

## Nutritional Status of Rural Pregnant Women

L.H. Madhavi, H.K.G. Singh

Department of Community Medicine, \*Department of Pediatrics, Khaja Banda Nawaz Institute of Medical Science, Gulbarga-585105 (Karnataka)

### Abstract:

Pregnancy is a crucial period of woman's life where socio-demographic factors affect her health as well as determine the health of future generation. A cross-sectional community based study was conducted in pregnant women in the field practice area of RCHTC, Hebbal. Variables considered for the study were: Age, religion, Socio-economics status, type of family & house, parity, spacing methods, utilization of health services, height, weight and Body Mass Index (BMI). Majority of pregnant woman had inadequate protein & calorie consumption during pregnancy; 23.93%, woman were having BMI<18.5; 66.67%, were anemic (Hb<11 gm%). The overall prevalence of anemia was found to be high among illiterate (98.2%), Hindu (92.31%) and moderately working woman (83.34%). Anemia was found to be more common whose age at first pregnancy was <20 years (57.28%), age at marriage <20 years (87.17%), in IInd trimester of pregnancy (62.83%) and in age group of 20-24 years (39.14%). Government hospital services were utilized by 78.63% but only 58.97% received iron & folic acid tablets and 70.94% had taken injection Tetanus Toxoid (TT).

Hence, effective intervention should be directed towards young pregnant women <20 years of age to improve maternal nutritional status, literacy level, and health education for utilization of health services.

**Key Words:** Maternal nutritional status; Body mass index; Hemoglobin percentage.

### Introduction:

Nutritional problems have serious public health significance impacting psychological, physical, developmental, behavioural and work performance of pregnant women. Iron deficiency is by far the commonest nutritional cause of anemia. It may be associated with folate deficiency, especially during pregnancy. Pregnant women form a large high-risk group requiring special care.

According to WHO, in developing countries, the prevalence of anemia among pregnant women is 56% (WHO, 1992). The prevalence of anemia in India is 60-70% (Park, 2005). In India, anemia is the 2<sup>nd</sup> most common cause of maternal deaths accounting for 19% of total maternal deaths (Govt. of India, 2002).

Nutritional problem may be caused not only by deficiency of protein, calorie, iron, Vit C etc, but by other conditions like malaria, worm infestation, adverse environmental and socio-demographic factors. Association of nutritional problem with adverse maternal outcome such as puerperal sepsis, anti partum haemorrhage, post partum haemorrhage etc. are also responsible for low birth weight, premature birth, high perinatal mortality rate and decreased work capacity.

**Corresponding Author:** Dr. Madhavi H, Professor, Department of Community Medicine, KBN Institute of Medical Sciences, Gulbarga-585105 (Karnataka)

**Phone No.:** 09341912570, 08472-227201

**E-mail :** mhksing@yahoo.com

In recent years, different Government programs like ICDS, RCH etc, have been introduced to improve the nutritional status of women. National Nutritional Anemia Prophylaxis Program (NNAPP) was initiated in 1970 with the aim to bring down prevalence of anemia to 25% (National Nutritional Policy, IX Plan). The daily dosage of elemental iron for prophylaxis and therapy has been increased to 100 mg & 200 mg respectively under Child Survival and Safe Motherhood Program (CSSM).

The present study was planned to find out the prevalence of anemia amongst pregnant women, the socio-demographic factors associated with anemia and utilization of health services by pregnant women.

### Material and Methods:

The present cross-sectional community based study was conducted during June to November 2006 in the field practice area of Rural Community Health Training Center, Hebbal village which is under the Department of Community Medicine, M. R. Medical College Gulbarga. Rural Community Health Training Center, Hebbal has 15 villages under its jurisdiction. The house to house survey was conducted in all 15 villages. Pregnant women present at home at the time of survey were included in the study. The inclusion criteria for study subject were presence of signs and symptoms of pregnancy & willingness to participate in

the study. A total of 117 pregnant women were included in the study. They were clinically examined and interviewed using pre-structured, pre-tested proforma. The B.G Prasad classification was used for socio-economic status. Hemoglobin estimation was done by Salhi's method. Anemia was classified as per WHO criteria (Park, 2005). The height was measured up to nearest of 1cm and weight up to nearest of 0.5kg. The chi-square & Z-test were used.

**Results:**

The present study showed that maximum number of pregnant women were Hindus (88.80%), moderate worker ( 87.15 % ) and were residing in kaccha house (92.30 %). Equal distribution of women was observed in nuclear type of family ( 48.70 % ) and joint type of family (51.30%). Overall prevalence of anemia was 66.67%. Similar prevalence was found in nuclear (48.72%) & joint (51.28%) type of families. High prevalence of anemia was noted in Hindus (92.31%), moderate worker (83.34%) and 96.16% pregnant anemic women were residing in kachha house (Table I).

Table I: Distribution of women according to socio-demographic character & Anemia

Characteristic	Anemia n=78 (%)	Normal n=39 (%)	Total n=117 (%)	$\chi^2$ value	p-value
<u>Type of family</u>					
Nuclear	38(48.72)	19(48.72)	57(48.70)	0.000	p>0.05
Joint	40(51.28)	20(51.28)	60(51.30)		
<u>Type of house</u>					
Kacha	75(96.16)	33(84.62)	108(92.30)	3.38	p>0.05
Pucca	03(03.84)	06(15.38)	09(7.70)		
<u>Type of work</u>					
Heavy	13(16.66)	02(05.13)	15(12.85)	2.15	p>0.05
Moderate	65(83.34)	37(94.87)	102(87.15)		
<u>Religion</u>					
Hindu	72(92.31)	32(82.05)	104(88.80)	2.77	p>0.05
Muslim	06(07.69)	07(17.95)	13(11.20)		

Maximum number of women (37.61 % ) were in the age group of 20-24 years followed by 35.90 % in the age group of 25-29 years, 15.38 % in the age group of < 20 years and 11.11% in the age group of >30 years. Majority of women were married before 20 years of age (88.03 %) followed by 10.26 % and 1.71 % in age group 20-24 year and > 25 years respectively. Age of first pregnancy was < 20 years in 54.70% of women followed by 42.74 % and 2.56 % in age groups of 20-24 years and > 25 years respectively at the time of

pregnancy. Gestational age of 62.39% women at the time of study was below 28 weeks. The prevalence of anemia was maximum (39.74 % ) in the age group 20-24 years followed by 32.06%, 15.48 % and 12.82 % in the age group 25-29 years, < 20 years and > 30 years respectively. High prevalence of anemia was observed in women who married ( 87.17%) and conceived (51.28% ) before 20 years of age. During pregnancy, anemia was more common (62.83%) below 28 weeks of gestational age (Table II). 78.63% pregnant women were utilizing Govt. hospital health services. Choice for place of delivery was equal between hospital (49.57%) & home (50.43%). Overall, 58.97 % of pregnant women were consuming Iron and folic acid tablets and 70.94% women received injection Tetanus Toxoid (TT). Most of the pregnant women (82.91%) were not using spacing method. Majority of pregnant anemic women (76.92% ) were utilizing Govt. hospital health services, 64.11% consuming Iron and folic acid tablets and 73.07 % women were receiving injection TT. Maximum number (97.44%) of pregnant anemic women were not using spacing methods. Choice for place of delivery among anemic pregnant women was hospital in 62.83% & home in 37.17% (Table III).

Table II: Distribution of women according to Age & Anemia

Charac- teristics	Anemia (%)	normal (%)	Total n=117 (%)	$\chi^2$ value	p-value
<u>Age (in Years)</u>					
<20	12(15.48)	06(15.78)	18(15.38)	1.86	p>0.05
20-24	31(39.74)	13(32.84)	44(37.61)		
25-29	25(32.06)	17(43.68)	42(35.90)		
>30	10(12.82)	03(07.70)	13(11.11)		
<u>Age at marriage</u>					
<20	68(87.17)	35(89.75)	103(88.03)	1.02	p>0.05
20-24	08(10.26)	04(10.25)	12(10.26)		
≥25	02(02.57)	00(00.00)	02(01.71)		
<u>Age at first Pregnancy</u>					
<20	40(51.28)	24(61.54)	64(54.70)	2.25	p>0.05
20-24	35(44.87)	15(38.46)	50(42.74)		
≥25	03(3.85)	00(00.00)	03(02.56)		
<u>Gestational Age</u>					
<28 weeks	49(62.83)	24(61.54)	73(62.39)	2.25	p>0.05
≥28 weeks	29(37.17)	15(38.46)	44(37.61)		

Table IV shows that 76.92% were multigravida and 66.67% multipara followed by primigravida (23.08%) and primipara (33.33%). Prevalence of anemia was high in multi para (77.63%) & multigravida (79.48%)

Table III: Distribution of women according to Utilization of health services & Anemia.

Health Services	Anemia (n=78) (%)	Normal (n=39) (%)	Total (n=117) (%)	$\chi^2$ value	p-value
<b>Service utilization</b>					
Govt. Hospital	60(76.92)	32(82.05)	92(78.63)	0.407	p>0.05
Private Hospital	18(23.08)	07(17.95)	25(21.37)		
<b>Spacing method</b>					
Yes	02(2.56)	18(46.15)	20(17.09)	38.002	p<0.001
No	76(97.44)	21(53.85)	97(82.91)		
<b>Tab Iron &amp; Folic Acid</b>					
Yes	50(64.11)	19(48.71)	69(58.97)	2.54	p>0.05
No	28(35.89)	20(51.29)	48(41.03)		
<b>Inj. TT</b>					
Yes	57(73.07)	26(66.66)	83(70.94)	0.510	p>0.05
No	21(26.93)	13(33.34)	34(29.06)		
<b>Preference for Place of Delivery</b>					
Hospital	49(62.83)	09(23.07)	58(49.57)	16.43	p<0.001
Home	29(37.17)	30(76.93)	59(50.43)		

Table IV: Distribution of women according to Parity Gestational age and Anemia

Parity (Gravida)	Anemia (n=78) (%)	Normal (n=39) (%)	Total (n=117) (%)	$\chi^2$ value	p-value
Primi	16(20.52)	11(28.21)	27(23.08)	0.87	p>0.05
Multi	62(79.48)	28(71.79)	90(76.92)		
All	78(66.67)	39(33.33)	117(100)		
<b>Gestational age (&gt;28 week of gestation)</b>					
Primi	17(22.37)	18(62.07)	35(33.33)	14.89	p<0.001
Multi	59(77.63)	11(37.93)	70(66.67)		
All	76(72.38)	29(27.62)	105(100)		

Table V: Distribution of women according to BMI and Anemia.

BMI	Anemia n=78 (%)	Normal n=39 (%)	Total n=117 (%)	$\chi^2$ value	p-value
<18.5	22(28.22)	6(15.38)	28(23.94)	3.04	p>0.05
18.5-25	52(66.66)	32(82.06)	84(71.79)		
>25	04(05.12)	01(2.56)	5(04.27)		

Table VI: Distribution of women according to consumption of Calories & Protein.

Nutrition	Anemia n=78 (%)	Normal n=39 (%)	Total n=117 (%)	$\chi^2$ value	p-value
<b>K Cal/day</b>					
<2000	71(91.03)	23(58.97)	94(80.34)	16.911	p<0.001
≥2000	07(08.97)	16(41.03)	23(19.66)		
<b>Protein</b>					
<65	72(92.31)	34(87.18)	106(90.60)	0.803	p>0.05
≥65	06(07.69)	05(12.82)	11(09.40)		

followed by primi para (22.37% ) & primigravida (20.52%). Overall 71.79% pregnant women were having BMI between 18.5 to 25 followed by 23.93 %

Table VII: Showing various variables.

Variables	Anemia Mean ± SD	Normal Mean ± SD	Z-value	p-value
Age of womens	24.4 ±4.3	23.5 ±2.93	1.33	p>0.05
Age at marriage	18.4 ± 2.09	18.3 ±1.55	0.292	p>0.05
Age of 1 <sup>st</sup> child	18 ±5.45	15.4 ±7.85	1.86	p>0.05
Gestational age	23.14 ±7.16	22.62 ±7.19	0.37	p>0.05
Weight	45.9 ±6.35	47 ±5.39	0.98	p>0.05
Calorie/day	1707.47 ±292.89	1703.33 ±276.97	0.07	p>0.05
Protein/day	55.48 ±93.91	99.87 ±152.36	1.67	p>0.05

women having BMI of <18.5 and 4.27 % had BMI >25. Prevalence of anemia was high ( 78.57% ) among pregnant women having BMI<18.5 (Table V). Overall 80.34% & 90.60% pregnant women were not consuming adequate calories & protein respectively. None of them were consuming more than 2500 Kcl/day. The prevalence of anemia was high among the women consuming proein <65 gm/day (92.31 %) and calories less than 2000 per day (91.03 %) as shown in Table VI. Prevalence of anemia was statistically not significant in the present study with relation to age of women, age at marriage, age at first child, weight, consumption of protein & calorie per day (Table VII).

**Discussion:**

High prevalence of anemia (66.67%) was observed in the current study where as Saxena et al (2000) and Gautam et al (2002) observed incidence of 36.1% and 96.5% respectively in their study. In the present study 94 ( 80.34% ) & 106 ( 90.60%) pregnant women were taking < 2000kcal/day and protein < 65 gm/day respectively. Similar finding were reported by Sachar et al (1999) but Saxena et al (2000) reported that only 29.5% pregnant women were taking less calories & protein as compared to our study. 23.93% Pregnant women had BMI<18.5 due to many socio-economic reasons such as illiteracy and negligence of women in family. Similar observation was made by Saxena et al (2000).

Utilization of Health services were more in Govt. hospital but preference for place of delivery were equal between hospital and home. In the present study 58.97% of pregnant women received Iron & Folic acid tablets, where as 70.94% women received injection T.T. Corresponding figures are lower (31%

& 40 %) in the study by Chopra et al (1999).

High prevalence of anemia was noted in less than 28 weeks of gestational age of pregnant women (62.83% ), the incidence is similar to that reported by Saxena et al (2000). The present study shows high prevalence of anemia in II<sup>nd</sup> trimester, illiterate pregnant women and who married (87.17%) and conceived (51.28% ) before 20 years of age indicating pre-pregnancy status of women. The present study shows that p-value is more than 0.05 for all variable parameters. Therefore, it shows that prevalence of anemia was statistically not significant with relation to age of women, age at marriage, age at first child, weight, consumption of protein & calorie per day.

The above parameters indicate that there is need for community based strategy to improve maternal nutritional status, literacy level, utilization of Health Services and Health education with emphasis on delaying marriage and conception.

### Acknowledgement

I profusely thank Prof.(Dr) S Tenglikar, Shri Srinivas Reddy statistician & All Medico Social Worker for their support & help for the completion of study. Author deeply acknowledges the support rendered by the pregnant women, Anganwadi workers , staff of Sub-center & RCHTC, for their whole hearted support during the study period.

### Bibliography:

1. Chopra H, Jain S, Garg SK, Bhatnagar M, Singh JV: A Status of reproductives health among women in rural Meerut. *Indian Journal of Preventive & Social Medicine*, 1999;30(3 & 4):116-119
2. Gautam VP, Bansal Y, Taneja DK, Saha R: Prevalence of anemia amongst pregnant women & its socio-demographic association in rural area of Delhi. *Indian Journal of Community Medicine*, 2002; 27(4):157-160.
3. Govt. of India, Annual paper 2001-2002, Ministry of Health and Family Planning. New Delhi, 2002.
4. National nutrition policy, Ninth plan,(1997-2002) Vol. 11, Planning commission, Govt. of India, N Delhi. p:549.
5. Park K: Park's text book of preventive and social medicine. 18<sup>th</sup> Edn.; M/s Banarsi Bhanod, Jabalpur, 2005;pp450,465.
6. Saxena V, Shrivastava VK, Idris MZ, Mohan U, Bhushan V: Nutritional status rural pregnant women. *Indian Journal of Community Medicine*, 2000; 25(3):104-107.
7. Sachar RK, Kaur N, Soni RK, Dhat R, Singh H: Energy consumption during pregnancy & its relationship to birth weight: A population base study from rural Punjab. *Indian Journal of Community Medicine*, 2000;25(4):166-169.

8. World Health Organization: The prevalence of anemia in women: a tabulation of available information, 2<sup>nd</sup> Edn.; WHO, Geneva, 1992.