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Community Based Study of Rural Tribal Women's Prepregnancy Health

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Abstract

Background: In addition to health during pregnancy, labour, post-birth, an optimal state of physical and mental health at the onset of pregnancy is essential for health of women and their babies during pregnancy, birth, and post birth over decades. The concept of preconception health has been old; however it has received little attention until recently. There has now been momentum because of persisting sufferings of women during pregnancy, birth and beyond in spite of best of care during pregnancy.

Objective: Present community based study was conducted to know about prepregnancy health, body mass index (BMI), hemoglobin (Hb), any major illnesses in women of a remote rural region.

Material and methods: After the institution's ethics committee's approval, community based study was conducted in 100 villages with health facilities in forestry and hilly regions. Total 2400 women of reproductive age, likely to have pregnancy were included randomly, minimum 20 from each village to get information as per objective.

Results: Among 2400 women, 22.8% had low BMI, 56.6% normal, 26.6% high BMI, 10% women had <5gm/dl Hb, 20.5% ≥ 5 but <7 gm/dl Hb, 33.7% ≥ 7 but <9 gm/dl Hb, 12% Hb ≥ 9 but <11gm/dl Hb, 23.6% women had Hb ≥ 11gm/dl Hb. Total 12.1% women had hypertension, 8.4% had diabetes, 79.5% had other disorders, mostly anemia.

Conclusion: There were 22.8% underweight tribal women with chances of other nutritional deficiencies, 30.54% had severe and 33.75% had moderate anemia, 10% had alarming very severe anemia, real cause of concern. Government health providers need to identify various disorders of prepregnancy which can become dangerous during pregnancy, birth, post birth for both mother and baby. It is also important to address them in later life through various preventive and therapeutic interventions.

Keywords: Prepregnancy Health, Body mass index, Hemoglobin, Other disorders

Background

Preconception health refers to the health of couples, especially women before they are likely to have a baby. The concept of preconception health has been around for some decades but has received little attention until the recent past. However there has been momentum because of various reasons like persistent disparities and new disorders causing adverse pregnancy outcome around the world. Pregnancy outcome is dependent on a variety of factors like genetic status, age, previous pregnancies, miscarriages, medical disorders, environmental factors, teratogen exposure, lifestyle, eating habits and so on. Optimal state of physical and mental health is essential during conception. The preconception period is critical window during which maternal health can profoundly affect individual and intergenerational health too.

Despite its importance, little information exists about women's preconception health behavior, but is vital for targeted health communication and care for best of health of women and children.

Objective

Community based study was conducted to know body mass index (BMI), hemoglobin, and other disorders amongst rural tribal women (most belonged to KORKU tribe but this was not part of study) prepregnancy.

Material and Methods

Study setting

The study was conducted in 100 villages near the villages with health facilities in forestry and hilly regions.

Study design

Descriptive research with predesigned tool.

Study period

One year.

Study sample

2400 sample calculated by descriptive study formula [1] (1/20% of overall population).

Inclusion criteria

Women of reproductive age group (15-45 years) likely to have pregnancy were randomly included.

Exclusion criteria

Women age <15 years, >45 years, women already undergone surgeries like hysterectomy, oophorectomy, tubal ligation, and women who already attained menopause.

Results

Among 2400 study subjects, 336 (14%) were of 15-19 years of age, 1564 (65.17%) were of 20-29 years, 426 (17.7%) were of 30-39 years and 74 (3.08%) were between 40-45 years of age. A total of 953 (39.71%) study subjects were illiterate, 850 (35.42%) had primary education, 506 (21.08%) had secondary education, 91 (3.79%) had higher secondary education. Of all the study subjects, 275 (11.46%) were homemakers, 958 (39.92%) were laborer, 468 (19.5%) were laborers but in their own farms, and 699 (29.13%) women worked at places other than their own villages. Total 864 (36%) women were from very low economic class, 662 (27.58%) from low class, 544 (22.67%) from low middle class, 183(7.63%) from middle class, and 147 (6.13%) from upper economic class (graded as per village level economy). Total 105 (4.37%) women had no birth, 1786 (74.42%) had 2 to 4 births and 509 (21.21%) already had 5 or more births.

Of the 2400 women, 547 (22.79%) had low BMI (p value<0.01, significant) calculated as per standard BMI formula, 1214 (50.58%) had normal, and 639 (26.62%) had high BMI (i,e; >24.8kg/m^2). Most cases of low BMI (<18kg/m^2) were of 20-29 years of age (n-424), followed by 30-39 age (n-58). Many women with low BMI were illiterate (n=224) and laborer (n=272). There were 204 (37.29%) women with low BMI, belonged to low economic class and 194 (35.47%) belonged to very low economic class.

Among 639 women with high BMI, 335 (52.42%) were of 20-29 years of age, 200 (31.29%) were 30-39 years, 64 (10.01%) were between 15-19 years, and 40 (6.26%) were of 40-45 years, however most of the women who had high BMI were of 20-29 years age (n=335), most with primary education (n=264) had high BMI, illiterate women (n=188), secondary education (n=160) and with higher secondary education (n=27).

Among women with high BMI, 272 (42.57%) women were laborer, 243 (38.03%) worked away from their villages, 69 (10.79%) were homemakers, and 55 (8.61%) women worked in their own farms. Among 639 women with high BMI, 235 (36.78%) belonged to middle class, 147 (23%) to lower, 149 (23.32%) to very low economic class, 65 (10.17%) and 43 (6.73%) women respectively belonged to upper and middle class.

Many women with high BMI were of 20-29 years (n=335), illiterate (n= 541), laborer (n= 272), belonged to low economic class (n= 521) and had one or two births (n= 516).

Of the 2400 study subjects, 240 (10%) had hemoglobin <5 gm/dl (very severe anemia) (p value<0.01, significant), 493 (20.5%) had hemoglobin ≥ 5 to < 7 gm/dl (severe anemia) (p value<0.01, significant), 810 (33.75%) had hemoglobin ≥7 but <9 gm/dl (moderate anemia), 290 (12.08%) had hemoglobin ≥ 9 but < 11 gm/dl (mild anemia), and only 563 (23.45%) women had ≥ 11 gm/dl Hb (mild/no anemia).

Among 240 women with hemoglobin < 5 gm/dl (very severe anemia), 34 (14.17%) were of 15-19 years, 144 (60%) between 20-29 years, 54 (22.5%) between 30-39 years, and 8 (3.33%) between 40-45 years of age, 83 (34.58%) illiterate, 80 (33.33%) had primary education, 59 (24.58%) had secondary education, and 18 (7.5%) had higher secondary education.

Of all the women with hemoglobin of ≥ 5 but < 7 gm/dl Hb (severe anemia), 215 (22.6%) were illiterate, 127(14.9%) had primary education, 133 (26.3%) had secondary education and 18 (19.8%) had higher secondary education. Most of the women with very severe anemia were 20-29 years old (n=144) and were illiterate (n=83). Among 810 women with ≥ 7 but <9

gm/dl Hb (moderate anemia), 374 (46.17%) were illiterate, 291 (35.92%) had primary education, 134 (16.54%) had secondary education, and only 11 (1.36%) had higher secondary education. Similarly, out of 290 women with hemoglobin ≥ 9 to < 11 gm/dl (mild anemia), 103 (35.52%) were illiterate, 99 (34.12%) had primary education, 72 (24.83%) had secondary education, and 16 (5.52%) had higher secondary education.

Among 240 women with hemoglobin <5 gm/dl (very severe anemia), 20 (8.33%) women were homemakers, 80 (33.33%) were laborers, 42 (17.5%) were laborer on their own farms and 98 (40.83%) women worked at places away from their own villages. Economically, 20 (8.33%) women belonged to upper economic class and middle class each, 64 (26.67%) to low middle class, 90 (37.5%) to low economic class, and 46 (19.17%) to very low class. However, most of the women with very severe anemia belonged to low economic class (n= 90) and worked away from their own villages (n= 98).

Among women who had <5 gm/dl Hb (very severe anemia), 10 (4.17%) had no birth, 61 (25.42%) had one or two births, 95 (39.58%) had three to four births, and 74 (30.83%) had 5 or more births.

Among women with ≥ 5 but < 7 gm/dl Hb (severe anemia), only 11 (2.23%) belonged to upper economic class, 15 (3.04%) to middle class, 173 (35.1%) to low middle economic class, 167 (33.87%) to low economic class, and 127 (25.76%) belonged to very low economic class. However, 15 (1.85%) women from upper economic class, 27 (3.33%) from middle economic class, 286 (35.31%) from low middle economic class, 232 (28.64%) and 250 (30.86%) from lower and very low class, respectively had ≥ 7 but <9 gm/dl Hb (moderate anemia). Similarly, 122 (42.07%) women with ≥ 9 but < 11 gm/dl Hb (mild anemia) belonged to very low class. Among women with ≥ 11 gm/dl Hb (non anemic), 319 (56.67%) women belonged to very low class and 128 (22.73%) to middle class.

It was revealed that among 2400 study subjects, 290 (12.08%) had hypertension, 202 (8.41%) had diabetes, and 1908 (79.5%) women had other disorders though mostly anemia. Of 290 women with hypertension, 210 (72.41%) were of 30-39 years age, 135 (46.55%) illiterate, housewives (n=136), very low economic class (n=117), and 1 and 2 births (n=150).

Of those with diabetes, 145 were of 30-39 years of age, and homemakers (n= 85). Among 202 diabetic women, 95 (47.03%) were illiterate, 70 (34.65%) had primary education, 27 (13.37%) had secondary education, and 10 (4.95%) had higher secondary education, middle economic class and very low economic class (n=80, n=70), respectively; 15 (7.42%) had no births, 92 (45.54%) had 1 or 2 births, 45 (22.28%) had 3 and 4 births, and 50 (24.75%) had 5 or more births.

Most of the diabetic and hypertensive women were of 30-39 years (p value 0.903), illiterate (p value 0.293, non significant), homemaker by occupation, belonged to middle economic class, and had one or two births.

Thus, it was seen that low prepregnancy BMI and very severe (hemogloin <5 gm%) and severe anaemia (hemoglobin 5-7 gm%) before pregnancy were statistically significant numbers (p value <0.05 for 95% C.I.), a cause for concern, of which maximum number of low prepregnancy BMI were women of 20-29 years, followed by low economic class, having 5 or more births, laborer, and illiteracy in order while maximum number of women with prepregnancy anemia were having 5 or more births, with hemoglobin <5 gm% followed by those working away from their own villages, low economic class, age 20-29 years, and illiteracy in order. For hemoglobin ≥ 5-<7 gm%, maximum relation was with women having 5 or more births followed by low economic class, illiteracy, laborer, and age 15-19 years in order. Other conditions like hypertension and diabetes had p value >0.05 and hence statistically not significant, however maximum relation for hypertension was with age 30-39 years, followed by homemakers, middle economic status, having no births, and illiteracy in order, while for diabetes it was middle economic status, followed by age 30-39 years, home makers, having no births, and illiteracy in order (**Tables 1-3**).

Table 1. Preconception BMI of women.

Variables	**Total**	**BMI**					
Age		**Low**	**%**	**Normal**	**%**	**High**	%
15-19	336	48	14.3	224	66.7	64	19
20-29	1564	424	27.1	805	51.5	335	21.4
30-39	426	58	13.6	168	39.4	200	46.9
40-45	74	17	23	17	23	40	54.1
Total	**2400**	**547**	**22.8**	**1214**	**50.6**	**639**	**26.6**
Education							
Illiterate	953	224	23.5	541	56.8	188	19.7

Primary	850	165	19.4	421	49.5	264	31.1
Secondary	506	121	23.9	225	44.5	160	31.6
Higher Secondary	91	37	40.7	27	29.7	27	29.7
Total	**2400**	**547**	**22.8**	**1214**	**50.6**	**639**	**26.6**
Profession							
Homemakers	275	18	6.5	188	68.4	69	25.1
Agriculture Laborer	958	272	28.4	414	43.2	272	28.4
Casual Laborer*	468	89	19	324	69.2	55	11.8
Shop Keeper	699	168	24	288	41.2	243	34.8
Total	**2400**	**547**	**22.8**	**1214**	**50.6**	**639**	**26.6**
Economic							
Upper	147	38	25.9	44	29.9	65	44.2
Middle	183	27	14.8	113	61.7	43	23.5
Lower Middle	544	84	15.4	225	41.4	235	43.2
Lower	662	204	30.8	311	47	147	22.2
Very Low	864	194	22.5	521	60.3	149	17.2
Total	**2400**	**547**	**22.8**	**1214**	**50.6**	**639**	**26.6**
Parity							
P0	105	32	30.5	39	37.1	34	32.4
P1-P2	1083	214	19.8	516	47.6	353	32.6
P3-P4	703	162	23	385	54.8	156	22.2
P5Above	509	139	27.3	274	53.8	96	18.9
Total	**2400**	**547**	**22.8**	**1214**	**50.6**	**639**	**26.6**

*Small Scale, (Food, Shoes making, Bamboo items) Industry, Welding Workshop, Brick furnace

Table 2. Preconception hemoglobin of women.

Variables	**Total**	**Hemoglobin of Women in gms/dl**									
Age		**<5**	**%**	**≥ 5<7**	**%**	**≥ 8<9**	**%**	**≥ 9<11**	**%**	**≥ 11**	**%**
15-19	336	34	10	104	31	78	23.2	36	10.7	84	25
20-29	1564	144	9.2	283	18.1	597	38.2	189	12.1	351	22.4
30-39	426	54	13	94	22.1	120	28.2	59	13.8	99	23.2
40-45	74	8	11	12	16.2	15	20.3	6	8.1	33	44.6
Total	**2400**	**240**	**10**	**493**	**21**	**810**	**34**	**290**	**12**	**567**	**24**
Education											
Illiterate	953	83	8.7	215	22.6	374	39.2	103	10.8	178	18.7
Primary	850	80	9.4	127	14.9	291	34.2	99	11.6	253	29.8
Secondary	506	59	12	133	26.3	134	26.5	72	14.2	108	21.3
Higher Secondary	91	18	20	18	19.8	11	12.1	16	17.6	28	30.8

Total	**2400**	**240**	**10**	**493**	**21**	**810**	**34**	**290**	**12**	**567**	**24**
Profession											
Home Makers	275	20	7.3	106	38.5	18	6.5	24	8.7	107	38.9
Agriculture Laborer	958	80	8.4	210	21.9	411	42.9	70	7.3	187	19.5
Casual Laborer*	468	42	9	71	15.2	220	47	39	8.3	96	20.5
Shop Keeper	699	98	14	106	15.2	161	23	157	22.5	177	25.3
Total	**2400**	**240**	**10**	**493**	**21**	**810**	**34**	**290**	**12**	**567**	**24**
Economic Status											
Upper	147	20	14	11	7.5	15	10.2	19	12.9	93	63.3
Middle	183	20	11	15	8.2	27	14.8	13	7.1	128	69.9
Lower Middle	544	64	12	173	31.8	286	52.6	52	9.6	33	6.1
Lower	662	90	14	167	25.2	232	35	84	12.7	89	13.4
Very Low	864	46	5.3	127	14.7	250	28.9	122	14.1	319	36.9
Total	**2400**	**240**	**10**	**493**	**21**	**810**	**34**	**290**	**12**	**567**	**24**
Parity											
P0	105	10	9.5	25	23.8	30	28.6	18	17.1	22	21
P1-P2	1083	61	5.6	142	13.1	504	46.5	92	8.5	284	26.2
P3-P4	703	95	14	155	22	147	20.9	127	18.1	179	25.5
P5Above	509	74	15	171	33.6	129	25.3	53	10.4	82	16.1
Total	**2400**	**240**	**10**	**493**	**21**	**810**	**34**	**290**	**12**	**567**	**24**
*Small Scale, (Food, Shoes making, Bamboo items) Industry, Welding Workshop, Brick furnace											

Table 3. Preconception disorders of women.

Variables Age	Total	Hypertension	%	Diabetes	%	Others	%
15-19	336	15	4.5	10	3	311	92.6
20-29	1564	25	1.6	15	1	1524	97.4
30-39	426	210	49.3	145	34	71	16.7
40-45	74	40	54.1	32	43.2	2	2.7
Total	**2400**	**290**	**12.1**	**202**	**8.4**	**1908**	**79.5**
Education							
Illiterate	953	135	14.2	95	10	723	75.9
Primary	850	85	10	70	8.2	695	81.8
Secondary	506	45	8.9	27	5.3	434	85.8
Higher Secondary	91	25	27.5	10	11	56	61.5
Total	**2400**	**290**	**12.1**	**202**	**8.4**	**1908**	**79.5**
Profession							
Home Makers	275	136	49.5	85	30.9	54	19.6
Agriculture Laborer	958	87	9.1	80	8.4	791	82.6

Casual Laborer*	468	47	10	28	6	393	84
Shop Keeper	699	20	2.9	9	1.3	670	95.9
Total	**2400**	**290**	**12.1**	**202**	**8.4**	**1908**	**79.5**
Economic Status							
Upper	147	36	24.5	15	10.2	96	65.3
Middle	183	70	38.3	80	43.7	33	18
Lower Middle	544	47	8.6	28	5.1	469	86.2
Lower	662	20	3	9	1.4	633	95.6
Very Low	864	117	13.5	70	8.1	677	78.4
Total	**2400**	**290**	**12.1**	**202**	**8.4**	**1908**	**79.5**
Parity							
P0	105	36	34.3	15	14.3	54	51.4
P1-P2	1083	150	13.9	92	8.5	841	77.7
P3-P4	703	50	7.1	45	6.4	608	86.5
P5 Above	509	54	10.6	50	9.8	405	79.6
Total	**2400**	**290**	**12.1**	**202**	**8.4**	**1908**	**79.5**
*Small Scale, (Food, Shoes making, Bamboo items) Industry, Welding Workshop, Brick furnace							

Discussion

The present community based study was conducted in remote villages. The study included 2400 tribal women who were likely to have pregnancy and were chosen randomly. Their characteristics were studied. Two thirds (65.17%) of women were between age 20-29 years, 39.71% women were Illiterate, 35.42% women had primary education. In the study by Shrinivasa et al. [2], 24.2% were illiterate women, 39.1% with primary education, 28.1% with secondary education, 8.1% with higher secondary and only 0.6% women were graduates and postgraduates.

Chandranipapongse et al. [3] reported that it was ideal to encourage future parents to adopt a healthy lifestyle while they were planning to have a baby, especially women needed increased motivation to improve their health. Msemo et al. [4] also reported that anemia among women of reproductive age before conception was very common in rural settings. In the present study, 30.54% women had severe anemia, 33.75% had moderate anemia, 12.08% had mild anemia, and only 23.62% were non anemic and 10% were very severely anemic, real matter of concern. The results are in accordance with the study by Rohisha et al. [5] from Karnataka, India who had reported that 89% tribal women had anemia and among these 11% had severe and 62% had moderate anemia and Shrinivasa et al. [2] in a cross-sectional study on tribal women health benefits, both for women of reproductive age and their future children. Tosh et al. [6] did a study in UK and reported that physical and mental health of women prior to conception have a significant impact on pregnancy and child outcomes and reported that greater recognition of mental and physical co-morbidities and closer integration of physical and mental health care in preconception period, could support people to optimize their health during this time and improve long term outcomes. Greer [7] reported that the benefits of high-quality preconception care optimizing the clinical outcomes for both the mother and the baby extrapolated across women with comorbidities as evidenced by MBBRACE-UK (Mothers And Babies Reducing Risk Through Audits And Confidential Enquires Across The UK). Out of 2400 women, 1908 were having other disorders maximum belonging to 20-59 year age group, 75.9% illiterate, 82.7% worked as agriculture laborers and belong to low economic status. Black [8] reported that nine in ten women had at least one risk indicator for adverse pregnancy outcome or long-term health problems for mother or baby. Nearly three-quarters of women did not take folic acid supplements before pregnancy, half were living with overweight or obesity, and around a quarter entered pregnancy with a previous obstetric complication or a pre-existing physical and/or mental health condition.

Conclusion

The high prevalence of moderate, severe, and very severe anemia among tribal women of reproductive age is a cause of concern. The poor nutritional status of almost one fourth of tribal women puts them at risk of developing complications during pregnancy and birth. There is a dire need of innovative and culturally acceptable strategies targeting

tribal reproductive age women for promotion of health and preventing nutritional deficiencies. Among 2400, two third of women having other disorders were illiterate and belonged to low economic status.

Strengths of study

- Community based study, rural, and tribal population included.

Weaknesses of study

- In this study, we took everyone who had a possibility of pregnancy. Neither menopause, nor tubectomised, hystrectomised patients were included.
- The information collected was only BMI, hemoglobin, and blood pressure. Women in this study were not examined by any doctors and no investigations were done.
- Only medical conditions about which either patient showed medications or told were taken into consideration.

Conflict of Interest

The authors declare that they have no conflict of interest.

References

1. Jose JA, Sarkar S, Kumar SG, Kar SS. Utilization of maternal health-care services by tribal women in Kerala. Journal of Natural Science, Biology, and Medicine. 2014;5(1):144.

2. Shrinivasa BM, Philip RR, Krishnapali VK, Suraj A, Sreelakshmi PR. Prevalence of anemia among tribal women of reproductive age-group in Wayanad district of Kerala. International Journal of Health and Allied Sciences. 2014;3:120-4.

3. Chandranipapongse W, Koren G. Preconception counseling for preventable risks. Canadian Family Physician. 2013;59(7):737–9.

4. Msemo OA, Schmiegelow C, Nielsen B, Kousholt H, Grunnet L, Christensen D, et al. Risk factors of pre-hypertension and hypertension among non-pregnant women of reproductive age in northeastern Tanzania: a community based cross-sectional study. Tropical Medicine & International Health. 2018;23(11):1176-1187.

5. Rohisha IK, Jose TT, Chakrabarty J. Prevalence of anemia among tribal women. Journal of Family Medicine and Primary Care. 2019;8:145-7.

6. Tosh C, Kavanagh K, Flynn AC, Stephenson J, White SL, Catalao R, et al. The physical-mental health interface in the preconception period: analysis of 131 182 women planning pregnancy in the UK. BJOG. 2023;130(9):1028-1037.

7. Greer O. Yet another clarion call for … integrated preconception services. BJOG. 2022;129(10):1653.

8. Black M. England's preconception health report: convenient and valuable data. BJOG. 2023.