EMERGING DISCOURSE IN FOOD CRAVINGS AND AVERSIONS FOR SUSTAINABLE DEVELOPMENT IN DIETARY PATTERN OF PREGNANCY WOMEN

MUSTAPHA Idayat Oyebola
Department of Home Economics, EACOED,Oyo

Abstract
Food craving and aversion are known all over the world as one of the problems that pregnant women normally face. It has been in existence from the time immemorial, when pregnant women start experiencing a discomfort which may not be palatable to them and the foetus.Food craving and aversion sometimes have significant input on pregnancy progress and outcome, which may be related to nutritional problem. Most pregnant women craved for various types of foods and avoid some during this period. The frequency at which pregnant women vomit and nauseate in the early months of pregnancy is higher especially in the first three months. Morning sickness is linked with the food aversions; cravings, nausea, and vomiting that are often associated with pregnancy. Majority of all pregnant women may suffer from any or combination of these symptoms. Cravings are due to pregnancy hormones and this is especially true when the body began experiencing higher hormone levels and the body is still adjusting.

Introduction

Food provides all organisms with the raw materials for growth, survival and reproduction. Therefore, dietary consumption during pregnancyhas significant health implications for both a mother and fetus. There is substantial evidence to suggest that diet can affect a range of factors such as the course of pregnancy, and the incidence of prematurity and congenital malformation in the infants (Knox *et. al,* 1994) Therefore, understanding the etiology of food cravings and aversions during pregnancy is important in ensuring that a mother and fetus attains adequate health and nutrition.

There are several mechanisms suggested to explain craving and aversion experiences during human pregnancy. These involve perspectives from a range of disciplines, and include factors such as ensuring adequate nutrition, palatability changes, psychological impacts, hormonal effects and the influence of culture. This review identifies a broad common knowledge base on the issue.

Food cravings during pregnancy are believed to be caused by hormonal changes that occur in the body. Generally, the first trimester is when the majority of cravings occur, but it is not uncommon for those cravings to last for the duration of the pregnancy. Finding ways to cope with overwhelming food cravings can be challenging for the mother-to-be, however, with some effort a healthy nutritional balance can be achieved.Aversions and cravings are linked to the dietary intake of pregnant women, it is therefore, imperative tounderstand the changes that normally occur at this period in providing lasting solution to such issues. This article is prepared to understand the effect of food aversion and craving on pregnancy.

Nutrition, Food Cravings and Aversions in Pregnancy

In order to sustain a successful pregnancy, a mother experiences a number of physiological and behavioral adjustments; heightened food cravings and aversions are an example of such changes. Food cravings are generally described as a distinct state characterised by an intense urge to obtain a food substance. In contrast, aversions are characterized by the repulsion and avoidance of particular foods. (Mercer & Holder, 1997)

Food aversions and cravings during human pregnancy have been documented for centuries, and are reported to occur ubiquitously around the world by between 50% and 90% of women. The most common cravings include fruit and fruit juices, sweets desserts and chocolates; whereas the most common aversions are nonalcoholic caffeinated beverages, meat, fish, poultry and eggs. (Bayley*et al,* 2002) This behavior is particularly prominent during the first and third trimesters of pregnancy.

However, not all craving and aversion behavior results in a nutritious diet. Pica; the craving for non-food substances such as detergent or soil, is a primary example of this. Additionally, women often report aversions for meats and eggs, which could lead to a dietary lack of protein; important for fetal growth and development.

Culture

A primary limitation in determining associations involved between pregnancy and food cravings is determining if the behavior is instigated by physiological or cultural influences. One of the first experimental studies to provide evidence for the influence of culture on food preferences during pregnancy was carried out in 1983 by Arthur Giles. This study involved 300 pregnant women in London, and found traditional cultural beliefs of nutrition in pregnancy to greatly influence the craving and aversion experience of pregnant women. (Knox et. al, 1994)

In a review investigating food preferences during human pregnancy, Knox*et. al,* (1994) also suggested that these cravings and aversions for food may be influenced by socio-cultural factors and existing food habits. This was supported through reference to a number of studies and cross cultural analysis; involving researches from the USA, UK, Italy and Africa, which provided evidence for regional differences in food preferences of pregnant women.

Demissie*et. al,*(1998) conducted a cross sectional study involving 295 Southern Ethiopian women, and found 43% of the women craved milk and meat. However, this conflicts with reports based on western societies (particularly the USA), which indicate meat to be one of the most common aversions. (King,2000) Hence, this implies that culture may be a factor that influences craving and aversion behavior during pregnancy.

Pica (the eating of non food substances) is a behavioral phenomenon most commonly observed in children and pregnant women. This behavior is reported to occur throughout the world; however cross-cultural analysis indicates the incidence and type of substances consumed seems to differ; implying a cultural influence. Corbett *et. al,* (2003) referred to a study in Kenya, which found that three quarters of all pregnant women who participated, ate soil on a regular basis. What was particularly interesting is that traditional belief in the region associated eating soil with improved outcomes in fertility and reproduction. In contrast, **Knox *et. al,* (1994) referred to a study performed in Jamaica by**

Landman& Hall (1983), **who found the prevalence for eating soil to be 14%. Hence, cultural beliefs are a likely factor in determining the types of foods pregnant women crave or avoid.**

However, otherstudies and data contradict the extent of culture influences on the pica behavior. An example is noted by Knox *et. al,* (1994) who referred to research in Italy by Fidanza&Fidanza (1986), which found that although women reported meat to be an important nutritious food during pregnancy, it was also found to be the most frequently reported aversion. Similar findings were indicated in a longitudinal study involving calcium metabolism, which found pregnant women increased their intake of dairy products, despite being specifically told not to. (King, 2000) . This indicates that factors other than culture may influence eating behavior in pregnancy.

Nutrition in relation to food cravings and aversions

One principal theory to explain cravings and aversions in pregnancy indicates that it is a physiological mechanism adapted to protect the mother and fetus from nutrient deficiencies or feta-toxic substances; and therefore ensure optimal growth and development of the fetus. This is supported by repeated study findings; that the most commonly avoided foods are alcoholic beverages, coffee, and cigarettes. Moreover, research indicates that in general, women crave foods that are lacking in their diets. (Demissie*et. al,* 1998) Therefore this supports the argument that cravings are triggered by a nutrient deficiency.

There is also evidence to suggest that palatability; the acceptance and experienced reward from consuming a food, has an adaptive function which reflects a physical need for nutrients. For example, enhanced palatability for sweets may be as a result of the increased demand for energy during pregnancy. (Yeomans, 2004) This is supported by findings which indicate that the most commonly craved foods providean increase in calcium and energy; whereas most food aversions involve reducing consumption of substances such as alcohol and caffeine, which are potentially harmful to the fetus. (King, 2000)

Cross-cultural studies have also provided evidence for this concept. Demissie*et. al,* (1998) conducted a cross sectional study involving 295 Southern Ethiopian women, which investigated the *nutritional significance of food aversions and cravings during pregnancy. They discovered a strong association between the incidence of aversion and craving (x^2 = 10.66, p <.001; odds ratio, 2.36). Subsequently, these results were attributed to the notion that food cravings and aversions are complementary processes to ensure optimal nutrition during pregnancy.*

Research into the behavior of pica (the eating of non-food substances) in pregnancy has also provided evidence for this theory. Although, the most commonly ingested pica substances include soil, clay, starch, baking powder, soap, ashes, chalk, paint, burnt match heads, toilet paper, pebbles, and dust.**(Corbett *et. al*,2003).** Research indicates that this behavior is associated with iron deficiency anemia, which can often be corrected with iron supplements. However, it is important to note that not all pregnant women who suffer from anemia practice pica, and that the craved substances are not necessarily a source of iron.

There are a number of studies which report evidence to reject this mechanism; (Knox *et. al,* 1994) argued against the concept of a

parasitic relationship between a mother and fetus, instead describing it as an anabolic process. They also identified that despite the maternal need for protein during pregnancy, reports of cravings for meat or eggs are rare, and among the most frequently reported aversions.

Additionally, Rosso (1987) discovered that nutrient and energy needs of the fetus are unrelated to maternal appetite. This study found maternal appetite to be greatest between the twelfth and twentieth weeks of gestation; when nutrient demands of the fetus are at its' minimum. Therefore, this suggests appetite and eating behavior in pregnancy may be influenced by factors other than simply maternal and fetal metabolic needs.

Psychological Factors Influencing Food Cravings and Aversions

Pregnancy is often associated with increased physical requirements from the mother, which often leads to heightened psychological and emotional demands. There is evidence to suggest that pregnant women who are more fatigued, stressed, and anxious consume more foods, and are more likely to experience food cravings and aversions. This is reflected by findings which indicate stress and anxiety are associated with higher intakes of breads, fats, oils, sweets, and snacks; and more likely to avoid the consumption of meat. (Hurley, 2005)

Another mechanism suggested to explain food cravings and aversions is taste aversion learning; where foods associated with illness are subsequently avoided. Bayley*et. al,* (2002) conducted a study investigating this concept, and found a significant relationship between experiencing 'morning sickness' and incidence of food aversions. Therefore, this indicates that psychological factors may also play a role in influencing eating behaviors such as cravings and aversions during pregnancy.

Hormonal Influenceson Food Cravings and Aversions

Hormonal variation is a typical feature of pregnancy and is known to have multiple functions and effects concerning the health of both mother and fetus. There are several hormonal mechanisms reported to affect the incidence of cravings and aversions; these involve the influence of Endogenous Opioid Peptides, Estrogen and Progesterone, Prolactin, and the metabolism of glucose.

Endogenous Opioid Peptides on food cravings and aversions

Some people believe that these cravings are simply a consequence of an increase in the pleasure or reward value obtained from consuming certain foods. According to Mercer& Holder, (1997) this change in palatability during pregnancy may reflect changes in endogenous opioid peptide (EOP) levels during pregnancy. Pregnancy and the accompanying stress are associated with changes in the opioid system. Experimental studies have found a strong relationship between endogenous opioid peptides (EOPs) and food intake. Mercer & Holder, (1997) reviewed the evidence for this relationship, and discovered that EOPs and opioid agonists seem to increase food intake; whilst opioid antagonists were found to decrease food intake, through blocking the receptor binding of specific EOPs. More specifically, they concluded that altered EOP activity may elicit food cravings and subsequently increase short-term consumption.

Estrogen and Progesterone functions in food Tasting

Progesterone and estrogens are two primary hormones required to conceive and sustain a pregnancy; this explains the observed increase in their circulation throughout the course of the gestation. Additionally, there is evidence to suggest that progesterone acts as an appetite stimulant while estrogen acts as an appetite regulator. (Knox *et al,* 1994) .A study conducted by Tepper&Seldner, (1999) confirmed these findings, and added that these hormones also play a rolein taste changes during pregnancy. (Tepper&Seldner, 1999)

Prolactin infood **cravings and aversions**

Prolactin is renowned for various regulatory functions of the brain. Evidence suggests that one of these functions is involved in influencing appetite. Therefore, it is argued that this hormone is responsible for the increase and changes in appetite during pregnancy; due to the observed increase in circulating levels of prolactin during this time (Grattan, 2001).

Gestational diabetes mellitus (GDM)

Gestational diabetes mellitus (GDM) is a form glucoseintolerance; similar to type II diabetes, which occurs in 1% to 14% of women during pregnancy. If left untreated, this disorder can lead to significant health implications for both mother and child. Women who suffer from GDM are also at greaterrisk of developing type II diabeteslater in life.

Treatment for this disorder typically requires monitoring a strict diet; however compliance to this advice is often limited. One theory to explain this suggests that women with GDM experience taste changes that could influencefood preferences, and make dietary compliance difficult to adhere to. Previous studies involving other forms of diabetes indicate that sufferers have a reduced taste perception for sugars, leading to an increased preference for sweet foods. This change is taste perception is reported to reflect either direct or indirect effectsof impaired glucose homeostasis or lipid metabolism. (Tepper&Seldner, 1999)

Further research concerning this issue is considered crucial, due to the significant influence of nutrition in maternal and fetal health. In particular, improved understanding with respect to the interaction between different determining factors could have important clinical implications; such as improving the compliance of nutritional advice in women with gestational diabetes mellitus (Grattan, 2001).

There is, however, a class of pregnancy cravings that is all its own. These are the odd or even downright bizarre cravings that seem to occur only during pregnancy. They may be for foods that the expectant mother didn't even enjoy prior to being pregnant. They appear during pregnancy (usually in the first trimester, peaking in the second trimester) and are generally gone before birth. They seem unpredictable, and may even differ from the first pregnancy to the next. While nausea and food aversion tends to happen at the same time, cravings are fairly unpredictable. What causes these odd pregnancy cravings? (Corbett *et. al,* 2003)

There are cultural factors at play as well. For example, women in different cultures clearly crave foods based on what's regionally and culturally available. A study of over 200 pregnant women in Tanzania found that the most common cravings among the women who craved were meat (23.3%), mangoes (22.7%), yoghurt

(20.0%) oranges (20.0%), plantain (15.3%) and soft drinks (13.3%). These are the rates among the cravers, but 60-90% of pregnant women will experience cravings during pregnancy. So obviously these are culturally influenced since clearly 23% of pregnant American women don't crave mangoes. In fact, in the US, the most common pregnancy cravings are for dairy and sweet foods, including chocolate, fruits and juices. Less commonly, pregnant women will crave savory or salty foods such as pickles or pizza (Grattan, 2001).

It was reported that there are a number of hypotheses about how these cravings that are specific to pregnancy occurrence such as hormone-based, which makes sense since several hormones shift significantly during pregnancy. Leptin is a hormone that fat cells secrete, and it functions to reduce appetite and stimulate metabolism.Another substance called Neuropeptide Y (NPY) is one of the most potent appetite stimulants known to man which is produced in the hypothalamus and delivered to various regions of the brain to increase the appetite. Other hormones such as ghrelin have been reported to be involved, but while these hormones might be tied to appetite changes in pregnancy, nobody has been able to explain adequately the specific food cravings in pregnancy. Pregnancy is associated with abnormal smell and taste perception, phantom smells, and specific food aversions as well. This idea is supported by some research that suggests that salt sensitivity is decreased during pregnancy and bitter sensitivity is increased (Corbett *et. al,* 2003).

Conclusion

Food cravings arenatural experience and very common during pregnancy, along with food aversions in many instances, yet their underlying causes are not well understood. Food cravings are usually met with the consumption of the craved food, which may include unhealthy foods, it is important to follow a healthy diet during pregnancy in order to promote healthy outcomes for both mother and infant.

Recommendations

There is the need to provide nutrition education at the antenatal and postnatal clinics.

Nutrition programmes should be provided by the use of both electronic and print media, religion houses and community meeting should be used as an avenue for nutrition information dissemination.

Cultural habit should be modified to permit the consumption of some foods that are not permitted during pregnancy.

References

Bayley, T.M., Dye,L.,Jones, S. DeBono, M.& Hill ,A.J. (2002). Food cravings and aversions during pregnancy: relationships with nausea and vomiting *Appetite* 38, 45-51.

Corbett, R.W., Ryan, C. &Weinrich, S.P. (2003).Pica in pregnancy: Does It Affect Pregnancy Outcomes? MCN *American Journal of Maternal/Child Nursing*28: (3) 183 – 189.

Demissie, T., Mirroki, N.M. &Wambui, K. (1998) Food cravings and aversions during pregnancy: prevalence and significance for maternal nutrition in Ethiopia. Food and Nutrition Bulletin l 19: (1) (online) Available:(http://www.unu.edu/unupress/food/V191e/eho5.htm). Accessed on 20/03/2006.

Grattan, D. (2001).Prolactin Receptors in the Brain during Pregnancy and Lactation: Implications for Behavior. *Hormones and Behavior*40, 115–124 (online) available: http://www.idealibrary.com

Hurley, K. (2005). Psychosocial Influences in Dietary Patterns During Pregnancy *Journal of the American Dietetic Association* 105: 6 (online) Available: www.sciencedirect.com.au (10th October 2005)

King, J (2000).Physiology of pregnancy and nutrient metabolism. *American Journal of Clinical Nutrition*,71:5,1218-225

Knox, B., Kremer, J. & Pearce, J.(1994). Food Preference during Human Pregnancy:*Food Quality and Preference131-154.*

*Mercer, M & Holder, D (1997).*Food Cravings, Endogenous Opioid Peptides, and Food Intake: A Review,*Appetite, 29*, 325–352.

Rosso, P. (1987). Regulation of food intake during pregnancy and lactation *Human obesity*, 499, 191-196

Tepper, B. &Seldner, A. (1999) Sweet taste and intake of sweet foods in normal pregnancy and pregnancy complicated by gestational diabetes mellitus*American Journal of Clinical Nutrition*.70:(2) 277-284

Yeomans, M. (2004). Palatability*: response to nutritional need or need-free stimulation of appetite? British Journal of Nutrition* 92, 3-14