Int J Biol Med Res. 2012; 3(4): 2485-2488

BioMedSciDirect Publications

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International Journal of Biological & Medical Research

Journal homepage: www.biomedscidirect.com

Original Article

Prevalence of anaemia and its socio demographic determinants among pregnant women attending government maternity hospital, tirupati, a.p.

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ARTICLE INFO

Keywords:
Pregnant women
Anaemia
Socio-demographic determinants
Gravida
Per-capita monthly income.

ABSTRACT

Context: Anaemia during pregnancy is neglected in developing countries although it is one of the most prevalent public health problems and has serious consequences for national development. It is the second most common cause of maternal deaths, accounting for 20% of total maternal deaths. It also significantly increases the maternal morbidity, fetal and neonatal mortality and morbidity including premature delivery and low birth weight. Objective: To find the prevalence of anaemia among pregnant women and its relation to certain socio-demographic factors. Study setting and design: A cross sectional study on 300 newly registered pregnant women in 12-20 weeks of gestation attending the antenatal clinic of Government Maternity Hospital, Tirupati during April to September 2009 selected by using simple random sampling technique. Materials and methods: Haemoglobin estimation was done by Cyanmethemoglobin method using the Systronic Photo calorimeter. The WHO cut off levels were used for diagnosis and grading of anaemia. The pregnant women were interviewed using pre-tested interview schedules. Modified BG Prasad classification scales of per-capita monthly income were used for assessment of economic status. The results were analyzed using MS Excel and Epi-info 3.4.2 version. Results: A high prevalence of anaemia was found among the pregnant women (70.7%). High prevalence of anaemia was observed in less than 20 years of age group (74.2%), Hindus (70.9%), Scheduled caste (78.9%), rural women (71.9%), Illiterates (88.2%), unskilled (78.5%), per-capita monthly income less than Rs 740/- (93.0%), multi gravida (79.9%) and birth-interval less than 36 months (85.2%).

1. Introduction

The importance of anaemia as a major public health problem throughout the world is widely recognized. It is neglected in developing countries although it is one of most prevalent public health problems and has serious consequences for national development. Iron deficiency is attributable to around 50% of all anemia and almost a million deaths every year with three-quarters of the deaths occurring in Africa and South-East Asia. Prevalence of anaemia among pregnant women in South East Asia ranges from 50 -70%.1. In India it is around 65% in urban areas and 75% in rural areas. It is the second most common cause of maternal deaths, accounting for 20% of total maternal deaths. It also significantly increases the maternal morbidity, fetal and neonatal mortality and morbidity including premature delivery and low birth weight 2. Iron deficiency in late pregnancy results in poor foetal iron stores 3. Latent iron deficiency is known to alter brain iron content and neurotransmitters irreversibly in foetal life and postnatal babies 4. Infants with anaemia suffer from failure to thrive, poor intellectual developmental milestones and higher rate of morbidity and mortality. Moreover, babies whose mothers had Anaemia in Pregnancy during their first trimester in utero experience higher rates of cardiovascular morbidity and mortality in their adult lives.

National Nutritional Anaemia Prophylaxis Programme (NNAPP) was initiated in 1970 during fourth five year plan with the aim to reduce the prevalence of anaemia to 25%5. Subsequent evaluations have shown no change in the situation. Since 1992, the daily dosage of elemental iron for prophylaxis and therapy has been increased to 100 mg and 200 mg respectively under Child Survival and Safe Mother-hood Programme.

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2. Material and Methods

A Cross sectional study was conducted during April to September 2009 in the antenatal clinic of Government Maternity Hospital, Tirupati, Andhra Pradesh among newly registered pregnant women with a gestational age of 12-20 weeks of pregnancy. The required sample size was calculated based on the estimated prevalence of 60% as several studies in India had reported a minimum prevalence of 60% anaemia among pregnant women. The sample size was calculated based on the formula, N= 4 PQ/L2 with allowance error (L) of 10% of the estimate. Accordingly, the study was conducted among 300 pregnant women selected based on simple random sampling technique. The women with multiple pregnancies and bleeding disorders were excluded from the study The study aimed to find out the prevalence of anaemia and its relation to certain socio-demographic factors like age, religion, caste, place of residence, education and occupation of the pregnant mother, per capita monthly of the family, type of family, gravida, birth interval, Haemoglobin level etc.,

Haemoglobin estimation was done by Cyanmethemoglobin method using the Systronic Photo calorimeter. The WHO cut off levels for were used for diagnosis and grading of anaemia 6. The pregnant women were interviewed using a pre-tested interview schedules. Modified BG Prasad classification scales of per-capita monthly income was used for assessment of economic status.7. The results were analyzed using MS Excel and Epi-info 3.4.2 version.

3. Results:

Most of the pregnant women were between 20-30 years of age (84.0%) followed by less than 20 years of age (10.3%). Majority of pregnant women belonged to Hindu religion (95.0%), backward caste (42.7%), rural areas (73.7%), joint family (54.7%), school level literates (63.6%), housewives (71.0%) and per capita monthly income less than Rs. 740/- (38.3%). It was found 47.0% women were primigravidae and 52.2% had birth interval between 18 – 35 months.

A high prevalence of anaemia was found among the pregnant women (70.7%). High prevalence of anaemia was observed less than 20 years of age group (74.2%), Hindus (70.9%), scheduled caste (78.9%), rural women (71.9%) illiterates (88.2%), unskilled workers (78.5%), per-capita monthly income less than Rs 740/- (93.0%), multi gravida (79.9%) and birth-interval less than 36 months (85.2%).

It was found that the prevalence of anaemia decreased significantly with increase in the educational level of women. The prevalence of anaemia was as high as 88.2% among illiterates while it was only 34.1% in those educated up to intermediate level. It was found that the anaemia prevalence was higher in primigravidae and increased with gravida. Similarly it was found that the prevalence decreased with increase in the birth interval.

The prevalence of anaemia was significantly associated with type of family ($\chi^2 = 14.81$, $P < 0.001$; S), education of the pregnant women ($\chi^2 = 36.74$, $P < 0.001$; S), per capita monthly income of the family ($\chi^2 = 77.42$, $P < 0.001$; S), gravida ($\chi^2 = 16.96$, $P < 0.001$; S) and birth interval ($\chi^2 = 13.05$, $P < 0.001$; S). It was however found that the prevalence of anemia was not significantly related with age ($\chi^2 = 1.49$, $P = 0.48$; NS), religion ($\chi^2 = 0.12$, P=> 0.73; NS), caste ($\chi^2 = 3.10$, $P = 0.36$; NS), residence ($\chi^2 = 0.66$, $P = 0.42$; NS) and occupation ($\chi^2 = 3.27$, $P = 0.19$; NS) of the pregnant women.

3. Discussion:

The prevalence of anaemia in the current study was 70.7% which was similar to Coimbatore study (72.4%). 8. Higher prevalence of anaemia was observed in the study conducted at Delhi (96.5%) 9 and in study conducted in North India (87.4%) 10. A study in Rural Varanasi showed 95.3 % prevalence of anemia in second trimester of pregnancy11. The ICMR District Nutrition Survey also reported a high prevalence of anaemia (84.2%) 12. NFHS-2 (National Family Health Survey) 1998-1999 13 reported a prevalence of 49.7%. A Multi-centric study conducted in seven states in India 14 revealed a prevalence of anaemia as 49.7% in pregnant women while NFHS-3 Fact sheet of India showed a prevalence of 56.4%.

Severity of anaemia in current study was inversely related to educational status and income which is similar to studies conducted in Coimbatore 8. Severe anaemia was seen much more commonly in primigravidae, 3rd and higher gravida and with birth interval less than 18 months which was comparable to studies conducted in Tirupati and in other parts of South India [15,16.]

Table 1: Association of Anaemia with Socio-demographic factors

Variable	Anaemia (n=212)		Normal (n=88)		Total (n=300)		P value
	No	%	No	%	No	%	
Age							
<20 years	23	74.2	8	25.8	31	100.0	0.48; NS
20–30 years	175	69.4	77	30.6	252	100.0	
>30 years	14	82.4	3	17.6	17	100.0	
Religion							
Hindu	202	70.9	83	29.1	285	100.0	0.73; NS
Muslim	10	66.7	5	33.3	15	100.0	
Caste							
OC	39	66.1	20	33.9	59	100.0	0.36; NS
BC	88	68.8	40	31.2	128	100.0	
SC	56	78.9	15	21.1	71	100.0	
ST	29	69.0	13	31.0	42	100.0	
Residence							
Urban	53	67.1	26	32.9	79	100.0	0.41; NS
Rural	159	71.9	62	28.1	221	100.0	
Type of family							
Nuclear	81	59.6	55	40.4	136	100.0	<0.001; S
Joint	131	79.9	33	20.1	164	100.0	
Education							
Illiterate	60	88.2	8	11.8	68	100.0	<0.001; S
Upton High School	138	72.3	53	27.7	191	100.0	
Intermediate & above	14	34.1	27	65.9	41	100.0	
Occupation							
Skilled	5	62.5	3	37.5	8	100.0	
Unskilled	62	78.5	17	21.5	79	100.0	0.19; NS
Housewife	145	68.1	68	31.9	213	100.0	
Per Month Income (Rs)							
>2520	1	16.7	5	5	6	100.0	
1250–2519	33	39.3	51	51	84	100.0	<0.001; S
740–1249	71	74.7	24	24	95	100.0	
380 739	88	91.7	8	8	96	100.0	
<380	19	100.0	–	–	19	100.0	

Table 2: Association of Anaemia with Gravida and Birth Interval

Variable	Anaemia (n=212)		Normal (n=88)		Total (n=300)		P value
	No	%	No	%	No	%	
Gravida							
Primi							
G2	85	60.3	56	39.7	141	100.0	<0.001; S
>G2	94	76.4	29	23.6	123	100.0	
	33	91.7	3	8.3	36	100.0	
Birth Interval (n=159)							
<18 months	41	89.1	5	10.9	46	100.0	
18–35 months	69	83.1	14	16.9	83	100.0	<0.001; S
>36 months	17	56.7	13	43.3	30	100.0	

4. Conclusion:

Anaemia during pregnancy continues to be a major public problem. Socio-economic status, literacy of women, gravida and birth interval are the major determinants that contribute to the problem of Anaemia. Therefore public health education on reproductive health, monitoring the compliance of women with ante-natal care services and strengthening of their health care seeking behaviour are important health care measures to be undertaken at the community level. Also, it is time for realization that health system should focus on various factors that contribute to the occurrence of anaemia and include them as important indicators in the National Health Policy.

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