Sathya P
Maternal and Child Health officer, ANM Training School, Veerapandi, Theni Dt, Tamil Nadu, India

Gandhimathi R
Staff Nurse, Govt. Block Primary Health Centre, Somanur, Coimbatore, Tamil Nadu-641668, India

Viruthasarani K
Assistant Professor, PSG College of Nursing, Coimbatore, Tamil Nadu-641004, India

Poornima Mary Rodriguez
Assistant Professor, PSG College of Nursing, Coimbatore, Tamil Nadu-641004, India

Rajeswari PM
Assistant Professor, PSG College of Nursing, Coimbatore, Tamil Nadu-641004, India

Subhathra N
Assistant Professor, PSG College of Nursing, Coimbatore, Tamil Nadu-641004, India

Merlin MS
Post Graduate Student, Coimbatore, Tamil Nadu-641668, India

A study to assess the prevalence of anemia among women in a selected urban area in Coimbatore district

Sathya P*, Gandhimathi R, Viruthasarani K, Poornima Mary Rodriguez, Rajeswari PM, Subhathra N, Merlin MS

Abstract

Background: Anemia as a global public health problem is compelling and harmful as the epidemics of infectious diseases. **Objective:** To assess the prevalence of anaemia among women. **Methods:** By using descriptive survey design 245 women who met the criteria were selected with purposive sampling technique in the selected urban areas of Coimbatore district. Hb estimation was done using Tallquist method. **Results:** Out of 250 women, 89 (35.6%) had their normal hemoglobin level (>12.0g/dl), 6 (2.4%) had mild anemia (11-11.9 g/dl), 145 (58%) had moderate anemia (8-10.9 g/dl) and 10 (4%) had severe anemia (<8.0 g/dl). **Conclusion:** The incidence and prevalence of anemia is high in developing countries like India, where the present study mainly focused to identify the anemic women in the urban areas of Coimbatore.

Keywords: Anaemia, Repoductive age, Hb level, Physical symptoms, Behavioural symp.

INTRODUCTION

Anemia continues to be a major public health problem worldwide with the highest prevalence in developing countries. It is found especially among women of reproductive age, young children and during pregnancy and lactation. Anaemia affects half a billion women of reproductive age worldwide. In 2011, 29% (496 million) of non-pregnant women and 38% (32.4 million) of pregnant women aged 15–49 years were anaemic.[1]

Nutritional anemia is a disease syndrome caused by malnutrition in its widest sense. According to WHO, anemia is defined as a condition in which the hemoglobin content of blood is lower than normal as a result of a deficiency of one or more essential nutrients, regardless of the cause such deficiency.[2]

Anaemia impairs health and well-being in women and increases the risk of maternal and neonatal adverse outcomes. Mild, anemia may not have any effect on pregnancy and labour except that the mother will have low iron stores and may become moderately-to-severely anemic in subsequent pregnancies. Moderate anemia may cause increased weakness, lack of energy, fatigue and poor work performance. Severe anemia, however, is associated with poor outcome. The woman may have palpitations, tachycardia, breathlessness, increased cardiac output leading on to cardiac stress which can cause de-compensation and cardiac failure which may be fatal. Increased incidence of pre-term labour (28.2%), pre-eclampsia (31.2%) and sepsis have been associated with anemia. Adverse perinatal outcome in the form of pre-term and small-for-gestational-age babies and increased perinatal mortality rates have been observed in the neonates of anemic mothers.[3]

Anemia during non-pregnant (15 years of age and above) is considered severe when hemoglobin concentration is less than 8.0 g/dL, moderate when hemoglobin falls between 8.0–10.9 g/dL, and mild from 11.0-11.9 g/dl.[4]

Anaemia is a major health problem for adults as well as children, affecting 55 percent of women and 24 percent of men. The prevalence of anaemia for ever-married women in the age-group of 15-49 has increased from 52 percent in NFHS-2 to 56 percent in NFHS-3 and thus anemia continues to be a serious problem in India.[5]

The best approach to combat mild anemia among population of a developing country would be through

Correspondence:
Sathya P
Maternal and Child Health officer, ANM Training School, Veerapandi, Theni Dt, Tamil Nadu, India

initiation of food fortification, creating more awareness about benefits of dietary diversification like use of iron rich diet, use of fresh fruits and green leafy vegetables. Iron and folic acid tablets supplementation is recommended to combat moderate and severe anemia.[6]

Although anaemia has been recognized as a public health problem for many years, little progress has been reported and the global prevalence of anaemia remains unacceptably high. The prevalence and incidence of anemia among women is high in India especially among urban slum dwellers. This scenario motivated the researchers to conduct study among urban slum women of reproductive age group and to identify the factors influencing anemia and thereby adopting preventive measures to improve the women health.

Objective: The study aimed to assess the prevalence of anaemia in terms of Hb estimation and the physical and behavioural symptoms experienced by women with anaemia.

MATERIALS & METHODS

By using descriptive study design, 250 women who met the inclusion criteria were selected as samples with purposive sampling technique in the selected urban areas of Coimbatore district. Tool consisted of three parts. Sec I: Baseline data, Sec II: Symptoms check list. The

assessment checklist consisted of 20 questions. The score for the checklist was given as 1 for Yes and 0 for No. The minimum score was 0 and the maximum score was 20 and is categorized as 0: No symptoms, 1-6 Mild symptoms, 7-13 Moderate symptoms, 14-20 Severe symptoms. Sec III: Hb estimation was done using Tallquist method. Anaemia is categorized as Normal (>12gm/dl), Mild (11-11.9gm/dl), Moderate (8-10.9gm/dl) and Severe (<8gm/dl) based on WHO classification (WHO, Vitamin and Mineral Nutrition Information System, 2011). Ethical clearance was obtained from Institutional Human Ethics Committee, PSGIMS&R. Informed consent was obtained from the study participants. Data was collected through interview technique. For Hb estimation one drop of blood was collected in the distal end of ring finger with a small needle prick. Descriptive and inferential statistics was used to analyse the data.

RESULTS

I. Prevalence of anaemia based on Hb level of women

With regard to Hb level, around 35.6% had normal hemoglobin level. Majority (58%) of the women had moderate anemia with the Hb level of 8-10.9gm/dl whereas 4% had severe anemia. The least no. of women (2.4%) had mild anemia. Mean Hb level of women was found to be 11.16±1.66 (mean±SD) (Figure1).
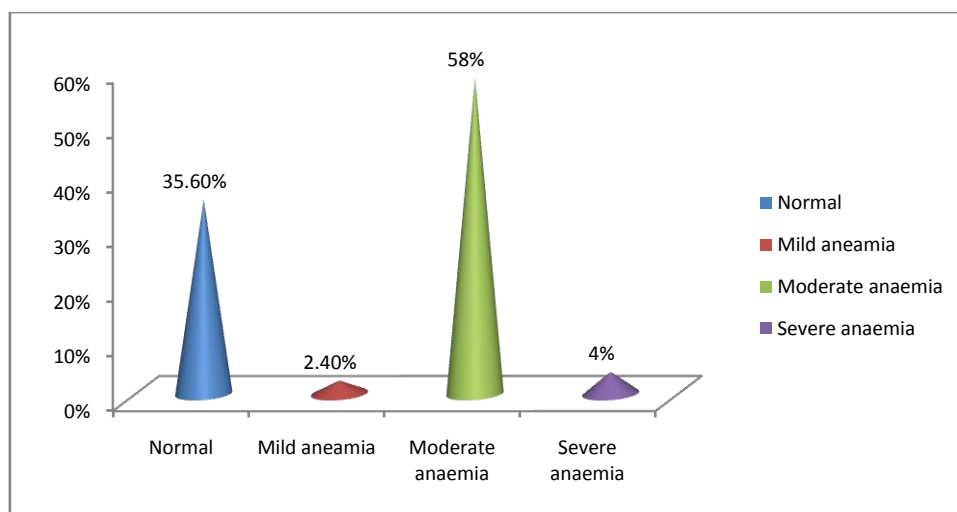

Figure 1: Prevalence of aneamia among women

II. Physical complaints and behavioural changes expressed by women with anaemia

The common physical complaints noticed were luster hair (21.2%), pale conjunctiva & dry skin (15.2%), white patches in face (8%) and pale tongue (1.6%). Behavioral changes expressed by women includes feeling sleepy (10%), tired during work (10%) and irritated during work

(14.8%). Women were categorized based on the symptoms experienced by them which were assessed using a checklist. Almost 44 % of women found to have moderate symptoms followed by 42.8 % of women with mild symptoms reported. Around 10.8% had severe symptoms and a least no. of women (2.4 %) reported no symptoms. The symptoms are seen to be common in women with low Hb levels i.e mild and moderate anemia (Table 1).

Table 1: Assessment of physical complaints and behavioral changes   N=250

S. No	Physical complaints and behavioural changes	Frequency	Percentage (%)
1.	No complaints	6	2.4
2.	Mild (1-6)	107	42.8
3.	Moderate (7-13)	110	44
4.	Severe (14 – 20)	27	10.8

III. Distribution of samples according to their demographic data and Hb level

More than half of the women were moderate anemic and severe anemic was found higher in the age group between 21-40 when compared to adolescent (15-20 years) and adults more than 40 years. Around half of the house wives were moderately anemic. The women whose monthly income <Rs.5000 are found to be severely anemic (3.2%) when compared to other income group. Most of the married women (46%) are moderately anemic. Those women had <2 children are moderately anemic (29.2%).

Chi square test was used to find out the association between baseline data and Hemoglobin level of women. There is an association between income (27.47), type of flow (13.266), parity (14.77) and Hb level of women and found to be statistically significant at p<0.05 level (Table2).

Table 2: Distribution of samples demographic data and Hb level according to their   N=250

S. No	Demographic Data		Anemia				χ^2
			Normal	Mild	Moderate	Severe	
1.	**Age Group**						
	a.	15-20	7.2	0	13.2	0.8	
	b.	21-30	12.4	2	21.6	1.2	2.139
	c.	31-40	12.8	0.4	18	1.2	
	d.	41-50	3.2	0	5.2	0.8	
2.	**Religion**						
	a.	Hindu	32.4	2	56.4	3.6	
	b.	Christian	2.8	0.4	2	0.4	1.978
3.	**Education**						
	a.	Illiterate	3.6	0	5.2	0.8	
	b.	Primary	3.2	0.4	6	0.4	
	c.	Middle school	5.2	0	10	0.4	8.552
	d.	High school	10.4	1.2	14.4	1.2	
	e.	Higher Secondary	4.8	0.8	11.6	0.8	
	f.	Graduate	8	0	11.2	0.4	
4.	**Occupation**						
	a.	Housewife	22	2	43.6	2.8	
	b.	Coolie	2.4	0.4	4.4	0	2.158
	c.	Others	6.4	0	14.8	1.2	
5.	**Family monthly Income**						
	a.	<5000	3.2	0	15.2	3.2	
	b.	5001-10,000	19.2	1.2	38	0.8	27.47*
	c.	>10,000	8.4	1.2	9.6	0	
6.	**Marital Status**						
	a.	Single	4.8	0	16	1.2	
	b.	Married	26	2.4	46	2.8	1.75
	c.	Widow	0	0	0.8	0	
7.	**Menstrual Duration**						
	a.	<3 days	12.4	0.4	27.2	0.4	
	b.	4-6 days	15.6	2	37.2	2	1.541
	c.	>7 days	0.4	0	1.6	0.8	
8.	**Type of Flow**						
	a.	2 pads/day	13.6	1.6	20.4	1.6	
	b.	3 pads /day	18.4	0.8	30	1.6	13.266*
	c.	>4 pads/day	3.2	0	8	0.8	
9.	**BMI**						
	a.	Underweight	4.8	0	6.4	0.8	
	b.	Normal	18.8	1.6	39.4	1.6	1.75
	c.	Overweight	12	0.8	12	1.6	
10.	**Livebirth**						
	a.	<2	22.8	2.4	29.2	1.2	14.77*
	b.	>2	2.4	0	4.4	2.8	

*significant

IV. Consumption of iron rich food by women

Almost equal number of women consumed green leafy vegetables daily (32.4%) and once in a week (36.4%). Dates were consumed occasionally by most (45.2%) of the population. Majority of the women (54.4%, 50.4%) consumed red meat, liver and drumstick leaves once in a week. Some of the iron rich foods such as Jaggery, Ragi and Dates were never consumed by 29.6%, 28.4%, and 21.2% of women respectively. This indicates that women are not giving much importance to consumption of iron rich foods (Figure2).
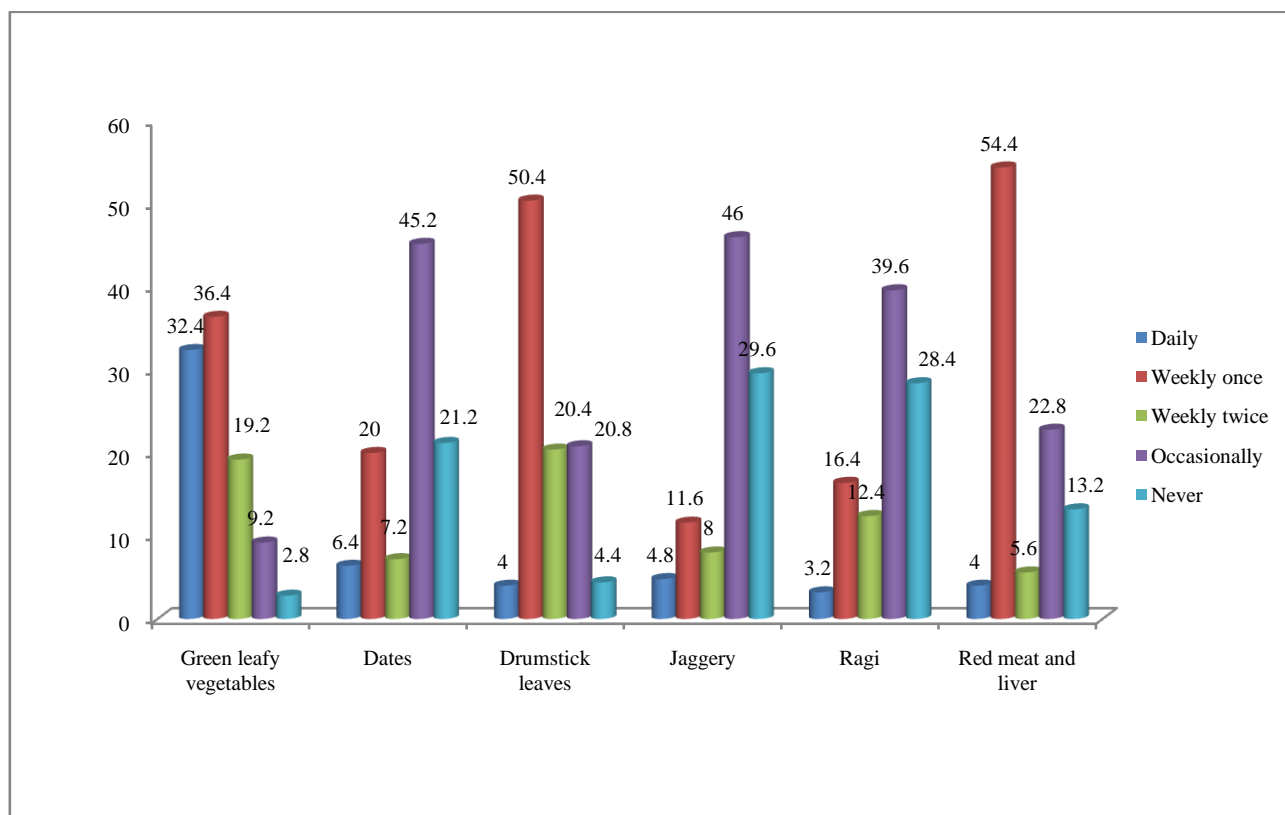

Figure 2: Consumption of iron rich food by women

V. Correlation between Hb level and symptoms experienced by women:

Karl pearson correlation co-efficient was used to find out the correlation between Hb level and the symptoms experienced by women. There was a negative correlation i.e as Hb level increases there is a reduction in the symptoms experienced by women(r= -0.41871) and found to be statistically significant.

DISCUSSION

Among 250 women the majority (64.4%) had aneamia with the mean Hb level 11.16±1.66 (mean±SD). The results of study are similar to NFHS-3 (2005-2006) conducted in Tamil Nadu in terms of anaemic women. However in the present study most of them had moderate anaemia compared NFHS survey in Tamil Nadu with the prevalence rate of 53% having anaemia, including 37 percent with mild anaemia, 14 percent with moderate anaemia, and 2 percent with severe anaemia.[7]

Chi square test was used to find out the association between baseline data and Hemoglobin level of women. There is an association between income (27.47), type of flow based on number pads used in a day during menstruation (13.266), parity (14.77) and Hb level of women and found to be statistically significant at p<0.05 level. With regard to number of pads used per day during menstruation similar findings are noted in a cross-sectional study was conducted among 257 adolescent girls to estimate prevalence of anaemia and its associated factors among adolescent girls of central Kerala, India. The prevalence of anaemia was 21%. Risk factors associated with anaemia in the univariate analysis were presence of ova or cyst in stool (p = 0.003, OR = 2.94) and number of pads per day during menstruation (p = 0.004).[8]

The major physical complaints noticed were luster hair (21.2%), pale conjunctiva & dry skin (15.2%) and the behavioral changes include feeling sleepy (10%), tired during work (10%) and irritated during work (14.8%). The symptoms are seen to be common in women with low Hb levels i.e mild and moderate anemia. These findings are in contrast with the descriptive study conducted by Mamta & Tamphasana Devi to assess the prevalence & knowledge regarding anemia among 40 reproductive age group women in rural Punjab.[9] With the overall prevalence of anemia being 92.5%. and more than half of the subjects (57.5%) reported weakness, followed by fatigue (55%), lethargy (47.5%) and fainting episodes (17%). According to clinical signs of anemia 65% of respondents had pallor skin, followed by (37.5%) had pallor tongue, (35%) had CRT >3 seconds whereas only very small number of subjects had (7.5%) had spoon shaped nail.[9] This difference noted in terms of small sample size increased symptoms with the high prevalence rate.

CONCLUSION

Aneamia continue to be a major public health problem especially in the reproductive age group and the findings also indicated that merely 65% of women were affected with some form of anemia. Despite the efforts made to combat aneamia it continues to pose enormous burden on the health system of our country. Anaemia especially iron deficiency anaemia being one of the major cause for maternal mortality can be

identified and intervened at any stage. Behaviour change communication would tackle this issue by initiating timely interventions to protect the vulnerable group and save every single mother of a newborn baby.

REFERENCES

1. WHO (2011). Global Nutrition Targets 2025: Anaemia policy brief. Available from : http://www.who.int/nutrition/publications/globaltargets2025_policybrief_anaemia/en/
2. Park K. Parks Text Book of Preventive and Social Medicine. 23rd Edition. Jabalpur: Banarsidas Bhanot Publishers; 2015
3. Sharma JB, Shankar M. Anemia in Pregnancy. JIMSA 2010;23(4):253-60.
4. WHO. Vitamin and Mineral Nutrition Information System. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Available from :http://apps.who.int/iris/bitstream/10665/85839/3/WHO_NMH_NHD_MNM_11.1_eng.pdf?ua=1
5. National Family Health Survey, India, NFHS-3.Summary of findings. 2005-2006. Available fromhttp://rchiips.org/nfhs/volume_1.html
6. Jilani T, Iqbal MP. Risks associated with mild anemia in apparently healthy individuals: How to combat anemia in general population. Pak J Med Sci. 2010; 26 (4): 990-994. Available from http://www.pjms.com.pk/index.php/pjms/ Risks_associated_with_mild_Anemia_in_apparently_he.pdf
7. National Family Health Survey, NFHS-3. 2005-2006, India. Available from http://rchiips.org/nfhs/NFHS-3%20Data/TamilNadu_report.pdf
8. Siva PM, Sobha A, Manjula, VD. Prevalence of Anaemia and Its Associated Risk Factors Among Adolescent Girls of Central Kerala. J Clin Diagn Res 2016;10(11):LC19–LC23.
9. Mamta L, Devi T. Prevalence of Anemia and Knowledge Regarding Anemia among Reproductive Age Women. IOSR-JNHS 2014;3(2):54-60.