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A study on nutritional status of lactating mothers attending the immunization clinic of a Medical College Hospital of Kolkata, West Bengal

[*]Dr. Sarmila Mallik[1], Dr. Kantibhushan Choudhury[2],
Dr. Sukanta Majumdar[3]

[1]*Associate Professor, Dept of Community Medicine, Calcutta National Medical College, Kolkata, India*
[2,3]*Assistant Professor, Dept of Community Medicine, Calcutta National Medical College, Kolkata, India*
*Dr. Sarmila Mallik

Abstract:
Background*: Lactating mothers from low income settings are considered as a nutritionally vulnerable group. Due to nursing process, mothers are subjected to nutritional stresses. Frequent pregnancies followed by lactation increase the health risk of mothers resulting in a high maternal mortality.*
Objectives*: To assess the socio-demographic profile of lactating mothers attending immunization clinic of Calcutta National Medical College, Kolkata, to determine the nutritional status of these mothers, to find out the different factors affecting their nutritional status.*
Study settings*: Immunization clinic of Calcutta National Medical College & Hospital, Kolkata, India.*
Study design*: Hospital based cross sectional observational study.*
Study population*: The lactating mothers having children <1 year of age attending immunization clinic.*
Methodology*: By systematic random sampling 250 mothers were selected for the study. Socio-demographic information, obstetric history, dietary history and nutritional status were recorded and analyzed.*
Results*: Maximum number of study subjects were in the age group of 20 to 24 years (55.2%),were Muslims(68.3%), educated up to middle school level(38.3%) and belonged to socio-economic class IV and V(31.7% and 26.6% respectively). 52.8% study subjects were primipara and 58.5%had spacing of 3 years or more from the last child birth. Most of the study subjects (98.0%) were non vegetarian. Only 40.4% mothers have taken additional meal. 28.4% of the study subjects had low BMI (<18.5), undernutrition was found to be significantly more common among women less than 20 years of age (52.4%), those belonging to lower socio-economic status (class IV—35.4% & class V-37.4%), Muslim mothers (29.2%), and those who had not taken extra meal (39.6%). Pallor was present in 43.6 % of study subjects, and significantly more frequent in those mothers having birth spacing less than 3 years (67.3%).*
Keywords: *BMI, Pallor, Additional meal.*

I. Introduction

Nutritional status is defined as the evident state of nutrition of an individual. [(1)] The nutritional status of any person is his or her health dictated by quality of nutrients consumed and body's ability to utilise them for its metabolic needs. Nutritional surveys in India showed that some sections of the population continued to suffer from malnutrition despite increased food production. [(2)] Lactating mothers from low income settings are considered as a nutritionally vulnerable group. Due to nursing process, mothers are subjected to nutritional stresses. Frequent pregnancies followed by lactation increase the health risk of mothers resulting in a high maternal mortality. [(3)] One of the major health problems that they suffer from is anaemia. This is mainly due to decreased dietary intake, increased metabolic demand, mal-absorption or parasitic infections like hookworm. Scarcity of suitable food, lack of purchasing power of the family as well as traditional beliefs and taboos about the diet of mother often lead to an insufficient balanced diet and malnutrition. [(2)]

Adequate nutrition of women is important for their health as well as for health of their offspring. Poor health of pregnant women, lactating mothers and their children have repercussions not only for them but also the whole society. Information on the nutritional status and associated factors of the lactating women are urgently required for prioritizing, designing and initiating intervention programme aimed at improving maternal nutrition. In this perspective this study was conducted with objectives of-- to assess the socio-demographic profile of lactating mothers attending immunization clinic of Calcutta National Medical College, Kolkata, to determine the nutritional status of these mothers and to find out the different factors affecting their nutritional status**.**

II. Materials And Methods

This Observational, descriptive and cross sectional study was carried out at the immunization clinic of Calcutta National Medical College on the lactating mothers having children <1 year of age attending immunization clinic. Inclusion criteria was all lactating mothers who gave consent to participate in the study and exclusion criteria were mothers who were not breast feeding, not willing to participate and whose children were more than 1 year of age.

Sample size and Sampling design: Prevalence of anaemia in lactating mother in India according to NFHS3 is 63%. So the sample size would be 206, considering 10% allowable error at 95% confidence limit. Around 25 mothers with their children less than 1 year of age attend the Immunization Clinic daily for primary immunization of their children. Considering the exclusion criteria, every fifth mother was selected for data collection after obtaining informed consent from them. Thus data collection was done from around 5 to 6 mothers daily by interviewing them, measuring their weight, height, and examining them for presence of pallor, and other vitamin and mineral deficiency signs. As the immunization clinic remains closed on Saturday and Sunday, around 25 mothers were included in the study every week and total 250 mothers were interviewed and examined in the total 3months period of data collection in September 2016 to December2016. Data analysis was done using suitable statistical methods.

III. Results

Majority of the mothers (55.2%) were in the age group of 20-24 years, though 8.4% were in adolescent age group. Majority of them were Muslims (68.3%) and from urban area (96.8%). Majority of the study subjects were educated up to middle- school level (38.3%), 16.7% being illiterate and all were home-makers. Most of them belonged to socio-economic class IV (31.7%) and V (26.6%). Majority of the study subjects were primipara (52.8%), only 6.4% had parity 3 or more. More than half of them (58.5%) had spacing of 3 years or more from the last child birth.

Most of the study subjects (98.0%) were non vegetarian. Most of them have taken fish, egg or meat in the previous week, the frequency being three times or more in around half of the mothers (50.4%). Around one third of mothers didn't consume pulses (32.0%), milk or milk product (28.8%).Although green leafy vegetables were taken by majority of the study subjects (80.8%) frequently, fruits were taken by only 34.8% mothers for three times or more in the previous week. Only 40.4% mothers have taken additional meal.

28.4% of the subjects had low BMI (<18.5), whereas 13.6%were overweight and obese. Undernutrition was found to be more common among women less than 20 years of age (52.4%), those belonging to lower socio-economic status (class IV—35.4% & class V-37.4%), Muslim mothers (29.2%), and those who had not taken extra meal (39.6%). The differences were statistically significant, $p< 0.05$.Pallor was present in 43.6 % of study subjects, while signs of riboflavin deficiency(angular stomatitis/ cheilosis) and goiter was found in 4.4 % and 5.2 % of women respectively. It was found that frequency of pallor increased with increase in parity, though the differences was not statistically significant. ($p>0.05$).Pallor was found more frequently in those mothers having spacing less than 3years from last child birth (67.3%)in comparison to mothers having interval from last child birth 3 years or more(36.2%). The difference was statistically significant. ($p<0.05$).

Table1: Distribution of study population according to their socio-demographic profile. (N=250)

Socio-demographic profile	Number	Percentage
Age in years		
<20	21	8.4
20-24	138	55.2
25-29	83	33.2
>=30	8	3.2
Religion		
Hindu	79	31.7
Muslim	171	68.3
Residence		
Rural	8	3.2
Urban	242	96.8
Educational Status		

Illiterate	42	16.7
Primary	17	6.7
Middle School	96	38.3
Secondary	25	10.0
Higher Secondary	45	18.3
Graduate & above	25	10.0
Socio-economic Status		
I	8	3.3
II	42	16.7
III	54	21.7
IV	79	31.7
V	67	26.6

Table 2: Distribution of study population according to their obstetric history (N=250)

Parity	Number	Percentage
Primipara	132	52.8
2nd	102	40.8
3rd or more	16	6.4
Interval between last two childbirths*		
<3years	49	41.5
>=3years	69	58.5

***n=118**

Table3: Distribution of study population according to their dietary profile (N=250)

Dietary Profile	**Number**	**Percentage**
Type of diet		
Vegetarian	5	2.0
Non vegetarian	245	98.0
Frequency of food intake		
Fish, meat, egg		
>= 3 times/week	126	50.4
<3 times/week	119	47.6
Never	5	2.0
Pulses		
>=3times/week	88	35.2
<3 times/week	82	32.8
Never	80	32.0
Milk or milk products		
>= 3 times/week	95	38.0
<3 times/week	83	33.2
Never	72	28.8
Green leafy vegetables		
>= 3 times/week	202	80.8
<3 times/week	48	19.2
Never	0	0
Fruits		
>= 3 times/week	87	34.8
<3 times/week	119	47.6
Never	25	17.6
Additional meal		
Yes	101	40.4
No	149	59.6

*Recall period 1week.

Table 4: Distribution of study population according to their nutritional status (N=250)

Nutritional Status	**Number**	**Percentage**
BMI		
<18.5(Underweight)	71	28.4
18.5-24.99(Normal)	145	58.0
>24.99(Overweight &Obese)	34	13.6
Presence of Pallor		
Yes	109	43.6
No	141	56.4
Angular stomatitis		
/Glossitis/Cheilosis		
Yes	11	4.4
No	239	95.6
Goiter		
Yes	13	5.2
No	237	94.8

Table 5: Association of BMI with socio-demographic factors and diet (N=250)

Sociodemographic		**BODY MASS INDEX**		**Test of significance**
factors				
Socio-economic	Under	Normal	Overweight	
status(B.G Prasad	weight	(18.5—24.99)	(>24.99)	
Scale 2015)	(<18.5)			
I	0	4(50.0)	4(50.0)	Chi sq=11.84
II	7(16.7)	27(64.3)	8(19.0)	p= 0.002
III	11(20.4)	36(66.7)	7(12.9)	df=2
				(clubbing SES I,II,III
IV	28(35.4)	42(53.3)	9(11.3)	
				& SES IV , V)
V	25(37.4)	36((53.7)	6(8.9)	
Age in years				Chi sq=6.48
<20	11(52.4)	9(42.9)	1((4.7)	P=0.01
20-24	37(26.8)	82(59.4)	19(13.8)	df=1
				(clubbing age
25-29	21(25.3)	50(60.2)	12((14.5)	
				groups20 years &
>=30	2(25.0)	4(50.0)	2((25.0)	
				above, and normal
				wt. with over weight)
				OR=3.09, 95% CI
				1.25 to 7.66
Religion				Chi sq=8.38
				P=0.01
Hindu	21(26.6)	40(50.6)	18(22.8)	
				df=2
Muslim	50(29.2)	105(61.4%)	16(9.4%)	
Additional meal				
Taken	12(11.9)	57(56.4)	32(31.7)	Chi sq=22.74,
Not taken	59(39.6)	88(59.1)	2((1.3)	df=1, p=0.00001
				(Clubbing normal wt.
				with overweight.)
				OR=4.86, 95% CI
				2.44 to 9.65

Table 6: Association of pallor with obstetric history**.**

Obstetric History		**Test of significance**	
Parity	**Present**	**Absent**	Chi sq.=5.69, df=2, p=0.06
(N=250)			
Primipara	51(38.6)	81(61.4)	
2nd	47(46.2)	55(53.8)	
3rd or more	11(68.8)	5(31.2)	
Interval between last			
two childbirths(N=118)			
<3years	33(67.3)	16(32.7)	Chi sq.11.09, df=1,
>=3years	25(36.2)	44(63.8)	p=0.0008
			OR=3.66, 95% CI 1.67 to
			7.86

IV. Discussion

In this study it was found that more than half of the study population did not take extra food. Although green leafy vegetables were taken by majority of the study subjects frequently, consumption of pulses, milk and milk products and fruits were low. Haileslassie K et al in their study found that majority (71.2%) of the participants did not take additional meals during lactation.[(3)] In the study of Ogechi U P et al it was found that cereals and vegetables were consumed more frequently, while legumes were consumed less frequently by the lactating mothers..[(4)] In the present study, 28.4% of the mothers were under nourished. Undernutrition or low BMI was found to be more common in young mother, in those coming from lower socio-economic status family, in Muslim women and those not taking extra food. Pallor was observed in more than 40% of study population, its occurrence being significantly more in women having child birth at short interval. Overall prevalence of iron deficiency anaemia and protein energy malnutrition in slum communities was found to be 22.3% and 27.1% respectively, higher among younger mothers than among older mothers by Haidar J et al in their study in Ethiopia. [(5)]Khan YM et al in their study on lactating mothers found that 56.4% women having clinical signs of nutritional deficiency. Low BMI was observed in 36.6% of Ladakhi women, 10% of women in Kashmir and 19.3% mothers in Jammu. [(6)]

V. Conclusion

More than half of the lactating mothers did not consume extra food. Young mothers, particularly those from lower socio-economic status suffered from undernutrition. Pallor was found to be more common in women having pregnancy at short interval.

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