

Nutritional supplementation practices during pregnancy in Village Development Committees of Morang District, Nepal

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ABSTRACT BACKGROUND

Pregnancy is a critical period for both woman and baby from a nutritional perspective. Poor nutrition, during pregnancy is associated with adverse maternal and fetal outcomes. However, due to various factors, pregnant women do not increase the quality or quantity of diet during pregnancy.

OBJECTIVE

To find out the prevalence of nutritional supplementations taken during pregnancy and to find out the association between sociodemographic characteristics and nutritional supplementations taken during pregnancy.

MATERIALS AND METHODS

The cross-sectional study was conducted from 1st March to 14th March, 2014 among the residents of Rangeli VDC of Morang District in Eastern Nepal where 300 households were taken as subjects. Semistructured questionnaire was used and face to face interview was conducted. Chi-square test was applied to find out the association between sociodemographic characteristics and nutritional supplementations taken during pregnancy.

RESULT

The problem of not taking extra nutritional supplementations during pregnancy is common and has become a key public health concern. Lack of education of wife and husband led some of the respondents not taking more nutritional supplementations during pregnancy.

CONCLUSION

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Keywords: Nutritional supplementations, Practices, Pregnancy & Nepal

INTRODUCTION

Every year more than 20 million infants are born with low birth weight worldwide.¹ About 3.6 million infants die during the neonatal period.² Two thirds of these deaths occur in southern Asia and sub-Saharan Africa. More than one third of child deaths are thought attributed to maternal and child undernutrition.³ Micronutrient deficiencies result from inadequate intake of meat, fruits and vegetables, and infections. Multiple micronutrient supplementation in pregnant women can be a promising strategy in reducing adverse pregnancy outcomes through improved maternal nutritional and immune status.^{4,5}

Several systematic reviews of trials examining the effects of multiple micronutrient supplementation in mother have been conducted⁶⁻⁹ but they have had their limitations. Some studies showed that micronutrient supplementation can increase perinatal mortality, no one of the articles have addressed this issue more details.^{6-8, 10} None has examined the potential sources of heterogeneity in the effect of supplementation on perinatal mortality.

Multiple rather than single deficiencies are found commonly in low socioeconomic population and studies that address and bring together the broader picture of multiple nutrient intakes or deficiencies are lacking.⁵ Therefore, this study was conducted to find out the prevalence of nutritional supplementations taken during pregnancy and to find out the association between sociodemographic characteristics and nutritional supplementations taken during pregnancy.

METHODS

The cross-sectional study was conducted from 1st March to 14th March, 2014 among the residents of Rangeli VDC of Morang District in Eastern Nepal. A study showed that 58.9% of women have taken more nutritional supplementations (Oyibo PG et al in Nigeria in 2011)¹¹, more than that (78.9%) of women (Sanjel S in Nepal in 2011),¹² and highest in Dhankuta, Nepal (82.4%) (Sah RB in Dhankuta, Nepal in 2013)¹³. We obtained a sample size of 300 at 95% CI taking 58.9% prevalence of nutritional supplementation in pregnant mothers.¹¹ All the participants aged 15 to 45 years from the selected households were included in the study. There are 9 wards in Rangeli VDC. Among 9 wards, the ward number 1, 2, 3 and 4 was randomly selected by lottery method. The list of households of these 4 wards was prepared and equal number of households (75) from each ward was selected on the basis of simple random sampling.

Semistructured questionnaire was administered to the study subjects in the presence of investigator and face to face interview was conducted. A written permission was taken from concerned authority and an informed verbal consent was taken from the participants of the study. Those families that were available after three visits and willing to give verbal consent were included in the study.

The collected data was entered in MS Excel 2000. The analysis was done by using statistical software SPSS (Statistical Package for Social Science) 17.0 version. Chi-square test was applied to find out the association between sociodemographic characteristics and nutritional supplementations taken during pregnancy. The probability of occurrence by chance is significant if $P < 0.05$ with 95% Confidence Interval.

RESULTS

Table 1: Distribution of study population by nutritional supplementations taken during pregnancy

Characteristics	Frequency	Percent
Food taken during pregnancy		
Same/ More	154	51.3
Less	146	48.7
Diet restriction during pregnancy		
Yes	145	48.3
No	155	51.7
If diet restriction then what (n=145)		
Urad, kalo, mass dal	25	17.2
Chilly and lemon	57	39.3
Pumpkin, cauliflower, tomatoes	26	18.0
Green spinach leaves	29	20.0
Papaya	8	5.5
Special food taken during pregnancy		
Yes	120	40.0
No	180	60.0
If special food taken then what (n=120)		
Juice of jwaano	21	17.5
Coconut	32	26.7
Sugar candy (Misri)	41	28.3
Meat, fruits, milk	41	11.7
Kaju, kismis	9	15.8
Working hour during pregnancy		
Same	14	48.3
Decreased	51	50.7
Increased	23	1.0
Drug taken during pregnancy		
Yes	52	1.7
No	95	98.3
Total	300	100.00

Table 1 shows that 50% of pregnant women have taken more nutritional supplementations during pregnancy. Almost 40% of women have taken special food and forty eight percent of women have restricted diet during pregnancy. Only five percent of women have taken drugs during pregnancy.

Table 2: Association between socio-demographic variables and nutritional supplementations taken during pregnancy

Characteristics	Nutritional supplementations taken during pregnancy		Total	P- value
	Yes	No		
Religion				
Hindu	147 (50.2)	146 (49.8)	297	0.009
Others (Muslim, Christian)	7 (100.0)	0 (0.0)	2937	0.009
Ethnicity				
Brahmin/ Chhetri	14 (40.0)	21 (60.0)	35	0.218
Kirati	2 (100.0)	0 (0.0)	7	
Janajati	75 (51.0)	72 (49.0)	35	0.218
Dalit	8 (72.7)	3 (27.3)	147	
Terai caste	55 (52.4)	50 (47.6)	11	
Education of wife				
Illiterate	75 (52.1)	69 (47.9)	144	
Below SLC	48 (48.0)	52 (52.0)	100	0.657
SLC and above	31 (55.4)	25 (44.6)	56	
Education of husband				
Illiterate	44 (61.1)	28 (38.9)	72	
Below SLC	67 (49.6)	68 (50.4)	135	
SLC and above	43 (46.2)	50 (53.8)	93	0.144
Occupation of wife				
Service	8 (72.7)	3 (27.3)	11	
Business	6 (50.0)	6 (50.0)	12	0.528
Farmer	4 (57.1)	3 (42.9)	7	
Housewife	136 (50.4)	134 (49.6)	270	
Occupation of husband				
Service	23 (57.5)	17 (42.5)	40	
Business	56 (43.1)	74 (56.9)	130	
Farmer	37 (63.8)	21 (36.2)	58	0.050
Others (Abroad, labor, unemployed)	38 (52.8)	34 (47.2)	72	
Total	154 (51.3)	146 (48.7)	300	

Table 2 shows that 40% of women of Brahmin/ Chhetri caste and almost 73% of women with Dalit ethnicity have taken more nutritional supplementations during pregnancy. The women with education level of SLC and higher have taken more nutritional supplementations than educational level below SLC and illiterate during pregnancy but the difference was not significant. Regarding occupation, the women with service have taken more nutritional supplementations than other occupational groups during pregnancy but the difference was not significant.

DISCUSSION

Several biological mechanisms can explain the beneficial effects of micronutrient supplementation on fetal growth. Women require more vitamins and minerals than normal during pregnancy and supplements can improve their nutritional status, haemoglobin status and functional immunity.¹⁴ Deficiencies of B-complex vitamins and folate are prevalent and may be a major cause of homocysteinaemia.³ Elevated homocysteine levels can lead to endothelial cell dysfunction and affect placental function. Thus, micronutrient supplements can help maintain normal homocysteine levels. Many vitamins and minerals also play important role in gene regulation and also in cellular metabolism and fetal growth.⁴

Current study showed almost 51.3% of pregnant women have taken more food during pregnancy. A study conducted by Abu-Saad K et al¹⁵ showed that adequacy of nutrients intake was low in pregnant women. Another study conducted by Hutter et al¹⁶ in rural south India also showed the practice of consuming fewer diet in pregnancy as compared to their non pregnant counterpart. This is because recommended dietary intake is more in pregnant women, but the study showed that dietary intake in pregnant women in rural resettlement colony is not very different from their non pregnant counterpart in terms of food group and nutrient intakes. The low calorie intake among both pregnant and non-pregnant women could be because of low socio-economic status as most of the subjects were from lower or middle socio-economic status.

This study showed almost 40% of pregnant women have taken special food (juice of jwaano, coconut, sugar candy (Misri), Meat, fruits, milk, Kaju and kismis) during pregnancy. More studies from Europe have presented data on maternal supplement use. In the DIPP study (Type 1 Diabetes Prediction and

Prevention Project) in 1998–2000, 85% of the women reported taking special food during pregnancy which is higher than our study.¹⁷ In the All Babies in Southeast Sweden (ABIS) study in Sweden, 56% of the women took some type of dietary supplement during pregnancy in 1997–1999¹⁸; this can be compared with, almost 10 years later, the 89% of Swedish women in TEDDY (The Environmental Determinants of Diabetes in the Young) who reported some type of dietary supplement. The high prevalence of supplement use in all TEDDY countries may be attributed to the recommendations on supplementation during pregnancy.

This study showed 48.3% of pregnant women have consumed less during pregnancy. In the study conducted by Negandhi PH et al¹⁹ showed that majority of pregnant participants are taking less than 80% of recommended nutrient intake, they are at a high risk of delivering low birth weight baby. This shows that a gap in knowledge about how much extra diet should be consumed in pregnancy is present.

This study did not show association between nutritional supplementations taken during pregnancy and ethnicity. But one of the few recent study on maternal supplement use and sociodemographic factors from the USA reports that nutritional supplementation is associated with ethnicity.²⁰ We did not observe differences regarding ethnicity when looking for any supplement use of diet in pregnancy. This may be due to the inadequate definition of supplement use. The description of any dietary supplement use is very broad as it may contain supplement use for health-seeking reasons (enhance the diet) and/or for medical reasons (e.g. anaemia). We do not have information about the reason why women use dietary supplements and are therefore not able to separate these behaviours. However, when looking at vitamin D containing

supplements, women with ethnicity other than non-Hispanic white were less likely in USA.²⁰

Our study showed the women with education level of SLC and higher education have taken more nutritional supplementations than women with education level below SLC and illiterates during pregnancy but the difference was not significant. The women with education level below SLC and illiterates may be correlated with the limited access to health facilities and taking less nutritional supplementations during pregnancy.²¹ Mothers with limited education are less likely to take more nutritional supplementations, to seek neonatal care and more likely to be at risk of adverse pregnancy outcomes.²¹ Picciano and McGuire²² reviewed diet supplement use in the United States and found a paucity of data concerning the use of dietary supplements during pregnancy. Although use of dietary supplements in the general US population is high and growing, demographic, sociologic, and economic factors influence supplement use. Female supplement users tended to be non-Hispanic white, more educated, and more affluent.²³ The variable maternal education only affected women in the USA and Sweden. It has been implied that a higher education level gives a greater awareness of the role of nutrition in good health.^{24,25}

Few studies have examined the effects of micronutrient supplementation on long-term child health outcomes, such as child mortality, morbidity, growth and cognitive development. A large trial in Indonesia showed that prenatal micronutrient supplementation was associated with a significant 18% reduction in early infant mortality.²⁶ Among Bhutanese refugees dependent on food aid, the incidence of low birth weight declined from 16% to 8% after 2 to 3 years of implementation of micronutrient-fortified foods.²⁷

The limitation of this study was that the study was not longitudinal and thus it was not able to detect the difference in dietary intake in pregnant and non pregnant state in the same person.

CONCLUSION

We conclude that the problem of taking inadequate nutritional supplementations during pregnancy is common and has become a key public health concern. The pregnant women living in rural areas do not increase their dietary intake in pregnancy. Lack of education of wife and husband led some of the respondents not taken nutritional supplementations during pregnancy. Thus, there is a need to educate women regarding amount of food that should be consumed in pregnancy. Health education can be provided through mass media regarding how to increase dietary intake in pregnancy. Also health personnel should practice providing diet plan comprising of locally available and affordable food items to pregnant women during routine antenatal checkups.

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