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Rural community based study of Magnitude of Anaemia in Women of Reproductive age

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Abstract

Background: Despite several steps taken by governments, anaemia continues to be common, and affects women's health negatively. Last demographic health survey in India revealed 27% women of 15-49 years age anaemic, so it was decided to look into present status in rural communities. Objective was to know community-based magnitude of anaemia in rural women of reproductive age.

Material and Methods: Community based study was conducted for knowing magnitude of anaemia in nonpregnant women of 15 to 49 years. In 28 villages around 75±10 km away from study institute in Central India, as per availability, 1267 women were randomly screened, keeping in mind inclusion and exclusion criteria. After information and request to permit, minimum 25 women per village, who so ever volunteered, fitted in inclusion criteria were screened.

Results: Of 1267 women randomly screened 858 (67.72%) were anaemic, 850 mildly or moderately anaemic. Eight (0.6%) severely anaemic, (Hb less than 7 gms/dl) were straight referred to hospital for work up and appropriate management. Others were also advised to get investigations, treatment, not part of study. Maximum burden of anaemia, (68.86%), was in women of 35-49 yrs age, 67.37% among 20-34 yrs old and 65.92% in adolescents, no significant difference in different age groups. Of 1267 screened, 972 (76.7%) were from lower economic status, 280(22.1%) middle economic status only 15(1.2%) from upper economic status, maximum anaemic was out of LES women. Most women with four and more births were anaemic. Parity affected maximum compared to age, economic status and education.

Conclusion: Around 70% women of reproductive age without any obvious disorders. were found to be anaemic in rural communities Parity had maximum effect.

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Background

Despite several steps taken by the governments, anaemia continues to be common disorder affecting women's health. Mostly the cause is nutritional deficiency of one or several nutrients. Main nutrients involved in the synthesis of haemoglobin are iron, folic acid, and Vit B_{12}. Deficiency of all three or anyone can lead to various degrees of anaemia. Women become anaemic more often due to

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menstruation, pregnancy, or abnormal uterine bleeding in addition to nutritional deficiencies due to various social reasons and disorders like bleeding piles, worm infestations, chronic diseases such as tuberculosis, malignancy which affect men as well as women.

Despite many efforts, the demographic health survey in India revealed 27% women, of reproductive age (WRA), (15-49) years having anaemia with significant regional variations [1]. National Family Health Survey III revealed that 55.3% WRA were anaemic in the country, more of pregnant women and young [2,3]. According to World Health Organization (WHO) report, anaemia affected 1.62 billion (24.8%) people globally [4]. Reducing anaemia in WRA by 50% by 2025 is one of the six global nutrition targets that were set forth by the World Health Assembly [5]. So, anaemia remains a public health problem globally. Objective was to know the community-based magnitude of anaemia in rural WRA with mission of advocacy of prevention and therapy.

Material and Methods

Rural community-based study was conducted for knowing the magnitude of anaemia. WRA from 28 villages of Wardha district, around 75 ± 10 km away from the study institute, were screened over a period of 9 months after approval of ethics committee of the institute. Pregnant women, those with obvious disorders which could cause bleeding causing anaemia like piles, menorrhagia and known chronic diseases which could cause anaemia. A pretested tool was used. Women were explained about plans of advocacy of prevention of anaemia and help in management if found anaemic. Inclusion was after woman's consent. No one refused. Sample size needed for screening was around 1200. Total 1267 women were randomly screened as per the availability keeping in mind inclusion and exclusion criteria. Call was sent to women to get screened at a fixed place on fixed days in 28 villages. Minimum 25 women / village were screened in each village, total 1267 women. Some villages were small other little bigger. Grade of anaemia was divided as mild, moderate, and severe. Haemoglobin $\geq$9.0–10.9g/d1 as mild, $\geq$7–8.9g/dl moderate, and <7g/dl as severe [6].

Results

Over all 858 (67.72%) women were found to be anaemic, a total of 850(67.08%) were mildly or moderately anaemic and 8 (0.6%) severely anaemic, (Hb below 7 gms/dl). Severely anaemic women were straight referred to hospital for work up and therapy though all women with anaemia were advised to get investigations and treatment which was not part of the study. Maximum burden of anaemia, 68.86%, was in women of 35-49 yrs, followed by 67.37%, amongst 20-34 yrs women, and 65.92% in adolescents. However, there was no significant difference in numbers of anaemic women in different age groups in villages. Of 1267 women who were screened, 972 (76.7%) were from lower economic class 280(22.1%) from middle economic class and only 15(1.2%) were from upper economic class [7]. As expected, highest incidence (68.50%) of anaemia was in women of low economic class, 73.70% mildly anaemic, 25.10% moderately anaemic, and 1.20% severely anaemic. Among middle economic status, 32.85% were non-anaemic and 67.14%, anaemic, 79.80% mildly anaemic and 20.20% were moderately anaemic. Among upper economic class as expected, 73.34% were non-anaemic, 26.66% anaemic equally divided in moderate and mild anaemia. (significant difference P value P=<0.000001). Of 1267 women screened 13.97% were primary school educated, 14.83% middle school pass, 55.2% high school pass, 4.5% graduates, 0.6% postgraduates and 10.9% were illiterate too. Among illiterates, 26.8% were non-anaemic and 73.20% anaemic, and 1.98% of them were severely anaemic. Of anaemic 21.78% were moderately and 76.24% mildly anaemic. As expected, highest numbers of anaemia cases were among illiterates, 73.20% and 59.74% among educated women. (significant difference P value = 0.001073). Of 1267 screened women,

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336 had no pregnancy, 140 women had one birth, 431 two, 282 three, 60 had four births 15 five and 3 had six births too. On the basis of parity, division was made in group I, P0 +P1, group II, P2+P3 and group III, P4 onwards. Highest number of anaemic women were in group III, 80.76% (71.42% mild, 23.82% moderate and 4.76 % severely anaemic) followed by 67.18% in group II (74.73% mild, 24.84% moderate and severe 0.43 %) and 66.38% in group I (75.94% mild, 23.1% moderate, 0.94% severe). So as expected more of rural women with many births were anaemic. Severely anaemic were also more. Significant association was found between parity and anaemia. Most women with four and more births were anaemic. (Table I). After thorough collection of information about symptoms it was found that of 850 anaemic women 4 (0.47%) had leucorrhoea, 3 (0.35%) numbness in feet, 70 (8.23%) pain in abdomen, 60 (7.05%) dysmenorrhoea, 93 (10.94%) low backache, 18 (0.02%) irregular menstruation, not excessive, 7 (0.82%) neck pain, 35 (4.11%) generalised malaise, 2 (0.23%) body ache, 21 (2.47%) giddiness, 32 (3.76%) generalised weakness, 37 (4.35%) headache, 7 (0.82%) oligomenorrhoea and 5 (0.58%) symptoms of urinary tract infection . Overall around, 50% women were having complaints which could be linked to anaemia. These women neither knew they had anaemia nor had sought help for any of their complaints.

Discussion

Particularly in countries where the prevalence of anaemia is moderate or severe it is a public health problem, more information elucidating the etiology of anaemia is needed. Thacker 2011 [8] reported significant association of anaemia with low economic status. In the present study too on looking into the economic status there was higher incidence of anaemia in lower economic status in community (68.50%). Education is thought to be an important factor for prevention of anaemia. In the present study also, anaemia was detected in significantly more illiterate women 73.2% at community level in villages. Trinh [9] has also reported that women with lower education were more often anaemic than women who were better educated. Raghuraman et al [10] in their rural study found anaemia more often in women who were of more than four parity. Farsi [11] also found more risk of anaemia among women with high parity compared to those who had fewer pregnancies as was found in the present study also. Actually, parity affected the occurrence of anaemia maximum compared to age, education and economic status. In a cross – sectional nationally representative data from 10 surveys examining the severity of anemia and the bivariate association between anemia and factors at the country level and by infection burden [12]. Anemia prevalence was ~40% in countries with a high infection burden and 12% and 7% in countries with moderate and low infection burdens, respectively. Iron deficiency was consistently associated with anemia in multivariate models, but the proportion of anemic women who were iron deficient was considerably lower in the high-infection group (35%) than in the moderate- and low-infection groups (65% and 71%, respectively). In the multivariate analysis, inflammation, vitamin A insufficiency, socioeconomic status, and age were also significantly associated with anemia, but malaria and vitamin B-12 and folate deficiencies were not. When anaemic women became pregnant anaemia increased with increased risk of poor birth outcomes, such as preterm birth, low birth weight, and perinatal and neonatal mortality [13]. Maternal mortality has also been associated with low haemoglobin concentrations during pregnancy with risk of maternal mortality decreasing by 25% for every 10-g/L increase in haemoglobin [14]. Anaemia resulted in reduced work productivity in nonpregnant WRA also [15-18], which is likely due to reduced oxygen-carrying capacity in an individual's blood [19]. In the study by bivariate analysis the factors found to be significantly associated with magnitude of anaemia were age, residence, educational status, income, ethnicity, religion, marital status, delivery site, number of pregnancies , history of abortion, use of contraceptives, blood

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loss in the last delivery, malaria in the last one year, soil transmitted helminthes infection, HIV status, and nutritional status [20] . However, residence, family size, soil transmitted helminthes infection, history of malaria in the last one year, and nutritional status remained significantly associated with magnitude of anaemia in the multivariate logistic regression (Kenea, etal 2018 [20] In the rural community based study parity affected maximum compared to age , economic status and education. These women were screened in their own villages and were not patients and did not have any obvious disorder which could cause anaemia. The high incidence of anaemia in women of reproductive age is something to worry, needs action.

Table I: Anaemic Women with Respect to Age, Economic status, Education and Parity.

Age	Women screened	Non anaemic		Anaemic		Mild 9-10.9 gm/dl		Moderate 7-8.9 gm/dl		Severe	
	No	No	%	No	%	No	%	No	%	No	%
15-19	179	61	34.08	118	65.92	87	73.74	30	25.42	1	0.84
20-34	619	202	32.63	417	67.37	316	75.78	96	23.02	5	1.20
35-49	469	146	31.14	323	68.86	241	74.61	80	24.77	2	0.62
	1267	**409**	**32.28**	**858**	**67.72**	**644**	**75.07**	**206**	**24.00**	**8**	**0.93**
Socio economic status											
Low	**972**	306	31.50	666	68.50	491	73.70	167	25.10	8	1.20
Middle	**280**	92	32.85	188	67.15	150	79.80	38	20.20	0	0
Upper	**15**	11	73.34	4	26.66	2	50	2	50	0	0
	1267	**409**	**32.28**	**858**	**67.72**	**643**	**74.94**	**207**	**24.12**	**8**	**0.94**
Education											
Illiterate	**138**	37	26.80	101	73.20	77	76.24	22	21.78	2	1.98
I-IV	**177**	57	32.20	120	67.8	89	74.17	30	25.00	1	0.83
V-VII	**188**	52	27.65	136	72.35	95	69.84	41	30.16	0	0
VIII-XII	**700**	243	34.70	457	65.30	351	76.81	101	22.19	5	1.10
Graduate	**57**	17	29.80	40	70.20	28	70.00	12	30.00	0	0
Postgraduate	**7**	3	42.86	4	57.14	4	100	0	0	0	0
Total	**1267**	**409**	**32.30**	**858**	**67.70**	**644**	**75.06**	**206**	**24.01**	**8**	**0.93**
Parity											
P0	**336**	115	34.2	221	65.8	164	74.21	55	24.84	2	0.95
P1	**140**	453	2.14	95	67.9	76	80.00	18	18.85	1	1.15
P2	**431**	149	34.6	282	65.4	213	75.54	67	23.75	2	0.71
P3	**282**	85	30.14	197	69.9	145	73.61	52	26.39	0	0
P4	**60**	13	21.7	47	78.3	35	74.47	11	23.40	1	2.13
P5	**15**	2	13.3	13	86.7	8	61.54	4	3.76	1	7.70
P6	**3**	0	0	3	100	2	6 6.67	0	0	1	33.33
Total	**1267**	**409**	**32.3**	**858**	**67.7**	**643**	**74.94**	**207**	**24.12**	**8**	**0.94**

Conclusion

More than two third women of reproductive age were found to be anaemic in community-based study of women of 15-49 years. These women did not have any obvious disorders which could have caused bleeding leading to anaemia or any other chronic disorders which could have made a change in haemoglobin. Parity had maximum effect.

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