International Journal of Science and Research (IJSR)
ISSN (Online): 2319-7064
Index Copernicus Value (2013): 6.14 | Impact Factor (2013): 4.438

Anemia and its Determinants among Self Help Groups in Kerala

Prabhakumari C[1], Rini Raveeendran[2], Togy Zacharia[3]

[1]Professor and Head, Government Medical College, Thrissur, Kerala

[2]Assistant Professor, Department of Community Medicine, Government Medical College, Thrissur, Kerala

[3]Assistant Professor, Department of Pathology, Government Medical College, Thrissur, Kerala

Abstract: ***Introduction: Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health. Objectives: 1) To determine the prevalence of anemia in non-pregnant self help group workers (15-49yrs). 2) To assess the epidemiological determinants of anemia.3) To determine the pathological type of anemia. Materials and Methods: Descriptive cross sectional study was conducted among 136 non pregnant women of the self help group workers (15-49yrs) from urban area of Thrissur corporation area. They were selected by lottery method of random sampling. They were interviewed regarding the factors causing anemia by using pre-designed, pre-tested, structured schedule. Hemoglobin estimation was done by using analyser and anemia graded according to WHO criteria. The consent of the respondents was collected after obtaining informed consent. Results: Prevalence of anemia was 85.3%.Mean Hb level was found to be 10.45 gm%. The predominant types of anemia were Normocytic normochromic and Microcytic hypochromic anemia. Conclusion: Inadequate intake of green leafy vegetable consumption is significantly associated with anemia.***

Keywords: Self help group, anemia, green leafy vegetables, non pregnant, diet

1. Introduction

Anemia is a global public health problem affecting both developing and developed countries with major consequences for human health as well as social and economic development. It occurs at all stages of the life cycle, but is more prevalent in pregnant women and young children. In 2002, iron deficiency anemia (IDA) was considered to be among the most important contributing factors to the global burden of disease. The main risk factors for IDA include a low intake of iron, poor absorption of iron from diets high in phytates or phenolic compounds, and period of life when iron requirements are especially high (i.e. growth and pregnancy)[1].

2. Literature Survey

Hb concentration is the most reliable indicator of anemia at the population level. Anemia can be caused by factors other than iron deficiency. Strategies addressing other causes of anemia should be tailored to local conditions, taking into account the specific etiology and prevalence of anemia in a given setting and population group. [1]

3. Problem Definition

Globally, anemia affects 1.62 billion people (95% CI: 1.50–1.74 billion), which corresponds to 24.8% of the population (95% CI: 22.9–26.7%). The population group with the greatest number of individuals affected is non-pregnant women (468.4 million, 95% CI: 446.2–490).

ASIA[1]

Population groups	*Prevalence (%)*	*Affected millions*
Non Pregnant women (15–49 yrs)	**33.0**	318.3

INDIA[2]

NFHS 3(2005-06)	*Prevalence (%) of anemia*
Non Pregnant women (15–49yrs)	**55.3**

Haemoglobin thresholds used to define anaemia[1]

Age or gender group	Haemoglobin threshold (g/l)
Non-pregnant women (≥15.00 yrs)	120

Classification of anaemia as a problem of public health significance[1]

Prevalence Category of anaemia (%)	public health significance
≤4.9	No public health problem
5.0–19.9	Mild public health problem
20.0–39.9	Moderate public health problem
≥40.0	Severe public health problem

Justification for this study:
Prevalence of anemia in pregnancy shows great variations in different parts of the world. The present study is an attempt to determine the prevalence and to explore the epidemiological determinants of anemia among self help group workers (non- pregnant women).

AIM: To determine the prevalence of anemia in non-pregnant self help group workers of Thrissur, Kerala.

4. Objectives

1) To determine the prevalence of anemia in non-pregnant self help group workers (15-49yrs).
2) To assess the epidemiological determinants of anemia.
3) To determine the pathological type of anemia.

5. Materials and Methods

Study design: Community based Descriptive – Cross sectional study

Study setting: Thrissur urban corporation area

Study period: 1 year.

Study population: Self help group workers of Thrissur Kudumbasree units.

Inclusion criteria:
a. All non pregnant women self help group workers aged 15-49yrs.
b. Those who gave consent to participate in the study.

Exclusion criteria:
a. Pregnant women
b. Adolescents aged <15yrs.

Sample Size
Sample size 'n' was calculated using the formula**:** 4 pq / L^2 , where p=Prevalence of Anemia in India[2]=55.3% (NFHS 3, 2005-06), q=100-p=44.7%. Sample size was calculated with an allowable error (L) at 5% risk that the true estimate will not exceed the allowable error by 20% of p.

So n = 82**.** Non responders: 10%**.** Hence sample size needed was 90.As 136 women participated in the study, total sample size was 136.Sampling procedure used was lottery method of random sampling.

Methodology
Descriptive cross sectional study was conducted among the non pregnant women Self help group workers aged 15-49yrs from Thrissur urban corporation area. Self help group workers were selected by lottery method of random sampling. They were interviewed regarding the socio-demographic and other related factors causing anemia by using pre-designed, pre-tested, structured schedule. Hemoglobin estimation was done using auto-analyser and anemia graded according to WHO criteria. The consent of the respondents was collected after informing to them the purpose of the study.

Tools for Data Collection:
1) Interview schedule 2) Auto analyser

Statistical analysis:
Data was entered into Microsoft Excel and analysis done using SPSS software. Quantitative variables were expressed in terms of Mean, Standard deviation and qualitative variables analyzed using proportions. Relation between the variables was analyzed using Chi square. For test of significance p value <0.05 was considered as statistically significant.

Ethical Consent
Protocol was submitted to the Institutional Research and Ethical committee and approval obtained. Data collection was done after getting informed consent from the respondents.

6. Results

- A cross sectional study was done among 136 Self help group workers of Thrissur.

Table 1: Socio-demographic information of the Responders (n=136).

Variable	*Frequency*	*Percentage*
Age (Yrs)		
>35	108	79.4
<35	28	20.6
Religion		
Hindu	75	55.2
Muslim	21	15.4
Christian	40	29.4
Educational status		
No schooling	3	2.3
≤4th	1	0.7
5-12th	109	80.1
≥Degree	23	16.9
Occupation		
Homemaker	98	72.1
Tailor	6	04.4
Manual Labourer	3	02.2
Salesgirl	5	03.7
Others(domestic help)	24	17.6
Type of Family		
Nuclear	85	62.5
Joint	51	37.5
Marital status		
Married	121	89.0
Widow	14	10.3
Single	1	0.7

- 79% were aged more than 35 years.55% of families belonged to Hindu Religion, rest belong to Muslims & Christians.80% (majority) have 5th -12th standard Education.98(72.1%) of them were homemakers ,6 Tailors, 3Manual laborers, 5sales girls, remaining 24 do other works.85 (62.5%) belong to Nuclear family.121 (89%) were married, 14 (9.1%) were divorced/widow and 1 single.

Table 2: Practice of wearing sandals (n=136).

Sandal usage	*Frequency*	*Percentage*
Using always	130	95.6
Occasionally	6	4.4

- Out of the 136 Self help group workers, 130 were found to use chappals always.

Table 3: Reproductive Information (n=136)

Variable	*Mean*	*Standard Deviation*	*Range*
Age of 1st pregnancy(Yrs)	22.069	3.983	16-35
Age of Menarche(Yrs)	13.345	1.124	11-17

Menstrual history	*Frequency*	*Percentage*
Regular	123	90.4
Irregular	13	9.6

- Lowest age of 1st pregnancy was 16yrs and mean age of menarche was 13 yrs.123 (90.4%) workers have regular menstrual cycles.

Table 4: Dietary Pattern (n=136)

Dietary pattern	Frequency	Percentage
Vegetarian	2	1.4
Mixed	134	98.6

- 98.6 % of Self help group workers take a mixed diet.

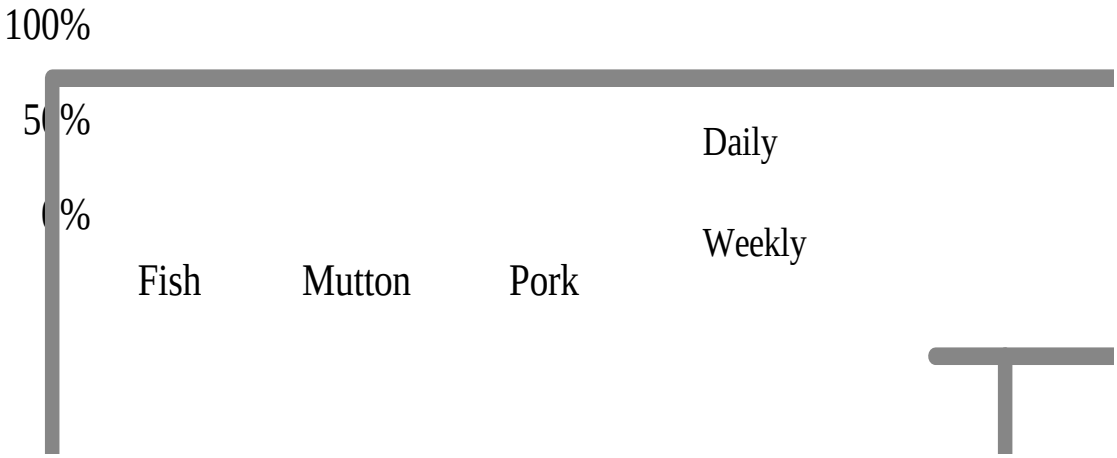
Table 5: Dietary Pattern- Specific consumption of Vegetarian food items (n=136)

Green Leafy Vegetable Consumption	*Frequency*	*Percentage*
Daily	6	4.4
2-3 times/week	55	40.4
Occasionally	62	45.6
Rarely	13	9.6

- Only 62(45.6%) person are occasionally taking GLV where as only 6 (4.4%) person are consuming GLV daily.

Table 6: Dietary Pattern- Specific consumption of Non vegetarian food items (n=136)

Consumption of Non vegetarian food items	*Frequency*	*Percentage*
Fish		
Never	7	5.1
Occasionally	14	10.3
2-3 times/week	85	62.5
Daily	30	22.1
Chicken		
Never	10	7.4
Occasionally	82	60.2
2-3 times/week	42	30.9
Daily	2	1.5
Mutton		
Never	89	65.4
Occasionally	43	31.6
2-3 times/week	4	3.0
Pork		
Never	102	75.0
Occasionally	34	25.0
Beef		
Never	50	36.8
Occasionally	61	44.9
2-3 times/week	24	17.6
Daily	1	0.7



Graph 1: Consumption of Non vegetarian food items

- 85(62.5%) takes fish 2-3 times per week along with the diet, 82(60.2%) self help group take chicken occasionally, 43(31.6%) consume mutton occasionally, 61 (44.9%) consume beef occasionally and 34(25%) consume pork occasionally.

Table 7: Characteristics of Anemia

Variable		
Hb Level	Mean Standard deviation	
Value	10.45	1.134
Status of Anemia(n=136)	Frequency	Percentage
Anemic	116	85.29
Non Anemic	20	14.71
Grading of Anemia(n=116)		
Mild (10.0-11.9)	74	63.79
Moderate (7.0-9.9)	42	36.21
Severe(<6.9)	0	0
Pathological Type(n=116)		
Normocytic normochromic	75	64.65
Microcytic hypochromic	34	29.31
Dimorphic	6	0.05
Macrocytic	1	0.008

- Mean Hb value was found to be 10.45 + 2x0.097 (SE) .Prevalence of anemia among the Kudumbasree workers were found to be 85.3%.Only 20 (14.71%) self help group workers have normal Hb level (>12g/dl).Out of the total 116 anemic self help group workers, none were having severe anemia. The predominant types of anemia were Normocytic normochromic (64.65%) and Microcytic hypochromic (29.31%) types which are the classical picture of iron deficiency anaemia.

Table 8: Determinants of Anemia (n=136)

Variable	Anemia (%)	Non anemia (%)	OR(95% CI)	X2 value	p value
Age in Years					
>35	94 (81)	14 (70)	1.831(0.632-5.302)	1.176	0.278
<35	22 (19)	6 (30)			
Family size					
>4	82(70.7)	18(90)	0.268(0.059-1.219)	2.351	0.125
<4	34(29.3)	2(10)			
Green leafy vegetable consumption					
Occasionally/Rarely	68(58.6)	7(35)	2.631(0.97-7.08)	3.848	0.05
Frequently	48(41.4)	13(65)			
Type of Family					
Nuclear	73(62.93)	12(60)	1.1318	0.0625	0.8025
Joint	43(37.07)	08(40)	(0.4287-2.9877)		
Menstrual Cycles					
Irregular	12	1	2.1923	0.115	0.7345
Regular	104	19	(0.269-17.863)		

- **Age and anemia**-Mean age of anemia was found to be 39±1.1 years. Age more than 35 yrs is a risk factor for anemia but anemia not found to be statistically significantly associated with age, (p Value: 0.362) after t test.
- **Family size and Anemia**-Increase in family size and anemia showed no statistically significant association.
- **Diet and Anemia**-Anemia is not associated with vegetarian / non-vegetarian diet but Inadequate green leafy vegetable consumption shows statistically significant association with anaemia.
- **Type of Family, Menstrual cycles**-Nuclear family, irregular cycles are a risk factor for anemia but is not statistically significant.

7. Discussion

- According to WHO cut off points ≥40.0% prevalence of anemia is a severe public health problem. This study has found a much higher prevalence of anemia 85.3% signifying a severe public health problem.
- NFHS 3[(2)] showed 55.3% prevalence of anemia in India. A study in Iran has shown a prevalence of 13.8%, against global prevalence of 24.8 %[(4)] .The prevalence in Asia is 33% [(1)]. Hence this study has found a much higher prevalence of anemia 85.3% compared to other studies [(1, 2, 3, 4),]
- The mean Haemoglobin level in this study was 10.45± 1.134 g/dl much lower than 13.07 ± 1.35g/dl [(4)].
- A higher prevalence was found above 35 yrs of age (69.11%) compared to study where it was 30.5% among 40-44yrs [(4)].
- This study has also found a statistically significant association between inadequate intake of green leafy vegetables and anemia .Other factors studied- type of family, education, family size, and menstrual cycles has not shown statistically significant association with anemia in this study which is similar to other studies [(3, 4).]
- Normocytic normochromic anemia and Microcytic hypochromic anemia have been predominantly found in this study which is amenable to effective treatment. This finding is similar to the study [(3)].

8. Conclusion

A higher prevalence of anemia (85.3%) reveals a severe public health problem which requires an effective health education regarding consumption of iron rich foods, adequate green leafy vegetable consumption and regular deworming to reduce the burden of anemia. Normocytic normochromic and Microcytic hypochromic types have been predominantly found in this study which is amenable to effective treatment.

9. Further Scope

Majority of anemia, if subjected to remedial measures show vast improvement. Yet further evaluation may be done to rule out other systemic causes. Details regarding worm infestation was not studied.

10. Recommendations

- Regular checkup and intake of Iron-folifer tablets.
- Deworming with Albendazole tablets.
- Inclusion of green leafy vegetables in daily diet.
- Nurture own kitchen garden at home.

11. Acknowledgement

Authors extend sincere thanks to all the participants and Dr Joy Augustine, Professor and Head of the Department of Pathology, Govt Medical College, Thrissur for cooperating during the study period. Authors are grateful to IRC/IEC, Govt Medical College, Thrissur for granting permission to conduct the study.

12. Funding

Monetary funding was provided by the Institution IRC committee towards the conduct of the study.

13. Conflict of Interest

None

References

[1] Worldwide prevalence of anemia 1993–2005, *WHO Global Database on Anemia.*
[2] Fred Arnold, Sulabha Parasuraman, P.Arokyasamy, and Monica Kothari.2009. Nutrition in India. *National family health survey (NFHS 3), India, 2005-06.* Mumbai: International Institute For Population Sciences; Calverton, Maryland, USA: ICF Macro.
[3] Prevalence of Anemia and Its Epidemiological Determinants in Pregnant Women. R.G. Vivek, A.B. Halappanavar, P.R. Vivek, S.B. Halki, V.S. Maled and P.S. Deshpande *Al Ame en J Med S c i (2 012)5 (3) :2 1 6 -2 2 3.*
[4] Prevalence of Anemia and Correlated Factors in the Reproductive Age Women in Rural Areas of Tabas.Majid Sadeghian, Ali Fatourechi, Mohammad Lesanpezeshki and Elham Ahmadnezhad, J Family Reprod Health. 2013 Sep; 7(3): 139–144.

Author Profile

Dr C Prabhakumari, Professor and Head of the Department of Community Medicine, Govt Medical College, Thrissur has been working actively as the Head of Department for the past 12 years. She has guided many PG thesis as well as projects, presented in many conferences. She graduated from Trivandrum Medical College in 1980 and completed her Post graduation from Kottayam Medical College in 1990.

Dr Rini Raveendran is working as Assistant Professor in the Department of Community Medicine, Govt Medical College, Thrissur for the past 5 years .She has presented in many conferences. She graduated in 2001 and completed her post graduation in 2008.

Dr Togy Zacharia is working as Assistant Professor in the Dept of Pathology, Govt Medical College, Thrissur.