Food taboos and traditional customs among pregnant women in Papua New Guinea: Missed opportunity for education in antenatal clinics

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Abstract

Taking into an account dynamically changing nutrition practices in Papua New Guinea (PNG), this study aimed to document and elucidate ethnocultural food practices related to pregnancy. With convenient sampling, 176 pregnant women were interviewed using a semi-structured questionnaire. The participants originated from three different ethnic rural communities in Madang Province and one from Simbu Province. Strength of beliefs in traditional food customs and taboos among pregnant women varied significantly between regions, with those believing in taboos ranging from 66 to 13%. The majority of the foods enlisted as taboos for pregnant women were rich in protein. A common belief supporting various taboos was that breaking them may cause deformities in the newborn. The participants demonstrated a low knowledge level on nutrition, which in conjunction with restrictive food taboos led to their suboptimal dietary practices. Our results suggested that communication on nutrition is inadequate in both a formal education and an antenatal care education. Suboptimal nutritional practices by pregnant women might have contributed to the high mother mortality ratio in the country.

Key words: food taboos, food believes, food prohibitions, pregnancy, nutrition in pregnancy, Papua New Guinea

Introduction

Food taboos and harmful dietary practices undermining mother and child health are known in all cultures and societies. These dietary rules are associated with special periods in a woman's life such as the menstrual period, pregnancy, childbirth and lactation. Although these dietary customs and taboos have been practiced since ancestral time, there is no single justification or theory that may explain why people embrace special food taboos. Fessler and Navarrete (2003) pointed out that two existing principal explanations to taboos, namely functional and symbolic, cannot explain all aspects of taboos. Functionalist explanations generally underline the health promoting aspects or environmental benefits of taboos, whereas symbolic explanations implement magical thinking wherein the person consuming tabooed food is believed to acquire the properties of the object consumed. Therefore, they consider that some psychosocial factors may contribute to the formation of taboos.

Meyer-Rochow (2009) provided examples of the functional explanation where food taboos are designed to protect humans from real or assumed health hazards. For instance, in the Kiriwina (Trobriand) Islanders, pregnant women are banned from eating cryptic fish or those who attach themselves to corals because this might cause complications during birth. Although in PNG there is a great variety of ethnic groups and cultures and food taboos, one common belief held by many ethnic groups is that a woman who eats too much protein during pregnancy, will have a too large baby and therefore will have a difficult delivery (Karel, 1999). Imposing of dietary taboos on some sections of the society, mainly women and children, may be in some cases dictated by men's egoistic motives to preserve exclusive rights to a certain food (Meyer-Rochow, 2009; Ogbeide, 1974).

According to Gillett (1990), the major problem with food taboos preventing a pregnant mother from accessing a well-balanced diet is the belief that transgression of those taboos may harm the mother and baby. Consequently, any miscarriage, complications during childbirth or baby being born with certain abnormalities are often believed to be caused by the mother, who may have eaten certain foods not allowed in pregnancy. A study by Gibbs (2010) in the Wosera area on the disabled and their families indicated that more than 7% of disabilities, in particular sight loss and limb malformations, are believed to be caused by broken food taboos.

Low protein in the traditional diet in various ethnic groups in PNG is further reduced for pregnant women by taboos forbidding the eating of fish, some other animal food and nuts. Gillett (1990), in his study on the health of women in PNG, pointed out that women, in particular pregnant and lactating, are the most disadvantaged groups receiving the worst diet. A study on the nutrition situation in PNG (Saweri, 2001) reported that women more than men are chronically undernourished. The author provided an example of the Misiman people, where pregnant women are restricted by taboo from eating fish and nuts, thereby reducing even the small amount of protein in their diet.

Food taboos and dietary restrictions are seen as contributing factors to the high prevalence of low birth weight in PNG. Choudhry (1997) postulated that appreciation of these traditional customs and food taboos helps to construct educational policies and ensure the provision of appropriate health care for pregnant women.

Taking into account the high prevalence of maternal and child mortality in PNG, a study of dynamically changing nutrition practices may inform the development of tools for the improvement of nutrition and health of these vulnerable groups. This study aimed to document, evaluate and elucidate ethnocultural food practices of pregnant women at various locations in PNG. The researches anticipated that the study could provide health workers with a better understanding of traditional knowledge and cultural differences that affect women's dietary choices during pregnancy, and enhance educational health promotion and counseling efforts about the optimal nutritional diet.

Our research questions were:

- What are the nutritional knowledge and dietary practices during pregnancy?
- What are ethnocultural and health beliefs related to nutrition in pregnancy?
- How do dietary beliefs affect pregnant women's food choices?

Methods

This was a mixed method study. With convenient sampling, 176 pregnant women who used community health centers for their antenatal care were invited to participate. Both primipara and multipara at all stages of pregnancy were included.

Data were collected at various locations in Madang Province (Bogia, Miak in Karkar Island, Gusap) and Simbu Province (Mingende) using a semi-structured questionnaire on dietary nutritional practices, pregnancy nutrition knowledge and traditional food taboos and customs.

The questionnaire was delivered by trained Rural Health students as a structured interview in Pidgin English, because of a high rate of illiteracy among women in rural areas.

To deepen the understanding of the customary practices connected with nutrition focus groups (4-6 participants) discussions with pregnant women have also been conducted.

***Ethical considerations*:** Voluntary informed consent was obtained from all participants. As part of the consenting process, participants were assured that they did not have to answer every question and could withdraw at any time. The principles of confidentiality and anonymity were observed at all times. The study obtained ethical clearance.

Results

Demographic features

Almost all women participating in the study were self-sustainable farmers from rural areas with only 5% of them having a formal job. Their median age was 22 years (range 16-49). Education status of the participants was generally low and included 17% (n=30) illiterates, 22% (n=39) with 4 and lower grades, 49% (n=86) grades 4-8 and only 12% (n=21) had grade 8 or higher.

Knowledge and customs about the food

As the source of their nutritional knowledge, the majority of the women (98%, n=172) indicated their mothers, colleagues and friends; only a few participants

mentioned nurses in the antenatal clinic. Surprisingly, a formal school education was not indicated at all as a source of their nutritional knowledge. Participants named different staple foods depending on the region: sweet potato dominated in the Highlands (Mingende); in Middle Ramu (Gusap) it was taro, yam and banana; in Bogia area - banana and taro.

Knowledge about the function of a particular type of food in the body was generally poor. Although in Gusap and Bogia about half of the mothers knew that greens "improve blood", in other areas (Mingende, Miak) most of mothers have no idea about the function of greens and they describe '*kumu*' (green leaves) generally as "a good side-dish" or "generally good for health".

Furthermore they did not have adequate knowledge about the role of fruits in the body: one third of women acknowledged that fruits are just "good for the body"; about quarter of all participants (24%, n=42) of participants understood that fruits help to fight diseases; and only 8% (n=14) of participants heard something about vitamins in fruits.

Similarly the participating pregnant women demonstrated vague knowledge regarding the role of protein food with about one fifth of them (21%, n=37) describing protein as generally good for the body. Most participants (89%, n=157) identified pig, chicken and fish as a source of protein, but only 11% (n=20) knew that beans and peanuts are a good source of protein.

Regarding the attitude of pregnant women towards breast feeding, almost all of them (98%, n=172) preferred breast feeding but they could not explain why breast feeding is better than bottle feeding.

When asked about betel nut chewing, most interviewed said that it is not good for the baby. However despite the knowledge about the negative effect of betel nut chewing, the majority of participants and all in Gusap area admitted chewing it regularly.

With reference to smoking during pregnancy, all considered it is as not good for the baby. However, 40% (n=22) of women in Gusap were smoking during their pregnancy.

Similarly, about a third of them agreed that alcohol is not good for the baby; yet in some places even 40% (n=22) (Gusap) of pregnant women occasionally drank alcohol.

Food taboos

Concerning beliefs about traditional food customs and taboos, results of the discussion groups revealed that in the past they had been strictly observed, whereas nowadays dietary customs and taboos are fading away and in many areas are rarely practiced by pregnant women. The strength of beliefs in traditional food customs and taboos varied significantly between regions. The percentage of pregnant women who believed in and followed food taboos were

respectively in Miak (Karkar) 66% (20 out of 30), in Mingende 40% (12 out of 31), in Bogia 28% (17 out of 60), and in Gusap only 13% (7 out of 55).

There are cultural norms and taboos that influence the diet of a pregnant woman in many rural parts of PNG. The common foods forbidden for pregnant women are foods rich in protein. It is believed that because protein helps the body to grow, therefore if a woman consumes a lot of protein in her pregnancy, then the baby will grow too big leading to complications during the labour.

In many ethnic groups people believe that if a pregnant mother breaks the taboos and eats forbidden food, she would either encounter difficulties during labour, or her infant would be abnormal, or would have congenital abnormalities, or the baby would be very small.

Interestingly, the researchers noticed on two occasions that food, which was not available during ancestors' time, has been enlisted as food taboos for pregnant women. Namely, a mother from Bogia mentioned a cat as forbidden food in pregnancy; a mother from Eastern Highlands said eating rice during the pregnancy is dangerous to the baby, as it will stick to the baby's skin.

Apart from food taboos, there are certain occasions when pregnant women must be cautious and abide by their customs. In the Bogia area, when a person dies, the families of the deceased normally prepare some meal for the people who gathered on the occasion. However, the pregnant women would not receive any form of food during the gathering. They believe that the food is unclean for the women and will harm her foetus.

In the same Bogia area people held a strong belief that a man should not receive food from a pregnant or menstruating woman because it will make him weak and his tools will lose power.

Furthermore, the husband and any man are forbidden to visit a woman, who is in the labour ward for a delivery. The restriction comes from a strong belief that if a man goes into the labour ward to see his wife, then the man's power would be lost, and he would not have any more strength left to do other important tasks for his family and community.

Another belief relating to the twisting of ropes was found in Karkar Island. People there believe that if a pregnant mother is involved in twisting a rope, it will result in the umbilical cord twisting around the baby's neck during delivery. The results of the survey regarding particular food taboos and underlying reason for the restriction are shown in Table 1.

Table 1: Food taboos and underlying reason for the restriction

Village/ district	Province	Customary banned food/food taboos for pregnant women	Customary reason why food is not allowed
Miak in Karkar Island (n=30) Madang	Madang	fish	Causing shortness of breath
		cuscus (tree kangaroo)	Baby can develop a hand like the animal
		bandicoot	Baby can develop body features of the eaten animal
		octopus	Baby can develop body features of the eaten animal, or develop shortness of breath
Bogia District (n=60) Madang	Madang	"*Aibika*" leaves (*Hibiscus manihot)*	Cause big placenta
		protein food	Is bad because baby will grow too big causing complications during labour
		bananas—type of big one	Baby will grow too big causing obstructed labour
		cuscus, bandicoot	Spirits would harm the baby making it sick
		fish Parr, shark, wallaby, cassowary, turtle, tree kangaroo	Cause difficulties during labour, her infant would not be normal, will have congenital abnormalities or babies will be very small
		flying fox	Baby would cry like flying fox
		snake	Snakes remove their scales and baby will have skin with scales like a snake
		cat	Cause difficulties during labour or her baby would not be normal
Gusap Middle Ramu (n=55)	Madang	salt	Cause baby deformity
		taro Singapore	Mother could have complicated delivery, child have slippery skin
		taro	New born baby will develop cough
		bandicoot, fish	Baby will develop tremor, will be sick
		any protein	Baby growth will be stunted
		pumpkin	Mother will have difficulties to walk long distance
	mother from WHP	*"yellow marita" (Pandamus conoideus)*	Baby skin will be red like burned
	mother from EHP	rice	Rice will stick to baby's skin
	mother from ESP	flying fox	Baby would have face like flying fox
Mingende (n=31)	Simbu	hot, spicy food	Cause heartburn
		snake	Make baby sick
		cuscus, frog, cassowary	Baby can develop fingers like eaten animals
		pumpkin	Cause blood clotting

Discussion

Health effects of food taboos

Our findings have shown that most of the foods enlisted as taboos for pregnant women are rich sources of protein. These findings confirm similar outcomes of studies in other parts of the world. Traditional societies, such as Australian aboriginal (Spielmann, 1998), Nigerian (Ogbeide, 1974), Tamils (Eichinger Ferro-Luzzi, 1973), Malay (Wilson, 1973) and PNG (Karel, 1999), restrict protein and fat foods for pregnant and lactating women. While diet in many developing countries is deficient in protein, food taboos and customary restriction could further aggravate protein malnutrition.

The question is raised: why low protein content in a diet of traditional societies is further reduced by imposition of food taboos on pregnant women? One explanation originates in traditional beliefs, widespread in various ethnic groups in PNG, that rich protein diet may increase baby size and may cause difficulties during delivery (Karel, 1999). Tietjen (1984), studying the Misin people of PNG, concluded that feeding practices during pregnancy, childbirth and lactation reflects a system of beliefs and the social significance of food. Another explanation was provided by Spielmann (1998). Based on the research done on many different undernourished societies, he indicated that maternal undernutrition causes longer postpartum amenorrhea and thus results in longer birth intervals. Finally, researches also showed that poor maternal nutrition reduces fertility and causes an increase of infant mortality, and therefore food taboos appears to have a potential to influence population size.

This study found that common traditional explanations supporting various taboos were beliefs that breaking taboos may cause deformities in the newborn. Following these beliefs, taboos were designed to protect the health of mother and child. For instance, in our study different ethnic groups from coastal villages in Bogia and Karkar Island enlisted certain fish as taboo for pregnant women. Similarly, Malinowsky (1922, 1929), studying customs of Triobriand islanders, mentioned that certain types of fish (cryptic fish) were seen as causing a complicated birth, and therefore were not allowed to be eaten by pregnant women. Furthermore, Trobriand islanders believed that bananas, papaya, mango, and other fruits eaten by pregnant women can cause hydrocephalus, club-foot, distorted belly, or other deformities in the newborn (Malinowsky, 1929).

In this line, Karel (1999) noted that many pregnant women in PNG fear that the baby born may be like the animal which is eaten during pregnancy. Likewise, in our study, in all locations, pregnant women used this symbolic explanation, in particular to taboos forbidding pregnant women eating certain animals. Other authors suggested that in male dominant societies, men may for egoistic reasons declare meat and other delicacies as taboo for women and children (Meyer-Rochow, 2009; Ogbeide, 1974).

The shortage of protein in diet could be related to various health problems. Although Kramer (2001) pointed out that randomized control trials of energy and/or protein supplements have shown only a small effect on birth weight, there is a growing body of evidence that malnutrition is correlated with low birth weight. Several researchers related a high incidence of low birth weight to the poor nutrition of mothers (Hawkesworth, et al., 2009; O'Dempsey, 1988; Saweri, 2001). Also an experimental study reported that fetal growth can be restricted by reducing maternal intakes of energy and protein during pregnancy (Harding, 2001). Susser and Stein (1994) showed that energy and protein deficiency in the mother's diet is associated with intrauterine growth retardation in humans, and during acute famine, birth weight falls by several hundred grams. Others (Leary, et al., 2006) indicated that birth weight is strongly related to maternal Body Mass Index. However, an intervention trial with supplementation of maternal diet with high-energy biscuits (Hawkesworth, et al., 2009) reduced the incidence of low birth weight by 40% and halved perinatal mortality.

Ogbeide (1974) pointed out that the ill-effect of protein malnutrition might present not only as increased maternal and child mortality but also as a condition termed "depleted maternal health" .This condition is the result of the combined work of several factors, such as early first pregnancy, continuous cycles of child bearing and lactation, and poor protein diet aggravated by food taboos. This, in turn, manifests itself in affected women as general malnutrition, premature aging and early death. Studies around the world have shown that low birth weight is linked to an increased risk of a wide range of health problems in adult life (Fall, 2009), such as increased risk of type 2 diabetes (EARLYREAD Collaboration, 2008); metabolic syndrome (Ramadhani, et al., 2006); chronic lung disease (Barker, et al., 1991); osteoporosis (Cooper, et al., 2006); and mental illness (Landon, et al., 2006). Furthermore, there is a wealth of data indicating that undernutrition during pregnancy results in poor intrauterine and infant growth, and is associated with reduced capacity in adult life, including such features as reduced stature, lower physical work capacity, impaired cognitive function and educational accomplishment, and (for females) an increased risk of low birth weight in the next generation (Victora, et al., 2008).

Nutritional knowledge and effect of food education of pregnant women

This study has shown that most pregnant women have a very poor understanding of the function of each type of food. The majority would eat certain foods because they think that "it is good" and "it goes well with other food", without understanding the basic function of the food type in the body. Interestingly, mothers pointing to the source of their knowledge about the food did not indicate formal school education. The two possible reasons for it could be that either the nutritional knowledge was not included in the current school curriculum, or that it was not included at the lower level of primary education – the level attained by the majority of women in rural areas.

There has been a controversy about the impact of an antenatal education on pregnancy outcome. However, a recent synthesis of experience with information, education and communication (IEC) indicates that if appropriate strategy of IEC is used, desirable changes in dietary attitudes and practices are reinforced (World Health Organization, 2001). Several studies have shown that educational intervention not only increases knowledge about a proper diet in pregnancy (Rao, et al., 2008), but also are positively correlated with good eating habits (Kim, et al., 2009). In addition, Liu, et al. (2009) observed that educational intervention enables women to change unhealthy practices and consequently decreases prevalence of postpartum complications. There are reports of educated women having better pregnancy outcomes compared with uneducated women (Harrison, 1997; Liu, et al., 2009). Similarly to our findings, Anya, et al. (2008) reported poor knowledge level among Gambian mothers that have visited antenatal clinics and concluded that health workers missed an opportunity to educate pregnant women and improve pregnancy outcomes.

Limitations of the study

The major limitation of this study was data collection in the antenatal clinics. Firstly, despite voluntary consent, reassurance and explanation given to the participants, it might have affected the response, as mothers were depending on health workers (students) collecting the data. Secondly, participants come to the clinic from different villages, and in the case of Gusap Health Centre from different ethnic groups.

Summary and recommendations

This study indicates that low knowledge of nutrition, followed by poor dietary practices in conjunction with food taboos, may lead to undernourishment of pregnant mothers. Better understanding of food taboos in different ethnic communities should throw more light upon the etiology and preventive aspects of some health problems in communities. Results of this study suggest that both basic school education on nutrition, and education and communication during antenatal care are inadequate. It seems that health education programs have not provided the rationale or cultural links strong enough to change dietary behavior. Pregnant women are not only pressured by the social implications of breaking food taboos, but also ill-equipped to make appropriate choices regarding their food practices. Consequently, all these factors may contribute to high mother and child mortality ratios in the country.

The findings revealing a low nutritional knowledge level among participants of this study clearly indicate that knowledge of nutrition and its function needs to be increased, especially at village level. The development of educational materials on nutrition tailored to individual communities and the provision of the education related to maternal care providers have great potential to positively impact maternal and childhood health. It is of paramount importance to include nutrition as one of the health education topics given to pregnant women during their antenatal checkups. Improved education about nutrition is

needed both in primary schools for all future mothers and in all medical and paramedical schools to equip health workers with sound knowledge about nutrition, and make them capable of giving simple and clear advice on the issue.

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