

A Study on Socio-Economic and Demographic Factors on Anaemia among Rural Women

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ARTICLE INFO

Article history:

Received: 18 December 2015;

Received in revised form:

1 February 2016;

Accepted: 6 February 2016;

Keywords

Anaemia,
Haemoglobin,
Blood,
RBC,
WBC.

ABSTRACT

Anaemia is a common health problem among women throughout the world. The present study with the objective to assess the nutritional status of rural village women and to study the knowledge of village women regarding Anaemia. In addition to this, the effect of various socio-economic and demographic factors on Anaemia related knowledge of village women are assessed. The cross sectional study was carried out in Punavasal village of Tiruvarur District in Cauvery delta region, Tamil Nadu. A total of 1000 respondents were selected randomly. Their knowledge was tested and socio-demographic and nutritional profile was recorded. Conclusion was that knowledge of rural women was found to be very poor in regard of Anaemia, nutritional status was unsatisfactory. To eradicate the problem of Anaemia a more intense awareness campaign is required in the region.

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Introduction

India is one of the few countries in the world where women and men have nearly the same life expectancy at birth. The fact that the typical female advantage in life expectancy is not seen in India suggests there are systematic problems with women's health. Indian women have high mortality rates, particularly during childhood and in their reproductive years. The health of Indian women is intrinsically linked to their status in society. While women in India face many serious health concerns, this study focuses on only Anaemia.

The word "Anaemia" comes from the ancient Greek meaning "lack of blood." It is a decrease in the normal number of Red Blood Cells (RBCs), or less than the normal quantity of haemoglobin (the protein in RBCs that transports oxygen to tissues) in the blood. Anaemia is the most common nutritional deficiency disorder in the world. It is a condition that occurs when the red blood cells do not carry enough oxygen to the tissues of the body. Anaemia is also defined as a condition in which the Haemoglobin (Hb) content of blood is lower than normal which causes as a deficiency of one or more essential nutrients. Most of the Anaemias are due to inadequate supply of nutrients like iron, folic acid and vitamin B12, proteins, amino acids, vitamins A, C, and other vitamins of B-complex group i.e., niacin and Pantothenic acid are also involved in the maintenance of haemoglobin level.

Anaemia is a blood disorder. Blood is a vital liquid that the Heart constantly pumps through the veins and arteries and all throughout the body. When something goes wrong in the blood, it can affect health and quality of life. Many types of anaemia exist, such as iron-deficiency anaemia, pernicious anaemia, aplastic anaemia, and Haemolytic anaemia. The different types of anaemia are linked to various diseases and conditions. Anaemia can affect people of all ages, races, and ethnicities. Some types of anaemia are very common, and some are very rare. Some are very mild, and others are severe or even life-threatening if not treated aggressively. The good

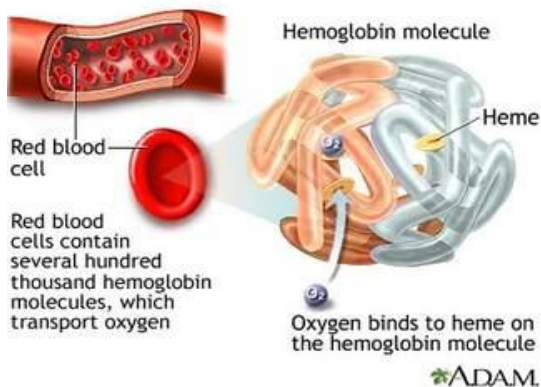
news is that anaemia often can be successfully treated and even prevented.

Anaemia is the most common form of malnutrition in the world and is the eighth leading cause of disease in girls and women in developing countries (World bank 1993). About one-third of the global population is Anaemic (WHO 2010). Its estimated prevalence in South-East Asia is 50% to 70% (UNICEF 2002). In India, two-thirds of the women of Child bearing age are estimated to suffer from iron deficiency Anaemia. Reports indicate that 15% of all maternal deaths are attributed to Anaemia (IIPS 2007; Chaka 2000; National Nutrition Monitoring Bureau 2002; Micronutrient Initiative 2007). The high prevalence of Anaemia among women in India is a burden for them, for their families, and for the economic development and productivity of the country (Bentley and Griffiths 2003). Whereas severe anaemia is closely related to risk of mortality, even mild anaemia carries health risks and reduces the capacity to work (Cohen and Giber 1980). Severe anaemia is known to result in obstetric risks such as fetal complications and increased infant and maternal mortality, a variety of functional disabilities such as reduced working capacity, defective immune response, impairment of learning ability and physical fitness occur even in mild to moderate anaemia. In spite of programmes, there is no significant decline in the prevalence of anaemia in the country. Poor knowledge of the dietary requirements and the nutritive value of different foods is an important contributory cause of widespread occurrence of malnutrition among vulnerable Section of the population in the developing countries. Prevalence of anaemia in all the groups is higher in India as compared to other developing countries. In India, Anaemia affects an estimated 50% of the population. The problem becomes more severe as more women are affected with it as compared to men. It is estimated that about 20%-40% of maternal deaths in India are due to Anaemia and one

in every two Indian women (56%) suffers from some form of Anaemia.

Importance of Hemoglobin

Hemoglobin is a molecule comprised of four subunits. Each subunit contains an iron containing pigment (heme) and a protein (globulin). There are two types of subunits, alpha and beta. Each gram of hemoglobin can carry 1.34 ml of oxygen. The oxygen carrying ability of blood is directly proportional to its Hemoglobin concentration. The numbers of red blood cells does not indicate blood's oxygen content because some cells may contain more Hemoglobin than others. Hemoglobin determination is used to screen for Anaemia, to identify the severity of anaemia, and to assist in evaluating the patient's response to Anaemia therapy. Hemoglobin also serves as an important Ph buffer in the extracellular fluid.



Normal hemoglobin values are

- Adult: (males): 13.5 - 17 g/dl
- (females): 12 - 15 g/dl
- Pregnancy: 11 - 12 g/dl
- Newborn: 14-24 g/dl

Haemoglobin: critical low and high values

- A haemoglobin value under 5 g/dl may cause heart failure
- A haemoglobin value over 20 g/dl may cause clogging of capillaries due to haemoconcentration

Increased levels of haemoglobin are found in any condition in which the number of circulating red blood cells rises above normal. Examples of conditions associated with increases in haemoglobin are Polycythemia vera, severe burns, chronic obstructive pulmonary disease and congestive heart failure.

The causes of anaemia can be acquired or inherited. "Acquired" means we aren't born with the condition, but we develop it. "Inherited" means our parents passed the gene for the condition on to us. Sometimes the cause of anaemia is unknown.

There are more than 400 types of anaemia, which are divided into three groups:

- Anaemia caused by blood loss
- Anaemia caused by decreased or faulty red blood cell production
- Anaemia caused by destruction of red blood cells.

Signs and symptoms of Anaemia

The most common symptom of anaemia is fatigue (feeling tired or weak). If we have anaemia, we may find it hard to find the energy to do normal activities.

Other signs and symptoms of anaemia include

- Shortness of breath
- Dizziness
- Headache
- Coldness in the hands and feet
- Pale skin
- Chest pain

These signs and symptoms can occur because the heart has to work harder to pump oxygen-rich blood through the body. Mild to moderate anaemia may cause very mild symptoms or none at all.

The present study is to assess the nutritional anaemia related knowledge of rural women, their nutritional status, dietary intakes and to see the association of various socio-economic and demographic factors, on the nutritional knowledge of rural women of the village Punavasal in Tiruvarur District. We observed from the study that adolescent girls, who constitute a sizable segment of its population form a vulnerable group and are at a greater risk of morbidity and mortality. It is the shaping period of life when maximum amount of physical, psychological and behavioural changes takes place. This is a vulnerable period in the human life cycle for the development of nutritional anaemia. Adolescent girls are particularly affected by Anaemia because of increased demand of iron for Haemoglobin, Myoglobin and to make up the loss of iron due to menstruation and Poor dietary habits. Moderate and severe Anaemia is seen even among both educated families with higher income and illiterate with lower level income in this village and also Pregnant women with Hb less than 8 g/dl constitute a high risk group. Other than pregnant women and lactating mothers, scenario is not good in the normal population. May be majority of them were belonging to scheduled class which is considered so they might be living in sub standard conditions and deprived of proper diet. Hence, these findings suggest continuation of anaemia throughout life of women in this village.

Objective of the study

To document the prevalence, age distribution, and risk factors for Anaemia in Punavasal village people, there by assisting in the development of effective strategies for controlling Anaemia. The basic intention behind the survey is to know whether they are satisfied with their nutritional status, economic condition, health condition etc., and also to know about the government schemes and policies and how far they reach the people.

Methodology

A total of 1000 respondents (628 are women and 372 are men), from Punavasal village in Tiruvarur district, Tamil Nadu were selected. Hemoglobin was estimated by the Whatman Filter Paper Method. Data on socio-demographic characteristics, pregnancy, nutritional status and dietary intakes were collected. The study was carried out from July 2014 to august 2014.

Discussion

Details

Punavasal is a small village in Needamangalam Taluk in Tiruvarur district of Tamil Nadu state, India. It is located 8 km towards west from district head quarters Tiruvarur. 11 km from Koradacherry. 313 km from state capital Chennai. Tiruvarur, Thiruthuraiipoondi, Nagapattinam, Karaikal are the nearby cities to Punavasal.

Demographics

According to 2001 census, Punavasal village had a population of 1,274 with a sex-ratio of 652 males and 622 females. The sex ratio was 954. The average literacy of the village was 70.77%. In Tiruvarur District 42 Primary Health Centres are functioning . Each Primary Health centre should cover 30,000 population to provide Health facilities. In Tiruvarur District 195 Health Sub Centres are functioning . Each Health Sub Centre should cover 5000 population to provide Health facilities. One Village Health Nurse is working in each HSCs. Punavasal Primary Health Centre contains five Health Sub Centres.

History

The Tiruvarur District along with the Nagapattinam District was part of the Tanjore district before 1991. After that, the present Taluks of Tiruvarur district and Nagapattinam district were separated from the Tanjore district and formed the Nagapattinam district. The present Tiruvarur district was formed in 1997.

Economy

Punavasal village lies in the kaveri basin and the main occupation of the inhabitants of the town and surrounding regions is agriculture. More than 70% of the work force is involved in agriculture, 14% being cultivators and rest are agricultural labourers. Paddy is cultivated in three seasons namely

- Kuruvai (june-august)
- Samba (august-january)
- Thaladi (January-march)

More than the rates fixed by the Tamil Nadu Government, but due to the decline in the number of days of work, the income levels are lower. As of 1998, the male labourers were employed 150 days a year, while the female labourers for 120 days. A government report in 2006, put these numbers at 120 and 100 days respectively. Due to the discontinuity in the working days, the labourers migrate to other states like Gujarat and Kerala. They are also shifted to other professions like construction industry in the urban centres and textile industry in the district.

Tiruvarur town



Location of Tiruvarur District in Tamil Nadu and India

Table 1. Distributions of respondents based on their sex

Sex	Number of respondents
Male	372
Female	628
Total	1000

Table 2. Distributions of respondents based on their age

Age	Number of respondents
Below 13	75
13-18	200
19-25	250
26-50	350
Above 50	125
Total	1000

Table 3. Distributions of women based on their age

Age	Number of respondents
Below 13	51
13-18	121
19-25	158
26-50	212
Above 50	86
Total	628

Table 4. Distributions of men based on their age

Age	Number of respondents
Below 13	24
13-18	79
19-25	92
26-50	138
Above 50	39
Total	372

Table 5. Distributions of respondents based on their marital status

Marital status	Number of respondents
Married	475
Unmarried	525
Total	1000

Table 6. Distributions of respondents based on their education level

Education	Number of respondents
<10	593
<HSC	148
UG	54
PG	23
NIL	182
Total	1000

Table 7. Distributions of respondents based on their nature of occupation

Occupation	Number of respondents
Agriculture	692
Other aspects	223
Nil	85
Total	1000

Table 8. Distributions of respondents based on their income level

Income in rupees	Number of respondents
Below 1000	72
1000-2000	122
2000-4000	434
4000-6000	195
Above 6000	105
Nil	72
Total	1000

Table 9. Distributions of respondents based on the house type

House type	Rental	Own house	Total
Thatched	112	654	766
Concrete roof	30	204	234
Total	142	858	1000

Table 10. Distributions of respondents based on their future plan towards their children's education

Children's education	Number of respondents
Primary	09
SSLC	178
HSC	97
Graduate	136
Total	420

Table 11. Distributions of respondents of their nutritional status

Good Nutritional status	Number of respondents
Below 13	13
13-18	31
19-25	62
26-50	78
Above 50	33
Total	217

Table 12. Distributions of respondents of their nutritional awareness

Nutritional awareness	Number of respondents
Below 13	4
13-18	21
19-25	34
26-50	63
Above 50	28
Total	150

Table 13. Distributions of respondents of their knowledge regarding Government schemes and Policies about anaemia

Reach Government Schemes	Number of respondents
Below 13	01
13-18	14
19-25	43
26-50	58
Above 50	22
Total	138

Table 14. Distributions of Women affected in Anaemia due to mensuration

Menstrual age	Number of respondents
Less than 13	07
13-18	68
19-25	76
26-50	148
Total	299

Table 15. Distributions of Women affected Anemic in reproductive age

Reproductive age	Number of respondents
Less than 19	68
19-25	76
Below 50	158
Total	302

Table 16. Distributions of Pregnant Women affected in Anaemia

Pregnant women	Number of respondents
Less than 19	04
19-25	26
Below 50	38
Total	68

Table 17. Distributions of Lactating Women affected by Anaemia

Lactating women	Number of respondents
13-18	3
19-25	11
26-50	14
Total	28

Table 18. Distributions of risk pregnancy Anaemia

Risk pregnancy	Number of respondents
Less than 19	03
19-25	19
26-50	28
Total	50

Table 19. Distributions of low birth child due to Anaemia

Low birth child	Number of respondents
Less than 19	02
19-25	14
26-50	21
Total	37

Table 20. Distributions of Women having more than three child

More than three children	Number of respondents
Less than 19	01
19-25	03
26-50	131
Total	135

Table 21. Distributions of Women Getting sick due to Anaemic per month

Getting sick instantly	Number of respondents
Less than 12	20
13-18	26
19-25	103
26-50	207
Above 51	82
Total	438

Table 22. Distributions of respondents who have Some other diseases due to Anaemia

Having Some other diseases	Number of respondents
Less than 19	18
19-25	62
26-50	158
Above 51	71
Total	309

Table 23. Distributions of Women respondents facing women hassarment

Facing women hassarment	Number of respondents
Yes	257
No	371
Total	628

Table 24. Distributions of Female Anaemic

Female Anaemic in ages	Number of respondents
5-12	18
13-18	68
19-25	76
26-50	158
Above 50	66
Total	386

Table 25. Distributions of male Anaemic:

Male Anaemic in ages	Number of respondents
5-12	04
13-18	26
19-25	30
26-50	52
Above 50	26
Total	138

Table 26. Distributions of overall Anaemic

Sex	Number of respondents	Anaemic percentage
Women	386	61.46%
Men	138	37.09%
Both	524	52.40%

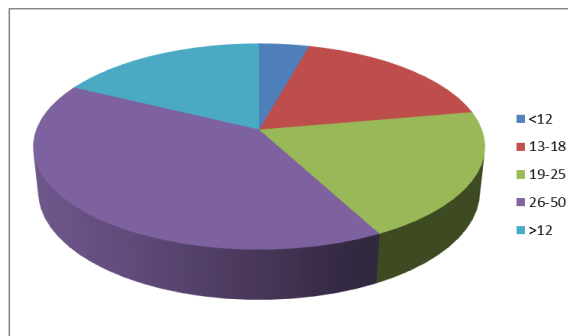


Diagram 1. The Pie- Diagram depicts the overall Women Anaemic

Women having severe Anaemia at the age group of 26-50

Table 27. Distributions of respondents based on their opinion about the various services provided by the government(out of 1000 respondents)

Services	VG	G	M	S	NS
Nutritional status	62	130	240	132	436
Health care centre	85	580	104	121	110
Availability of medicines	60	172	189	251	328
Municipality services	54	234	312	237	163
Quality of food items provided in ration	32	153	265	197	353
Water facility	161	284	135	186	234
Power supply	18	92	164	342	384
Gas facility	46	68	95	117	674
Rural employment	58	259	95	125	463
Salary structure	28	52	118	217	585
Fees structure in government schools	413	276	106	121	84

VG-very good, G-good, M-moderate, S-satisfied, NS-not satisfied

Findings

- 20% of respondents are Anaemic in the age group of 13-25. Especially girls are 14%.
- 18.2% are illiterate.
- 92.3% are not graduate.
- 71.3% of people are getting poor salary.
- 69.2% of people are working as a farmer.
- 42% of people are giving good education to their children.
- 21.7% of people having good nutritional status.
- 15% of people having nutritional awareness regarding Anaemia.
- 13.8% of people know the government schemes and policies regarding Anaemia.
- 47.6% of girls are anaemic due to their menstruation.
- 48.08% of women are anaemic in reproductive age.
- 43.8% Of people are in severe anaemic.
- 47.6% of people are slightly affected in Anaemia.
- 40.92% of women respondents facing women hassarment.
- 20.92% of women are anaemic.
- 18.46% of women having risk pregnancy.
- 11.38% of women having low birth child.
- 41.53% of women having more than three children.
- 30.09% of people having some other diseases due to Anaemia.
- 61.46% of women are anaemic in out of 628 respondents.
- 37.09% of men are anaemic in out of 372 respondents
- 52.4% are anaemic in out of 1000 respondents

3. Dietary Interventions to Reduce and Prevent Anaemia

Iron absorption can be improved by changing the foods consumed or their composition. One way to improve the absorption of iron from food is to increase the intake of vitamin C. Vitamin C is probably most effective for improving the absorption of fortificant iron added to foods. The addition of meat or fish to a meal provides not only more absorbable iron, but also increases the absorption of non-haem iron, including fortificant iron. In Thailand, both iron and vitamin C intakes were increased as intended, as well as

serum ferritin in school girls, although they also received iron supplements and better school lunches.

There are opportunities on the horizon to improve iron status through genetic enhancement of plants. A maize variety that is low in Phytate has been produced in relatively small amounts. The single efficacy trial of iron absorption from this source showed that iron absorption was improved from 5% in control maize to 8% in the low phytate maize. Genetic modification to insert ferritin synthesizing genes into rice and other cereals is also being evaluated.

3.1 General food consumption pattern of low- and middle-/high- income population

MEAL	FOOD CONSUMED	
	LOW-INCOME POPULATION	MIDDLE-/HIGH-INCOME POPULATION
Morning	Tea	Tea or coffee
Breakfast/lunch	Wheat and/or millet chapatti or rice+tea; vegetable; pickle; onion+salt+chilli; jaggery	Wheat parantha(sort of chapatti shallow fried on an iron pan) and/or millet chapatti+milk or curd (a type of yoghurt) and/or pulse+banana or bread, butter,jam+fruit.
Mid-morning	Tea(sometimes)	Tea or coffee +snack (biscuit,sandwich,samosa or pakora or burger)
Lunch	-	Wheat and/or millet chapatti or rice+vegetable and/or pulse+ salad and/or fruit
Mid-afternoon	Tea+sometimes a small burn or biscuit or savoury snack	Tea or coffee+ snack(biscuit, sandwich, samosa or parkora, or burger)
Evening/dinner	Same patterns as for brunch, generally includes a vegetable or pulse	Same as lunch with more variety

3.2Combinations and proportions of foods for daily consumption to enhance iron bioavailability

	MENU	FOOD, RAW EDIBLE PART(g)
Early morning	Tea with milk/lime or herbal tea+ biscuits (two) or rusk(one) Sugar	150+50/10 or150 5
Breakfast	Stuffed chapatti or pranantha wheat+ potato(boiled) Curd(like yoghurt) or milk	100+75 100
Lunch	Wheat+ millet flours+ cauli flower chapatti Lenitl dal Cabbage,raw+potato+lime juice salad Jiggery+gingelly seeds gazak	50+50+50 30 25+30+15 10+10
Mid-afternoon	Tea with milk/lime or herbal tea Sugar Snack(sweet or savoury), 1 or 2 pieces or equivalent	150+50/10 or 150 5
Dinner	Rice khichdi: Rice parboiled+ green gram split+ amaranth leafy vegetables onion stalks guava, orange or papaya	100 30 75 50 50

3.3 Women's food consumption: percent distribution of married women by frequency of consumption of specific foods, 1996-99

Type of food	Frequency of consumption (% of women)					
	Daily	Weekly	Occasionally	Never	Missing	Total
Milk or curd	37.5	17.4	34.1	10.9	0.0	100.0
Pulses or beans	46.8	40.8	11.6	0.6	0.0	100.0
Green leafy vegetables	41.8	43.4	14.3	0.4	0.0	100.0
Other vegetables	65.1	28.0	6.6	0.2	0.0	100.0
Fruits	8.1	24.9	62.2	4.7	0.1	100.0
Eggs	2.8	25.0	37.9	34.2	0.0	100.0
Chicken, meat or fish	5.8	26.1	37.3	30.8	0.0	100.0

4. Suggestions and Conclusions

4.1 Suggestions for improving nutritional status

In the light of the above discussion, it is necessary to discuss some strategies required for improving the nutritional status of the village people. Some of the important considerations are the following

1. Maternal nutrition intervention programmes need to examine the role of micronutrient rich foods. Interventions to improve pre-conceptional maternal nutritional status of rural young girls may be more beneficial than those during pregnancy.
2. In view of the increasing importance of micronutrients identifying functional or protective foods consumed in different rural communities of the village is essential.
3. Most problems related to maternal and child health will need awareness in this village mothers as supplementation cannot be a permanent solution.
4. While it may be difficult to increase age at marriage in rural areas, postponement of first pregnancy appears to be a feasible and achievable goal to ensure better reproductive health.
5. Policy for free education to girls implemented in some states of India has long term health benefits, as it will automatically delay the age at marriage and conception.
6. It is highly essential that children below three years are covered in the on-going Nationwide Intervention Programme so that they can have better adolescent growth and adult size.
7. Drastic shifts in diet pattern and activity occurring in urban populations owing to nutritional transitions are partly responsible for increased prevalences of adult diseases. The rural population may experience similar risks even at a relatively lower level of shift in diet pattern.

Finally, it cannot be denied that formulating appropriate programmes and strategies are essential but effective implementation is the key to success. Efforts are necessary for exploring non-nutritional avenues such as imparting knowledge about nutritional needs during pregnancy, lactation and infancy, and creating nutritional and health awareness among rural rural to ensure a better quality of life for the next generation.

4.2 Conclusions

In the above discussions we observed that 61.46% of women, 37.09% of men are Anaemic. Most of the women having severe anaemia in the age group of 26-50. Prevalence

of anaemia was high among all age groups of women. Very high prevalence of anaemia having indicates that the anaemia continues to be a major public health problem in this village. From the results it can be concluded that nutritional status as well as nutritional knowledge of the village women is unsatisfactory. So there is need for regular supply of iron and folic acid tablets at Anganwadi Centres. New program strategies are needed and also the ongoing Awareness programmes if carried with proper motivation would help in combating the nutritional problems of the village.

Acknowledgement

The authors are thankful to the people of Punavasal village who have given their cooperation for doing the survey. The second author thankful to UGC for supporting through Rajiv Gandhi National Fellowship.

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