis, Moshes, Basares and other smaller tribes. Kasoa is reported to be one of the fastest growing communities in West Africa with a population estimated to be 69,384 people as at 2010 (Awutu Senya East Health Directorate, 2013). The area is one fundamentally challenged with inadequate provisions of basic amenities like, housing, poor drainage systems, inadequate health facilities and erratic flow of potable water due to technical challenges. Kasoa houses a large number of migrant workers from rural Ghana and some neighbouring countries like Togo, Niger, Nigeria, Burkina-Faso and Ivory Coast. Kasoa is a prime example that people of numerous or different nationalities can peacefully co-exist in harmony. The residents of these communities are busily engaged in a lot of commercial activities. The beauty about Kasoa is visible and appreciated in the cultural and religious diversity of the community.

Study Population

According to Ingleby, (2012), a population is a group of individuals who have one or more characteristics in common and of an interest to the researcher. Agyedu, Donkor and Obeng, (2011) further explained that a population does not necessarily refer to people. According to them, a population refers to the complete set of individuals (subjects), objects or events having common observable characteristics in which the researcher is interested in studying.

The target population of this study was mainly pregnant women in Kasoa-Zongo Community. The population for this study as gathered from the records obtained from Kasoa Polyclinic in 2017 was made up 744 respondents of pregnant women who reported and registered for antenatal care services at the Kasoa Polyclinic between January 2016 and June 2017, as well as three (3) senior midwives and three (3) popular traditional health providers at Kasoa. This study included traditional health provider because some pregnant women may prefer the services of the traditional health providers in the community for various reasons.

Sample Size and Sampling Techniques

In any research, people, places, and things are studied. The opportunity to study the entire population of these people, places, and things is an endeavour that most researchers do not have the time and money to undertake (Latham, 2007). This, therefore, calls for sampling to arrest the difficulty of studying the entire population. A sample is a subset of the population and consists of individuals, objects or subjects that form part of the population. A single member of the population is referred to as a sampling unit, and a complete list of sampling units is the sampling frame (Agyedu, Donkor & Obeng, 2011). Owu-Ewie (2012) outlined six reasons for sampling in research and they are: economy, time, manageable population size, inaccessibility of some population, and destructiveness of the observation. Another advantage of sampling is that it ensures a greater response rate. According to Solomon (2011), sampling is the process of selecting a subset of units or individuals from a population of interest so that by examining the sample, one can generalize the results to the whole population. In other words, it is the process of obtaining information about an entire population by examining only a part of it. That notwithstanding, the researcher employed a statistical model by Yamane (1964) to settle on the sample size at a 9% margin of error. The sample size for this study included the total number of households within the study area.

$$n = \frac{N}{1 + N(\partial^2)}$$

Where n= the sample size, N= the sample frame, 1= a constant, and $\partial = 0.09$

However, given that 744 pregnant women reported and registered for antenatal care services at the Kasoa Polyclinic between January 2016 and June 2017, including three (3) senior midwives and three (3) popular traditional health providers at Kasoa, therefore,

N = 744 + 3+ 3= **750**

$$n = \frac{750}{1+750(0.09^2)} = \mathbf{106}$$

In view of Guest, Bunce, and Johnson (2006), there is no specific threshold for selecting a sample size for any research population. However, Crouch and McKenzie (2006) argued that a higher sample size assures a reasonable representation of the study population. That notwithstanding, Crouch and McKenzie (2006) proposed that a minimum of 15 participants is good for a qualitative study, whereas any number above 100 participants is good for quantitative study of 1000 population. Also, according to the "useful guide for determining the sample size" by Israel (2013), a sample size of 100 is acceptable for a population of 20,000 at ±10% Precision. Therefore, a sample of 106 is a reasonable representation of a population of 750 people.

In this study, a combination of purposive, snowballing, and convenience sampling methods were adopted in selecting a total of 106 participants for the study. The 106 participants included 100 pregnant women, three health attendants (midwives) and three

traditional health attendances. Firstly, 100 pregnant mothers were conveniently selected on antenatal clinic days for this study. Laerd (2012) viewed convenience sampling as one where the units that are selected for inclusion in the sample are the easiest to access. According to Sedgwick (2013), convenience sampling is the least rigorous technique, involving the selection of the most accessible subjects within a specific period of time. Sedgwick (2013) maintained that it is the least costly to the researcher, in terms of time, effort and money. Assessing these two definitions, it can be established that convenience sampling involves obtaining units or people who are most readily, easily and conveniently available. In this study, the researcher selected 100 expectant mothers who were present at antenatal clinic days and were willing to partake in this study.

Secondly, the researcher purposively handpicked three senior midwives as study participants on the basis of judgment of their suitability for the issue under investigation. The health workers were purposively selected because they were considered as key personnel who could formulate and implement prenatal, antenatal and postnatal services targeted at pregnant women. Also, the researcher relied on three midwives, because at the time of the collection (between 2016 and 2017), Kasoa Polyclinic only had three (3) senior midwives.

Finally, snowballing sampling technique was employed to select the three traditional health providers in the community. This technique helped the researcher to access the few traditional health providers in the community. It is a kind of strategic method of sampling where the researcher collects data from few members of the target population that he/she is able to locate. The researcher then asks those individuals to provide information needed to locate other members of population (Agyedu, Donkor & Obeng, 2011). Snowballing sampling is useful when the information about a population is scanty (Wagner & Lee, 2014). Beauchemin and González-Ferrer (2011) viewed snowballing sampling as appropriate when the members of a special population are difficult to locate. The researcher contacted the first Herbalist and then he led the researcher to locate the others.

Instrumentation

A structured question was developed and used to collect data from the pregnant women. The reason was that most of the pregnant women could not read and write, therefore, a structured questionnaire was more appropriate. By using this instrument, the researcher had the opportunity to seek clarification from the respondents to ascertain their feelings and experiences of the various subjects' matter understudy.

Structured Questionnaire

The structured questionnaire was divided into four sections, that is 'A, B, C and D'. Section 'A' sought information on biographical data. The rest of the items (B, C and D) focused on pregnancy-related food taboos, the rate and reasons for adherence, and assessment of nutritional knowledge of the pregnant women in Kasoa Zongo community respectively.

This study adopted both close and open-ended items to collect data on pregnancy -related food taboos in order to answer the research questions. The close-ended items were those on background characteristics, the nutritional knowledge and the views on various issues (Likert scale). A four-point Likert-type items: Strongly Agree (SA) = 4), Agree (A) = 3), Disagree (D) = 2 and Strongly Disagree (SD) = 1. The items were built to reflect on the key themes raised in the research questions. The mean for the Likert scale was 2.5 (10/4). All statements with means more than 2.5was taken as agreement with the statements.

In order to assess the level of nutritional knowledge, two types of short answer questions; namely, Completion and True or False were used. The responses were summed up to get each respondent's actual score. For the Completion test, a correct answer yields 2 marks, a partly correct answer yields 1 mark. This means the highest score any respondent could get in the five questions of the Completion test was 10. With regard to the True or False questions, each question answered correctly attracted 1 mark so the highest a respondent could score was 15. Wrong answers did not attract any scores, i.e. zero (0). The total scores for all the questions were 25 (100%).

4. RESULTS

The Food Taboos and Beliefs Associated with Pregnancy in Kasoa-Zongo Community?

This Research question sought to find out how the pregnant women describe and conceptualize food taboos. It starts with question on foods that are considered as taboo for pregnant women. All the responses are presented in Table 1.

Table 1: Foods Considered as Taboo for Pregnant Women

Food	Frequency		
	Yes (%)	No (%)	Total
Snails	84.0	16.0	100
Ripe plantain	79.0	21.0	100
Mushrooms	73.0	27.0	100

Pork	68.0	32.0	100
Eggs	61.0	31.0	100
Fishes (mudfish)	58.0	42.0	100
Groundnut	56.0	44.0	100
Python	52.0	48.0	100
Tortoise	52.0	48.0	100
Duck	21.0	79.0	100
Goat	16.0	84.0	100

*Multiple choices
Source: Field Data, 2017.

Table 1 presents multiple responses on the pregnant women's awareness of taboos related to some foods. It is obvious from the responses presented in Table 1 that the majority of the respondents were aware of nine major pregnancy-related tabooed foods which are snails (84.0%), ripe plantains (79.0%), mushrooms (73.0%), pork (68.0%), eggs (61.0%), mudfish (58.0%), groundnuts (56.0%), python (52.0%), and tortoise (52.0%). Very few of the pregnant women in the sample being 21.0% and 16.0% had little or no awareness that duck and goat were considered as pregnancy-related taboo foods.

The Reasons Why Pregnant Women Avoid Eating Some Prohibited Foods

The respondents were allowed to provide as many as the reasons why they avoided some foods during pregnancy. Table 2 presents the multiple responses to the reasons why pregnant women avoid eating some prohibited foods.

Table 2: Reasons why Pregnant Women Avoid Eating Some Prohibited Foods

Reason	Frequency	%
Religious belief	83	17.0
Prevention of miscarriage	79	16.2
Foods spiritually unwholesome	66	13.5
Taboo (ancestral taboo)	63	12.9
Baby born with watery/slimy mouth	59	12.1
Prevention against prolonged labour	58	11.9
Allergies and malformation	46	9.4
Depression	34	7.0
Total	488*	100

*Multiple Responses
Source: Field Data, 2017

It can be observed from the data in Table 2 that most of the pregnant women stopped eating prohibited foods for the reasons being: Religious belief (17.0%) prevention of miscarriage (16.2%), foods being spiritually unwholesome (13.5%), ancestral taboo was 12.9%. Prevention of having a baby born with watery/slimy mouth had (12.1%), prevention against prolonged labour (9.4%) and allergies and malformation of foetus was (9.4%). Depression had the least percentage (7.0%).

Self-Restricted Foods during Pregnancy

It was noticed during the interview and also from casual discussions with the respondents that there were some foods that were not necessarily food taboos which the pregnant women restricted themselves from eating or avoided during pregnancy. There was a need therefore to find out what these foods were. Table 3 has a list of those foods.

Table 1: Self-Restricted Foods during Pregnancy

Food	Multiple Responses	
	Frequency	%
Sugarcane	83	15.3
Coconut	81	14.9
Pawpaw	75	13.8

Pineapple	72	13.3
Okro	66	12.2
Milo	47	8.7
Palm kernel oil	42	7.7
Sugary foods	41	7.6
Beans	35	6.5
Total	542*	100

*Multiple Responses
Source: Field Data, 2017.

Table 3 presents the dichotomous responses on self-restricted or avoided foods by some pregnant women during pregnancy. The majority, being 15.3% avoided sugarcane, 14.9% avoided coconut, 13.8% avoided pawpaw, 13.3% avoided pineapple and 12.2% avoided okro. The rest of the responses show that 8.7% also avoided palm kernel oil, 7.7% avoided sugary foods and (6.5%) avoided beans.

The responses as narrated by the Midwives, Nurses and Herbalists are represented below;

> "Yes, most of the pregnant women are aware of food taboos associated with pregnancy. They comply with them too. The foods are the forbidden foods for pregnant women". (**Midwife 1)**
>
> "People are forbidden or not allowed to eat the tabooed foods at certain periods, especially during pregnancy in order to avoid complications and dangers. These foods are not allowed to be eaten due to their effects on the foetus or unborn child, the expectant mother, and the human body as a whole". **(Midwife 1)**
>
> "Some believe that bad people may cast evil eyes on the pregnancy through pawpaw. There is also some fear concerning snails. They belief that snails make babies have a watery/slimy mouth. Ok! Some comply with it because of personal dislike for milk, eggs and coconut". (**Midwife 2)**
>
> "I do. I have been practicing herbal medicine for the past 19 years. I have in-depth knowledge of food taboos associated with pregnancy. Surely, I offer my services to pregnant women in this community. Food taboos are foods which are forbidden for pregnant women for safety reasons. Yes, foods like sugarcane, groundnut, oranges, roasted corn, ripe plantain, banana and coconut are forbidden foods for pregnant women". **(Male herbalist)**
>
> "Yes, I have a rich knowledge on food taboos associated with pregnancy because I have been practicing traditional or herbal medicine for 30 years. Foods such as ripe plantain, pawpaw and sugary foods usually cause miscarriages. When a pregnant woman eats more of snails, she is likely to give birth to a baby with watery mouth". (**Female herbalist 2**)
>
> "The reason for the prohibition will depend on the type of the tabooed food. For instance, in order to prevent miscarriages pregnant women must avoid foods like sugarcane, ripe plantain, okro, and banana. Avoidance of groundnut, roasted corn and oranges will help prevent lower abdominal pains during the first trimester of the pregnancy. It is believed that when a pregnant woman eats a lot of snails, she is likely to have a baby with watery mouth". (**Female herbalist**)

Reasons for Self-Restricted Foods during Pregnancy

Usually, there are obvious reasons why people do certain things or take certain actions. The pregnant women in the sample were therefore asked to give their reasons for the self-restricted or for avoiding the listed foods. Their reasons are presented in Table 4.

Table 4: Reasons for Self-Restricted Foods during Pregnancy

Reason	Frequency	%
Miscarriage	30	30.0
Heartburn, lower abdominal pain	23	23.0
Constipation	12	12.0
Fatty baby and difficult delivery	11	11.0
Allergies (itching throat)	10	10.0
Malformation/Foetal abnormality	10	10.0
Skin and respiratory problems	4	4.0
Total	**100**	**100**

Source: Field Data, 2017.

Data in Table 4 indicate the reasons for the personal restrictions of some foods during pregnancy. The following ailments were outlined by the pregnant women in this study as being the reasons why they usually stop eating some foods during pregnancy: Miscarriage (30.0%), heartburns and lower abdominal pain (23.0%), constipation (12.0%), fatty babies that result in difficult delivery (11.0%), allergies such as itching throat (10.0%), malformation/foetal abnormality (10.0%) and lastly skin and respiratory problems.

Sources from which the Pregnant Women got the Awareness of Food Taboos

The pregnant women in the sample were asked to indicate the sources from which they got the awareness of the food taboos. Their responses are presented in Table 5.

Table 5: Source of Knowledge of Food Taboos

Source	Frequency	%
Mosque/Church	31	31.0
Grandparent	24	24.0
Herbalist	21	21.0
Parents	17	17.0
Self	7	7.0
Total	**100**	**100**

Source: Field Data, 2017.

A critical examination of Table 5 shows that the pregnant women had knowledge and awareness mostly from mosque/church (31.0%), grandparents (24.0%), herbalists (21.0%) and parents (17.0%). The least source of knowledge of pregnancy food taboos was personal knowledge and/or self-awareness, which was given by seven percent of the respondents.

Reasons/Motives Why Pregnant Women Did Not Eat Taboo Foods

Just as the pregnant women were asked to give reasons for avoiding tabooed foods, they were again asked to indicate the rationale hind why they do not eat taboo foods. Their responses are presented in Table 6.

Table 6: Reasons/Motives Why Pregnant Women Did Not Eat Taboo Foods

Reason/motives	Frequency	%
Health	45	45.0
Religion	42	42.0
Security	13	13.0
Total	**100**	**100**

Source: Field Data, 2017.

Table 6 gives information on the reasons why the pregnant women did not eat forbidden or taboo foods. A majority number (45.0%) of the pregnant women did not eat taboo foods for health reasons. This was followed by 42.0% of the respondents who did not eat taboo foods for religious reasons, and the least (13.0%) reason for not eating the taboo food was security.

5. DISCUSSIONS OF THE FINDINGS

What are some of the food taboos and beliefs associated with pregnancy in Kasoa-Zongo Community?

This question sought to find out how the pregnant women describe and conceptualize food taboos. It was found out that the majority of the respondents were aware of six major pregnancy-related tabooed foods, which are snails, ripe plantains, mushrooms, pork, eggs and mudfish. At least a respondent in this study admitted avoiding one food or the other in pregnancy based on the associated food taboos. This is consistent with the findings of Biza-Zepro (2015) that at least one half (49.8%) of women living in the (shashemene) district of Ethiopia had encountered food taboos at least for one food item. food items that were avoided by the pregnant women in Ethiopian, as found by Biza-Zepro (2015) were; linseed, honey, milk times, fatty meat, eggs, fruits and vegetables. Similarly, Oni and Tukur (2012) found that pregnant women were found to cope with food taboos by either secretly ignoring them or by eating nutritious foods that supposedly prevented the consequences of eating tabooed foods.

As evident in Table 1, it is revealed that the foods most commonly avoided in pregnancy by the pregnant women in this study were snail, mushrooms and pork. Cobbinah, Vink and Onwuka (2008) found that snails are avoided by many pregnant women because it is believed that they make babies sluggish and salivate excessively like a snail. According to the findings of Arzoaquoi (2014), snails are among the list of foods prohibited during pregnancy in the Yilo Krobo District in Ghana. In the same vein, Ihara (2004) found out that many cultures in Africa and South American settings portray eating snail meat as taboo and believe that it makes an

individual sluggish or slow and link this to the slimy nature of the snail's secretions. However, the findings of Cobbinah, Vink, Onwuka (2008) suggested that there has not been any established link between snail consumption and sluggishness and pork consumption with prolonged labour. On the contrary, according Fagbuaro, Oso and Edward (2006) found out that the giant African snail has been shown to be a rich source of protein, trace elements and minerals which are needed for proper growth and development in human beings.

Ali and Azim (2016) also found out that ripe plantains and eggs to be the foods often associated with several taboos and prohibited for pregnant women and children. It is therefore not surprising that in this study, the egg was found to be one of the most commonly denied foods of pregnant women, as indicated by 61.0% of the respondents. This is consistent with the finding of Maduforo (2010) who conducted a study on the superstitions and nutrition among pregnant women in Nwangele local government area of Imo state, Nigeria, and found out that most of the pregnant women within the Nwangele districts to not eat because they believe eggs it leads to allergies and malformation of the baby/foetus, and also make babies to steal. This practice has been reported by other studies (Fagbuaro, Oso & Edward, 2006).

The reasons why pregnant women avoid eating some prohibited foods

The reasons given by the women are almost the same as the finding of Maduforo, Nwosu, Ndiokwelu, and Obiakor-Okeke (2013) on food superstition, feeding practices and nutritional anthropometry of pregnant women attending ante-natal clinic in University of Nigeria teaching hospital Ituku/Ozalla, Enugu State, Nigeria. They found out that most pregnant women stopped eating prohibited foods for the fear of miscarriage, depression, and prevention of malformation of foetus. Oni and Tukur (2012) also found out in their study in Uganda that women avoid eating foods like snails, tortoise, ducks and eggs during pregnancies for the avoidance of serious health problems, miscarriage, premature delivery, stillbirth, or even death of the mother. Furthermore, Yetunde and Olubukunola (2015) found out that a significant number of pregnant women in the West African Region avoid eating some foods during pregnancy for the reasons of religious belief and ancestral taboos. The findings from current study also concurs with the finding of Ekwochi, Osuorah, Ikenna, Ifediora, Asinobi and Eke (2015) that many women from the South-south part of Nigeria are prohibited from eating mudfish, *omoebe* (black soup), *Bini owo* soup, crabs, *omi ukpoka* (corn soup), octopus, snakes/pythons, pigs, antelopes and okro soup to avoid giving birth to unwholesome spiritual babies, sluggish babies with drooling mouth, stillbirth or severe neurological illnesses, including mental retardation, blindness and epilepsy or children with disabilities/malformation.

Self-restricted/avoided foods during pregnancy

This study found out that most of the foods such as snails, mushrooms, pork, eggs and mudfish were classified as sources of cheap protein foods by Okunaiya, Fadupin, and Oladeji, (2016), in their study "Knowledge, attitude and practice of maternal and child food-based dietary guidelines among pregnant women in urban slum of Lagos State". However, this can be deduced that the adherence to food taboos by the pregnant, as found in this study, is preventing the pregnant women from getting the rich nutrients of these foods. More so, most of the foods the pregnant women avoid have a lot of nutritional benefits, including vitamin A from pawpaw (Russell, 2000). Okro and pineapples will also supply vitamins and mineral salts (Slavin, 2013), but these were all avoided.

It is clear from the literature that many many researchers have conducted studies into food taboos, restriction or prohibition during pregnancy and found different results. For example, the findings of Ali and Azim (2016) shows that some pregnant women naturally avoid some foods during pregnancy without being coerced or any attachment to any religious, traditional belief, medical or ancestral taboo. According to them, the sudden urge to stop eating some particular foods during pregnancy may include loss of appetite for sweet delicacies, spicy, salty or sour foods.

Reasons for self-restricted/avoided foods during pregnancy

Just like the tabooed foods, other studies have also found some claims being made by pregnant women concerning certain foods and so they avoid them during pregnancy. Studies in Ghana by Meyer-Rochow (2009) and Nti, Larweh and Gyemfua- Yeboah (2002) revealed that pregnant women in some communities of Ghana avoided *fufu, gari, kokonte* (all cassava-based foods), fresh fish, corn dough porridge, eggs, banana, crabs and ripe plantain, not because of taboos or superstitions. They just did not feel like eating them. Several claims and wild beliefs have been made, most of which have not been proven scientifically. Resnikoff, Pascolini, Kocur, Pararajasegaram, Pokharel, and Mariotti (2004) found out that coconut is one of the leading causes of many eye infections diseases like glaucoma, trachoma believed and baby blind; a condition described as "white eye". Yetunde and Olubukunola (2015) found honey and bambara beans to be regarded as the cause of respiratory and skin problems for the child at birth. Again, Cobbinah, Vink and Onwuka (2008) found corn flour to be linked to heavy bleeding at delivery. More so, Maduforo *et al*, (2013) found that eggs, fresh meat, fresh milk, and sugary foods are also believed to make the unborn babies large or fatty, resulting in difficult delivery, complications and possible death of the mother.

Sources of knowledge and awareness of food taboos

Furthermore, it was found in this study that the highest source of knowledge and awareness of food taboos was from the mosque/church. This response as seen in Table 5 show that the highest source of knowledge and awareness was from the mosque is not surprising since it could be as a result of the settings of the study. Kasoa-Zongo is predominately a Muslim community. The data in Table 1 also indicate that 83.0% of the respondents gave religion as a reason for not eating the tabooed foods. Pork, for example is avoided by Muslims. This finding confirms the findings of Swimberghe, Sharma and Flurry (2011) that religion has consequence on the decision latitude of an individual.

Most of the respondents ranging from 52.0% to 83.0% of the pregnant women were aware of taboos foods during pregnancy. Most of them avoided or stopped eating the forbidden foods to avoid miscarriage, birth defects or malformation, allergies heartburn, lower abdominal pains, depression, and avoidance of characteristics of animal. The qualitative interview data from the responses of the health personnel, birth attendants and herbalist yielded similar responses. However, according to the finding of Biza-Zepro (2015) most of the forbidden foods are rather critical for cellular growth and development of the foetus and pregnant mother during gestation or pregnancy. It was also found out that the pregnant women mostly had information on pregnancy related food taboos from their grand-parents (24.0%), herbalists (21.0%) and parents (17.0%). This suggests that most of them patronized traditional or herbal medicine and/or visited traditional or herbal medicine practitioners for treatment; hence their knowledge of food taboos. It is also likely that either they lived with their grand-parents and parents or vice versa; hence their awareness of the food taboos. This observation suggests that the pregnant women were taught about food taboos by their immediate and extended families. This finding supports Dove (2010) who found out from an empirical study that in addition to herbal remedies, pregnant women were taught about taboos by their immediate families, extended families, and communities. Similar study carried out in the Yilo Krobo District by Arzoaqoi in 2014 identified rats, snails, snake, hot food and animal lung as prohibited foods during pregnancy. Amoako-Kwakye (2010) also cited in her text that pregnant and lactating women in various parts of the world are forced to abstain from especially nutritious and beneficial foods for social, cultural, and religious reasons. This finding also supports Adigbo and Maddah (2011) who referred to a well-known religious practice that Hindus and those who are forbidden from eating beef and its products comply because cows occupy a sacred place in their religion.

6. Conclusions

Overall, the foods that were avoided or tabooed included snails, ripe plantain, mushrooms, pork, duck and goat. For the reason of religious belief, fear of miscarriage, prevention of foods spiritually unwholesome babies, taboo (ancestral taboo), baby born with watery/slimy mouth, prevention against prolonged labour, allergies and malformation and depression. Again, certain foods that were self-restricted by the pregnant women themselves included; sugarcane, coconut, pawpaw, pineapple, okro, palm kernel oil, sugary foods and beans to prevent miscarriage, heartburns and lower abdominal pain, constipation, fatty babies that result in difficult delivery, allergies such as itching throat, malformation/foetal abnormality and lastly skin and respiratory problems. It was also eminent that the information on pregnancy related food taboos were sourced from the Mosque/church, their grandparents, herbalists and parents. That notwithstanding, some pregnant women in kasoa Zongo eat a variety of alternative foods such agushie, herring, salmon, egg yolk, and fruits in place of the taboo foods, because of their availability, relative affordability, convenience of eating them, and their nutritional value.

7. Recommendations

In the light of the findings of this study, the following recommendations are put forward.

To reduce maternal and neonatal morbidity and mortality and promote safe and healthy delivery of a live and healthy baby, conscious efforts must be made by all stakeholders to achieve this. The following recommendations have been suggested:

a. Nurses and midwives in the Awutu-Senya East (Kasoa) Municipality, faith-based organizations (FBOs), the media, and other stakeholders should educate expectant mothers to eat alternative healthy and nutritious foods, including iron-rich foods in lieu of taboo foods. They should encourage them to eat alternative nutritious foods which contain protein, vitamins and minerals such as fruits examples are, banana, oranges, pineapples and monkey apples (*alasa*) and vegetables with examples as, kontomire stew and soup, *ayoyo* soup, *agushie* and garden egg stew.
b. Though education on healthy eating is already on going in various Maternal and Child Health clinics in the municipality, it should be well intensified and expectant mothers should be assisted on how to plan a well-balanced diet, including alternative foods in lieu of taboo foods using the local food ingredients available to them.
c. Health workers and health authorities in the municipality should implement surveillance activities to increase coverage and compliance of iron supplementation.
d. Researchers investigating the food taboos and feeding practices of pregnant women should also conduct such studies among expectant mothers who do not attend any antenatal clinics. This would limit the level of bias that the research environment could have on the data being generated.

REFERENCES

Abedi, P. (2014). *Theory of reasoned action, theory of planned behaviour*. Available online at: http://fnursing.ajums.ac.ir/_fnursing/documents/THEORY%20O%20REASOND20ACTION,%20THEORY%20OF_20140525_1 2824.pdf (retrieved on02/07/2017)

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179-211.

Ajzen, I. (2011). The theory of planned behaviour: Reactions and reflections. *Psychology and Health*. https://doi.org/10.1080/08870446.2011.613995

Ajzen, I., & Fishbein, M. (1980). The prediction of behavioral intentions in a choice situation. *Journal of Experimental Social Psychology, 5*, 400-416.

Ali, U., & Azim, H. (2016). Taboos and beliefs among pregnant & lactating women. *The Saudi Journal of Life Sciences*, Scholars Middle East Publishers Dubai, United Arab Emirates, ISSN 2415-6221(Online)

Al-Qaradawi. (1993). al-Muntaqa min Kitab alTarghib wa al-Tarhib li al-Mundhiri. 2 vols. alMansurah: Dar al-Wafa' li al-Tiba'ah wa al-Nashr wa al-Tawzi'.

Armitage, C. J., & Conner, M. (2001). Efficacy of the theory of planned behaviour: A meta analytic review. *British Journal of Social Psychology, 40*, 471-499.

Armitage, C. J., & Conner, M. (2001b). Social cognitive determinants of blood donation. *Journal of Applied Social Psychology, 31*, 1431-1457.

Arzoaquoi, S. K. (2014). Common Food Taboos and Beliefs During Pregnancy in Yilo Kro District, Ghana. Available from: http://hdl.handle.net/123456789/5904

Arzoaquoi, S. K., Essuman, E. E., Gbagbo, F. Y., Tenkorang, E. Y., Soyiri, I., & Laar, A. K. (2015). Motivations for food prohibitions during pregnancy and their enforcement mechanisms in a rural Ghanaian district. *Journal of Ethnobiology and Ethnomedicine*. https://doi.org/10.1186/s13002-015-0044-0

Asma, R. S., Asma-Ul-Hosna, & Ashraful, A. (2012). Pregnancy and nutrition. *Bangladesh Journal of Medical Science*. https://doi.org/10.3329/bjms.v11i4.12596

Beauchemin, C., & González-Ferrer, A. (2011). Sampling international migrants with origin-based snowballing method: *Demographic Research*. https://doi.org/10.4054/DemRes.2011.25.3

Bediako, T. (2012). *Food and nutrition for senior high schools in West Africa* (5th ed.). Kumasi, Ghana: Esswin Publishing Ltd

Biza Zepro, N. (2015). Food taboos and misconceptions among pregnant women of Shashemene District, Ethiopia. *Science Journal of Public Health*. https://doi.org/10.11648/j.sjph.20150303.27

Cameron, R., Ginsburg, H., Westhoff, M., & Mendez, R. V. (2012). Ajzen'S Theory of Planned Behavior and Social Media. *American Journal of Psychological Research, 14*, 88-107.

Cobbinah, J. R., Vink, A., & Onwuka, B. (2008). *Snail farming: Production, processing and marketing* (1st ed.). Wageningen: Agromisia Foundation

Creswell, J. W. (2013). Steps in conducting a scholarly mixed methods study. *DBER Speaker Series*. https://doi.org/10.1016/j.annfar.2012.10.011

Crouch, M., & McKenzie, H. (2006). The logic of small samples in interview-based qualitative research. *Social Science Information, 45*(4), 18. doi: 10.1177/0539018406069584

Davies, D. J., & Thate, M. J. (2017). *Religion and the individual: belief, practice, and identity*, mdpi.com.

Demelash, H., Motbainor, A., Nigatu, D., Gashaw, K., & Melese, A. (2015). Risk factors for low birth weight in Bale zone hospitals, South-East Ethiopia: A case-control study. *BMC Pregnancy and Childbirth*. https://doi.org/10.1186/s12884-015-0677-y

Devriese, L. (2016). To slaughter, to sacrifice: The historic background of killing animals for food. *Vlaams Diergeneeskundig Tijdschrift*.

Edusei, A. K., Bentum, J., & Nkum, B. (2014). Birth Weight of Newborns in Relation to Nutritional Status of Pregnant Women Attending Antenatal Clinic at the Nkawie Government Hospital in Atwima Nwabiagya District, Ghana. *Journal of the Ghana Science Association*. https://doi.org/10.4314/jgsa.v15i1.

Ekwochi, U., Osuorah, C. D. I., Ikenna, K. N., Ifediora, C., Asinobi, I. N., & Eke, C. B. (2015). Food taboos and myths in South Eastern Nigeria: The belief and practice of mothers in the region. *Journal of Ethnobiology and Ethnomedicine*

Elhassan, E. M., Abbaker, A. O., Haggaz, A. D., Abubaker, M. S., & Adam, I. (2010). Anaemia and low birth weight in Medani, Hospital Sudan. *BMC Research Notes*. https://doi.org/10.1186/1756-0500-3-181

Fadzlillah, N. A., Che Man, Y. B., Jamaludin, M. A., Rahman, S. A., & Al-Kahtani, H. A. (2011). Halal food issues from Islamic and modern science perspectives. *2nd International Conference on Humanities, Historical and Social Sciences*.

Fagbuaro, O., Oso, J. A., Edward, J. B., & Ogunleye, R. F. (2006). Nutritional *status of four species of giant land snails in Nigeria. J Zhejiang Univ Sci B., 7*(9):686–9.

Fielding, K. S., McDonald, R., & Louis, W. R. (2008). Theory of planned behaviour, identity and intentions to engage in environmental activism. *Journal of Environmental Psychology, 44*, 14-38. https://doi.org/10.1016/j.jenvp.2008.03.003

Gebre, A., & Mulugeta, A. (2015). Prevalence of anemia and associated factors among pregnant women in north western zone of tigray, northern ethiopia: A cross-sectional study. *Journal of Nutrition and Metabolism*. https://doi.org/10.1155/2015/165430

Ghana Health Service (2015). Improve Maternal Health Care. Available online at: http://www.ghanahealthservice.org/maternal-health.php (retrieved on 02/07/2017)

Golden, C. D., & Comaroff, J. (2015). The human health and conservation relevance of food taboos in north-eastern Madagascar. *Ecology and Society, 20*(2), 42.http://dx.doi.org/10.5751/ES-07590-200242

Ihara, E. (2004). Cultural competence in health care: is it important for people with chronic conditions? *Center on an Aging Society*, Minnesota USA.

Ingleby, E. (2012). Research methods in education. *Professional Development in Education*. https://doi.org/10.1080/19415257.2011.643130

Israel, G. D. (2013). Determining sample size 1. *University of Florida*, gjimt.ac.in

Khattak, J. Z. K., Mir, A., Anwar, Z., Wahedi, H. M., Abbas, G., Khattak, H. Z. K., & Ismatullah, H. (2011). Concept of Halal food and biotechnology. *Advance Journal of Food Science and Technology*. https://doi.org/10.1017/CBO9781107415324.004

Lebso, M., Anato, A., & Loha, E. (2017). Prevalence of anemia and associated factors among pregnant women in Southern Ethiopia: A community based cross-sectional study. *PLoS ONE*. https://doi.org/10.1371/journal.pone.0188783

Maduforo, A. N. (2010). Superstitions and nutrition among pregnant women in Nwangele local government area of Imo state, Nigeria. *Journal of Research in National Development*, researchgate.net

Maduforo, A. N., Nwosu, O. I. C., Ndiokwelu, C. I., & Obiakor-Okeke, P. N. (2013), Food superstition, feeding practices and nutritional anthropometry of pregnant women. *Jorind., 11*(1), ISSN 1596-8308.

Malla, D. S., Giri, K., Karki, C., & Chaudhary, P. (2011) Achieving Millennium Development Goals 4 and 5 in Nepal. Available online at: http://onlinelibrary.wiley.com/doi/10.1111/j.1471 0528.2011.03113.x/pdf (retrieved on 02/05/2017

Marangoni, F., Cetin, I., Verduci, E., Canzone, G., Giovannini, M., Scollo, P., … Poli, A. (2016). Maternal diet and nutrient requirements in pregnancy and breastfeeding. An Italian consensus document. *Nutrients*. https://doi.org/10.3390/nu8100629

Marvasti, A. (2018). Research methods. *The Cambridge Handbook of Social Problems*. https://doi.org/10.1017/9781108656184.003

Maslow, A. (1943). A theory of human motivation. *Psychological Review, 50*, 370-396.

Masuku, S. K. S., & Lan, S. J. J. (2014). Nutritional knowledge, attitude, and practices among pregnant and lactating women living with HIV in the Manzini region of Swaziland. *Journal of Health, Population and Nutrition*. https://doi.org/10.1007/s00382-009-0588-6

McDermott, M. S., Oliver, M., Simnadis, T., Beck, E. J., Coltman, T., Iverson, D., & Sharma, R. (2015). The Theory of Planned Behaviour and dietary patterns: A systematic review and meta-analysis. *Preventive Medicine*. https://doi.org/10.1016/j.ypmed.2015.08.020

Meyer-Rochow, V. B. (2009). Food taboos: Their origins and purposes. *Journal of Ethnobiology and Ethnomedicine*, *5*,18. https://doi.org/10.1186/1746-4269-5-18

Morrison, J. L., & Regnault, T. R. H. (2016). Nutrition in pregnancy: Optimising maternal diet and fetal adaptations to altered nutrient supply. *Nutrients*. https://doi.org/10.3390/nu8060342

Mridula, D., Mishra, C. P. & Chakravorty, A. (2003). Dietary intake of expectant mother. *Indian Journal of Nutrition and Dietetics, 40*(1), 24-30.

Naeem, A., Zill-E-Huma, & Afridi, U. (2013). Maternal risk factors associated with low birth weight. *Pakistan Journal of Medical and Health Sciences*. https://doi.org/10.1007/BF02822189

Nti, C. A., Larweh, P. M., & Gyemfua-Yeboah, Y. (2002). Food consumption patterns, dietary quality and health status of expectant mothers: Case studies in suburban and rural communities in Ghana. *International Journal of Consumer Studies*. https://doi.org/10.1046/j.1470-6431.2002.00211.x

Nurdeng, D. (2009) Review Article Lawful and unlawful foods in Islamic law focus on Islamic medical and ethical aspects. *International Food Research Journal*, *16*, 469 478.

Okunaiya, G. A., Fadupin, G. T., & Oladeji, D. (2016). Knowledge, attitude and practice of maternal and child food-based dietary guidelines among pregnant women in urban slum of Lagos State. *Clinics in Mother and Child Health*. https://doi.org/10.4172/2090-7214.1000240

Olsen, C. M. D. (2012). Cross-sectional study design and data analysis. *World Health Organization Report*. https://doi.org/ISBN 9789241564434

Oni, O. A., & Tukur J. (2012) Identifying pregnant women who would adhere to food taboos in a rural community: a community-based study. Available online at https://www.ncbi.nlm.nih.gov/pubmed/23437501 (retrieved on 02/05/2017)

Otoo, P., Habib, H., & Ankomah, A. (2015). Food Prohibitions and Other Traditional Practices in Pregnancy : A Qualitative Study in Western Region of Ghana. *Advances in Reproductive Sciences*. https://doi.org/doi:10.4236/arsci.2015.33005

Pinto, E., Barros, H., & Santos Silva, I. Dos. (2009). Dietary intake and nutritional adequacy prior to conception and during pregnancy: A follow-up study in the north of Portugal. *Public Health Nutrition*. https://doi.org/10.1017/S1368980008003595

Rahman, A. H. A., Ahmad, W. I. W., Mohamad, M. Y., & Ismail, Z. (2011). Knowledge on halal food amongst food industry entrepreneurs in Malaysia. *Asian Social Science*. https://doi.org/10.5539/ass.v7n12p216

Reid-Cunningham, A. R. (2008). Maslow's Theory of Motivation and Hierarchy of Human Needs: A Critical Analysis. PhD Thesis.

Resnikoff, S., Pascolini, D., Etya'ale, D., Kocur, I., Pararajasegaram, R., Pokharel, G. P., & Mariotti, S. P. (2004). Global data on visual impairment in the year 2002. *Bulletin of the World Health Organization*. https://doi.org//S0042-96862004001100009

Ribeiro, A. M., de Carvalho Lima, M., de Lira, P. I. C., & da Silva, G. A. P. (2015). Low birth weight and obesity: causal or casual casual association? *Revista Paulista de Pediatria (English Edition)*. https://doi.org/10.1016/j.rppede.2015.06.014

Russell, R. M. (2000). The vitamin A spectrum: From deficiency to toxicity. *American Journal of Clinical Nutrition*. https://doi.org/10.1093/ajcn/71.4.878

Sedgwick, P. (2013). Convenience sampling. *BMJ*. https://doi.org/10.1136/bmj.f6304

Shafir, T., Angulo-Barroso, R., Jing, Y., Angelilli, M. L., Jacobson, S. W., & Lozoff, B. (2008). Iron deficiency and infant motor development. *Early Human Development, 4*, 55-63. https://doi.org/10.1016/j.earlhumdev.2007.12.009

Slavin, J. (2013). Fiber and prebiotics: Mechanisms and health benefits. *Nutrients*. https://doi.org/10.3390/nu5041417.

Solomons, N. W. & Schumann, K. (2004). Intramuscular administration of iron dextran is inappropriate for treatment of moderate pregnancy anemia, both in intervention research on underprivileged women and in routine prenatal care provided by public health. *American journal of Clinical Nutrition Services1, 2* (79), 1-3.

Sommer, L. (2011). The theory of planned behaviour and the impact of past behaviour. *International Business and Economics Research Journal*. https://doi.org/http://cluteinstitute.com/ojs/index.php/IBER/article/viewFile/930/914

Story, M., & Stang, J. (2005). U*nderstanding adolescent eating behaviors.* Available online at http://www.epi.umn.edu/let/pubs/img/adol_ch2.pdf (retrieved on 02/05/2017)

Swimberghe, K. R., Sharma, D., & Flurry, L. W. (2011). Does a consumer's religion really matter in the buyer-seller dyad? an empirical study examining the relationship between consumer religious commitment, Christian Conservatism and the Ethical Judgment of a Seller's Controversial Business Decision. *Journal of Business Ethics*. https://doi.org/10.1007/s10551-011-0829-6

Taylor, D., Bury, M., Campling, N., Carter, S., Garfield, S., Newbould, J. & Rennie, T. (2007), A Review of the use of the Health Belief Model (HBM), the Theory of Reasoned Action (TRA), the Theory of Planned Behaviour (TPB) and the Trans-Theoretical Model (TTM) to study and predict health related behaviour change. *National Institute for Clinical Excellence.* London: The School of Pharmacy, University of London.

Ugwa, E. (2016). Nutritional practices and taboos among pregnant women attending antenatal care at general hospital in Kano, Northwest Nigeria. *Annals of Medical and Health Sciences Research*. https://doi.org/10.1109/PCTHEALTH.2008.4571014

United Nations Children's Fund. (2012). Nutrition in the first 1, 000 days. The State of the World's Children.

Wagner, J., & Lee, S. (2014). Sampling rare populations. *Handbook of Health Survey Methods*. https://doi.org/10.1002/9781118594629.ch4

Wardlaw, G. M. & Smith, A. M. (2009*). Contemporary nutrition* (8th ed.). New York, USA: McGraw-Hill Companies Inc.

Wardlaw, G. M., Hampl, J. S., & DiSilvestro, R. A. (2004). *Perspectives in nutrition* (6th ed.). U.S.A.: McGraw- Hill Companies Inc.

Watts, S., & Stenner, P. (2012). Doing Q-methodological research. In *Theory, Method and Interpretation*.

Worku Takele, W., Tariku, A., Wagnew Shiferaw, F., Demsie, A., Alemu, W. G., & Zelalem Anlay, D. (2018). Anemia among Women Attending Antenatal Care at the University of Gondar Comprehensive Specialized Referral Hospital, Northwest Ethiopia, 2017. *Anemia*. https://doi.org/10.1155/2018/7618959

Xiao, D., Bai, G., & Huang Y. (2014). A model of consumer perception and behavioral intention for E-Reading. *The SIJ Transactions on Industrial, Financial & Business Management (IFBM*), Vol. 2, No. 6, August 2014

Yetunde, S.-L. M., & Olubukunola, O. (2015). The Nutrient Adequacy of Foods Eaten by Pregnant Women Attending Antenatal Clinic at Traditional Birth Homes. *IOSR Journal of Nursing and Health Science Ver. III*. https://doi.org/10.9790/1959-04236567