Dietary Consumption of Calories Predicting the Nutritional Status of Preconception Women in a District of North Karnataka–A Community Based Study

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Abstract

The term 'preconception period' includes both the period before conception and the inter-conception period. Many women in low- and middle-income countries do not have adequate access to the prenatal care they need. Reproductive-aged women are at risk of iron deficiency because of blood loss from menstruation, poor diet, and frequent pregnancies. It affects children in a family and also brings down house hold economic status. In India, because of low socio economic status and consumption of less caloric food affects the health and nutritional status of woman is adversely affected. So, this study was done to know the nutritional status of preconception women and calories consumption in a district of Karnataka. A total of 770 preconception women were enrolled across the district. Women were identified by simple random method. In the present study, majority of them, (36.6%) were normal below body mass index (BMI), 45.5% had normal BMI and 17.9% of them were overweight. Significant association between BMI and calories intake was found (p=0.038).

Keywords: Preconception; Reproductive Age; Body Mass Index.

Introduction

As per WHO, the term 'preconception period' includes both the period before conception and the inter-conception period. Preconception women also termed as pre-pregnant women. Even where strong public health programmes across the life-course are in place, they do not guarantee that women enter pregnancy in good health. The reality is that many women in low- and middle-income countries do not have adequate access to the prenatal care they need.

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Preconception care can make a useful contribution to reducing maternal and childhood morbidity and mortality, and also to improve maternal and child health in both high- and low-income countries [1].

In India, women of the child-bearing age (15 to 49 years) constitute 22.2 percent of the total population. Mother and children not only constitute large group, but also a vulnerable or special-risk group. Malnutrition is like an iceberg; most people in the developing countries live under the burden of malnutrition. The adverse effects of malnutrition have been well documented, which include maternal depletion, low birth weight, anaemia, toxaemias of pregnancy and postpartum hemorrhage [2].

Reproductive-aged women are at risk of iron deficiency because of blood loss from menstruation, poor diet, and frequent pregnancies [3]. They are more

prone for nutritional anaemia. Poor health of women has implications on self as well as on their families. It affects children in a family and also brings down house hold economic status. Because of prevailing culture and traditional practices in India, the health and nutritional status of woman is adversely affected [4].

This study contributes information on body mass index and calorie consumption in preconception women.

Methodology

This cross-sectional study was conducted between January to December 2014. A total of 770 preconception women were enrolled belonging to 18 villages of 10 primary health centres across the Belagavi district in Karnataka state. Women were identified by simple random method with the help of ANMs and ASHAs. Women of nulliparous and Para 1-3 who were non-pregnant and non-lactating (NPNL) were enrolled in the study. Women with NPNL who were having Hb% less than 7gm/dl and adopted permanent and temporary method of sterilization were excluded.

The present study was approved by J N Medical College, Belagavi Institutional Ethics Committee on Human Subjects Research. Informed written consent was obtained from each study participant. Socio-demographic data was collected by interview and anthropometric measurements were carried out in primary health centres. The anthropometric measurements taken were women's height and weight. The WHO recommended appropriate Body Mass Index (BMI) for Asian population and their cut-off values were used for classification [3].

Data was analysed by SPSS version 21.0 and chi-square test of significance was applied for establishing the association between two variables.

Results

In the present study, the mean age was 22.5 (SD±3.19) years and the median age was 22 years. As many as 638 (82.9%) participants of the study were housewives and 331 (43.0%) educated up to high school. Amongst the total women, 338 (43.9%) were having 1 child, 141 (18.3%) 2 children and 33 (4.3%) had 3 or more children. About 258(33.5%) women were nulliparous. Majority, 499 (64.8 %) belonged to class V followed by 185 (24.0%) to class IV, 58 (7.5%) to class III, 22(2.9%) to class II and only 6 (0.8%) belonged to class I socio-economic status according to modified B G Prasad classification (Table-1).

One third of the study participants, 282 (36.6%) were below BMI(18.5) , 350 (45.5%) were having normal BMI(18.5–22.9) and 138 (17.9%) of them were overweight(≥23). Women having BMI category of underweight 3(23.1%) consumed energy <50% of RDA, 70(48.9%) consumed 50-70% of RDA, 29(20.3%) consumed 70-90% of RDA and only 11(7.7%) were consuming >90% of RDA. This association between BMI and energy consumption of preconception women was statistically significant (p=0.038) (Table-2).

Among participants of class I of SES, 2(33.3%) women belonged to normal, mild and moderate category of anaemia equally. But women belonged to class V, 215(43.2%) had moderate anaemia, 195(39.0%) had mild anaemia and 89(17.8%) had normal haemoglobin. This association between SES and Haemoglobin was statistically significant (p=0.041) (Table. 3).

Table 1: Demographic characteristics (n=770)

Demographic Characteristics of Study Participants		Number	Percentage
Age :	15 – 19 Years	129	16.8
	20- 24 Years	441	57.2
	25-29 Years	181	23.5
30- 34 Years		19	2.5
Education :			
Illiterate		51	6.6
Primary		228	29.6
Secondary		331	43.0
PUC		123	16.0
Graduate And			
Post Graduate		37	4.8
Socio Economic Status :			
Class I		6	0.8
Class II		22	2.9
Class III		58	7.5
Class IV		185	24.0
Class V		499	64.8
Body Mass Index (BMI):			

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<18.5	282	36.6
18.5 – 22.9	350	45.5
≥23	138	17.9
Parity :		
Nulliparous	258	33.5
1 Child	338	43.9
2 Children	141	18.3
3+Children	33	4.3

Socio Economic Status

■ Cass I ■ Class II ■ Class III ■ Class IV ■ Class V
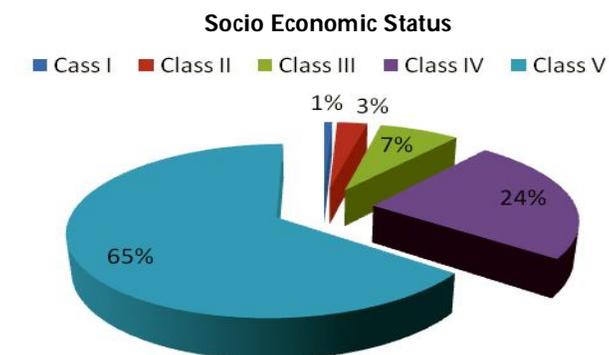
Graph 1:

Table 2: Association between body mass index (BMI) and energy intake

Body Mass Index (BMI)	Energy %				Total
	<50 No. (%)	50 – 70 No. (%)	70 – 90 No. (%)	>90 No. (%)	
Overweight(≥23)	16(23.5)	20(29.4)	25(36.8)	7(10.3)	68
Normal (18.5-22.9)	36(20.7)	61(35.1)	58(33.3)	19(10.9)	174
Underweight (<18.5)	33(23.1)	70(48.9)	29(20.3)	11(7.7)	143
Total	85	151	112	37	385

$x2 = 13.331$, $DF = 6$, $p = 0.038$

Association between Body Mass Index(BMI) and Energy intake
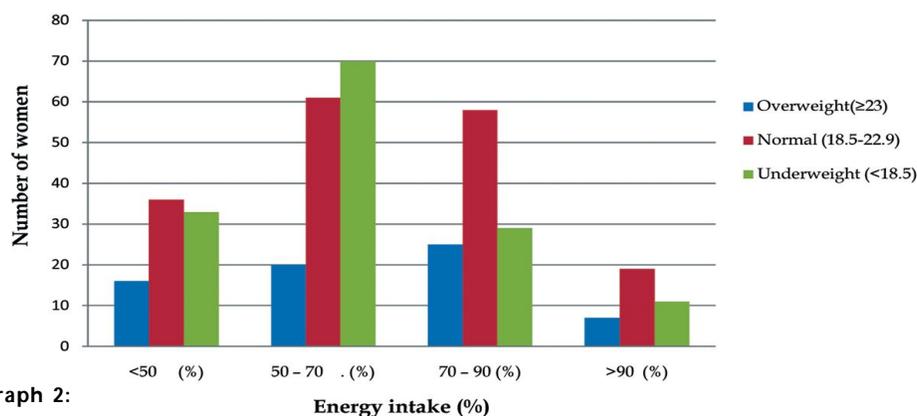
Graph 2:

Table 3: Association between socio economic status (SES) and hemoglobin:

Socio economic status (SES) (Rs.)	Hemoglobin level			Total
	Normal No. (%)	Mild Anemia No. (%)	Moderate Anemia No. (%)	
Class I ? 5571)	2(33.3)	2(33.3)	2(33.3)	6
Class II (2786-5570)	9(40.0)	7(31.8)	6(27.2)	22
Class III (1671-2785)	15(25.8)	26(44.8)	17(29.4)	58
Class IV (836 -1670)	50(27.0)	64(34.6)	71(38.4)	185
Class V (?836)	89(17.8)	195(39.0)	215(43.2)	499
Total	165	294	311	770

$x2 = 16.064$, $DF = 8$, $p = 0.041$

Discussion

In reproductive age group socio-economic status and BMI of women are utmost important as they are future mothers. But haemoglobin level of women in this study was very poor and it may lead to many complications in the health of the women.

Similar study was conducted in Bangladesh by Hague et al [5]. It showed that, the mean age of woman was 28 years(SD ± 8.1).A study by Potadar et al. in Mumbai [6] comprised 69.7% Hindus and 25.6% Muslims. Similarly, a study conducted at mumbai [6], 81.4% of the women completed secondary school education. A study in Mumbai [6] showed that, 31% women were nulliparous, 43.7% had 1 child and 25.0%were with more than 1 child. A study done in Kerala [7] showed that 31.3% preconception women were undernourished (BMI <18.5). Another study in Dhaka [5] showed that, 25.6% preconception women were undernourished and 28.7% had normal BMI.

In the present study, a majority (64.8%) of the participants belonged to Class V socio-economic status and 24.0% to class IV of socio-economic status. A study done in rural areas of Belgaum [8] showed that, 62.5% participants belonged to Class V and 23% to class IV of socio-economic status. Similar observations were found in both the studies.

In the present study, 40.4% of preconception women had moderate anaemia and 38.2% were suffering from mild anaemia. A study done in Madhya Pradesh [9], Chambal division showed that 48.0%women had moderate anaemia and 42.1% had mild anaemia. As per NNMB 2006 [10], India contributes 51% of anaemia in 15-49 reproductive age group women. A study done in Iran [11] revealed that, mild anaemia was present in 11.5% women, moderate anaemia in 2.3% and no one had severe anaemia. In preconception women, this large gap could be due to low socio-economic status and less nutritious diet pattern in rural area. In our study, lower socio-economic status and taking low calorie diet were predisposing factors for low BMI. Various other studies also proved the same relation.

Conclusions

The current study revealed that preconception women staying in rural areas had low socio-economic status and less calorie consumption as per RDA. So, women were having high prevalence of anaemia and low BMI. Low BMI in women pronounced that their socio-economic status was also low. The key intervention would be suggestion of good nutrition and health education regarding importance of good health during preconception period.

Acknowledgements

References

1. WHO-meeting to develop a global consensus on preconception care to reduce maternal and childhood mortality and morbidity. 2012: 6-7.

2. Park K. Text book of Preventive and Social Medicine. Jabalpur. M/S Banarsidas Bhanot Publishers India: 22nd edition. 2013; 480-482.

3. American College of Obstetricians and Gynecologists. ACOG practice bulletin no. 95: Anemia in pregnancy. Obstetric Gynecology. 2008; 112: 201-7.

4. Mallikarjun RK, Balakrishanan N, Aralappa, Laxmaiah A, Brahmam NV. "Diet and Nutrition status of women in India" J Hum Ecol. 29(3): 2010; 165-170.

5. Haque MJ, Rashid M. "Nutritional status of Women at Reproductive Age with some of their socio demographic characteristics of a slum in Dhaka". Dinapur Med Col J. 2008; 3(1): 116-119.

6. Potadar R et.al. Improving women's diet quality preconceptionally and during gestation: effects on birth and prevalence of low birth weight-a randomized controlled efficacy trial in India (Mumbai Maternal Nutrition Project) Mumbai Maternal Nutrition Project) AJCN (American journal of clinical nutrition). 2014; 100: 1257-68.

7. Ramesh P. Malnutrition among Women in Kerala: An Analysis of Trends, Differentials and Determinants: National Family Health Survey (NFHS-2), 1998–99: Data files of Kerala.

8. Sulakshana SB, Naik VA, Mallapur MD. Nutritional status of Adolescent girls residing in rural area: A community based cross sectional study. Journal of scientific society. 2014; 41(1): 210-212.

9. Ghosh S.et al. Dimensions of nutritional vulnerability: Assessment of women and children

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in Sahariya tribal community of Madhya Pradesh in India. Indian J Public Health. 2015; 57(4): 117-221.

10. National Nutritional Monitoring Bureau (NNMB):Diet and Nutritional status of rural population, prevalence of Hypertension & Diabetes among adults and infants & young child feeding practices-Report of the 3rd report

survey. 2012; 26: 23-211.

11. Majid SA, Fatourechi, Lesanpezeshki M, Ahmadnezhad E. Prevalence of Anemia and Correlated Factors in the Reproductive Age Women in Rural Areas of, Tabas, Iran. Journal of Family and Reproductive Health Sept. 2013; (7): 139.

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