



“ASSESSMENT OF KNOWLEDGE, ATTITUDE AND PRACTICE TOWARDS ANAEMIA IN ADULT FEMALE PATIENTS IN A TERTIARY CARE CENTRE IN PUDUCHERRY – A CROSS SECTIONAL STUDY”

Dr. Kondugari Mrudula Theresa	Third Year Post Graduate, Department of General Medicine, SVMCH & RC, Puducherry, India. ORCID ID: 0009-0001-1123-270X
Dr. Samuel Appadurai Alexander. R	Associate Professor, Department of General Medicine, SVMCH & RC, Puducherry, India.
Dr. Suresh. K	Professor and Head, Department of General Medicine, SVMCH & RC, Puducherry, India.

ABSTRACT **Back ground** Anaemia is considered to be the most common nutritional deficiency worldwide. Inappropriate knowledge and indifferent attitude regarding healthy eating among females result in deterioration of their anaemic state. **Objectives** To assess the Knowledge, Attitude and Practice towards Anaemia in adult female patients attending General Medicine OPD in Sri Venkateshwaraa Medical College Hospital and Research Centre, Ariyur, Puducherry. **Material And Methods** The present study was cross sectional study carried out among the adult female patients attending the outpatient department, department of general medicine. The study period is of 3 months. Patients with hereditary anaemia, chronic illnesses were excluded. Informed consent was obtained from all the participants participated in the study. The sample size was estimated to 200. The data was collected in a semi structured questionnaire. Statistical analysis was done using descriptive statistics. **Results** 83.5% had known about anaemia, 76.5% had known about symptoms and 74% the causes. 77% had known iron rich foods. 84.5% thought anaemia to be serious health problem. 73.5% interested in knowing their anaemic status. 67.5% were willing to take medication for anaemia. Only 39% thought they can be anaemic. 78% wash hand with soap after defecation. 25.5% regularly skipped some meal. **Conclusion** Addressing the knowledge gap regarding food interactions is vital as many had reported to consume coffee/tea alongside food and only fewer proportion were suspecting anaemia in them which again is barrier to screening. Only few had reported to eat green leafy vegetables/fresh meat.

KEYWORDS : Anaemia, knowledge, attitude, practice, iron deficiency, iron folic tablets, haemoglobin.

INTRODUCTION

Anaemia is characterised by either affect in the number of red blood cells (RBCs) or the haemoglobin concentration within the RBCs are lower than normal. The above results in decreased oxygen carrying capacity of blood leading and also lead to various complications during one's life time¹. World Health Organisation had defined anaemia as haemoglobin level of less than 12 gram per decilitre².

Anaemia is a serious global public health problem¹. It occurs in all life stages of a person and more prevalent among females of reproductive age group (15 to 49 years) and young children¹. Estimates had stated that 42% of all pregnant women is anaemic while the proportion was 30% among the non-pregnant women. Africa and Asia together contribute to 85% of all the high-risk groups where anaemia occurs more frequently¹. Anamia among pregnant women also contributes to considerable maternal and perinatal mortality and morbidity⁵. The causes of anaemia are always multifactorial⁴.

Anaemia is the most common nutritional deficient disease globally. It was documented that 95% of the anaemia cases is the result of poor dietary intake⁶. The other causes of iron deficiency anaemia (IDA) include decreased absorption and blood loss⁷. The consequences of IDA include decreased physical capacity, poor work performance, impaired cognitive performance, behaviour and growth⁸.

Assessment of knowledge, attitude and practice is vital before putting forth any nutritional intervention⁹. The present study was conducted to find out the Knowledge, Attitude and Practice towards Anaemia in adult female patients attending General Medicine OPD in Sri Venkateshwaraa Medical College Hospital and Research Centre, Ariyur, Puducherry. Only few studies were conducted with similar objectives in the past. The study will provide insight regarding the knowledge about anaemia, its causes, prevention methods and treatment among the women and their attitude towards anaemia.

MATERIAL AND METHODS

The present study was cross sectional study carried out among the adult female patients aged more than 18 years attending to the outpatient department of general medicine, Sri Venkateshwaraa Medical College Hospital and Research centre, Puducherry. The study was carried out for a period of 3 months between September 2023 and November 2023. Ethical clearance for the study was obtained from the

institutional ethics committee. Informed consent was obtained from all the participants.

The sample size for the study was determined using the open epidemiology software 3.01. The confidence interval was kept at 95%, The margin of error at 0.7%. The expected frequency was 64.4% (Monika Singh et al)¹⁰. The sample size was calculated to be 200. Convenient sampling was followed. The data for the study was collected using a validated and pre tested structured questionnaire.

The questionnaire consisted of four parts. Part I dealt with socio demographic variables. The socio demographic variables included into the study were age, sex, place of residence, education, monthly income, employment status, height, weight and BMI. The other histories collected include any history of recent pregnancy, miscarriage and heavy menstrual bleeding. Following the sociodemographic part is the knowledge, attitude and practice parts, respectively. The knowledge part consisted of 10 questions and each question is provided with a yes/no answer. Similarly, the attitude part consisted of 10 questions and the initial 9 questions had yes/no answer. For the last question regarding consumption of iron supplements along with milk, the options were more effective, less effective, no effect and don't know. The last one was the practice part which also consisted of 10 questions. All the questions were provided with yes or no answer except one where the options were regularly and once in a while.

The data collected were entered into Microsoft excel 2019 and the master chart was created. The master chart was then loaded onto SPSS version 26 for statistical analysis. Descriptive statistics were used in analysis of the data. The qualitative variables were expressed using frequency and percentage. Bar charts were used to represent the data pictographically.

RESULTS

Among the 200 female participants included into the study, 68 (34%) were in the age group between 41 to 50 years followed by 54 (27%) in the age group 31 to 40 years. 118 (59%) resided in rural area. 56 (28%) studied up to middle school followed by 40 (20%) studied up to high school. 26 (13%) were graduates. 72 (36%) were housewives followed by 51 (25.5%) were unskilled labourers. 89 (44.5%) were earning between 5001 and 10000 rupees monthly and 45 (22.5%) earned less than 5000 rupees monthly. 138 (69%) were married and 38 (19%) were

either separated or widowed. 151 (75.5%) were non vegetarians. 91 (45.5%) were of normal weight, 65 (32.5%) were over weight and 27 (13.5%) were obese. 63 (31.5%) had history of recent pregnancy. 89 (44.5%) had history of miscarriages in the past. 73 (36.5%) were reported to have heavy menstrual bleeding (Table 1).

167 (83.5%) has known what exactly anaemia is. 148 (74%) correctly stated at least one cause of anaemia. 153 (76.5%) answered correctly the symptoms of anaemia. 129 (64.5%) had known various ways to prevent anaemia. 78 (39%) thought unsafe drinking water practice can cause anaemia. 121 (60.5%) answered that heavy menstrual bleeding can cause anaemia. 154 (77%) has known regarding the food's rich in iron. 97 (48.5%) answered that beverage like coffee or tea can hinder iron absorption. 108 (54%) reported that anaemia could result in heart failure. 143 (71.5%) answered anaemia can complicate labour and cause maternal death (Table 2).

With regard to attitude related questions, 169 (84.5%) reported anaemia to be serious health problem. 78 (39%) thought that they were likely to be anaemic. 147 (73.5%) were interested in knowing their anaemic status. 113 (56.5%) were willing to check haemoglobin yearly once. 194 (97%) thought anaemia can be corrected. 135 (67.5%) were willing to take medications if they were found to be anaemic. 115 (57.5%) felt confident in preparing iron rich foods. 140 (70%) thought anaemia to be more common in women than men. 93 (46.5%) thought barefoot walking can cause anaemia. 98 (47%) reported that consuming iron supplements with milk as less effective and 54 (27%) reported it to be effective (Table 3 & Fig 1).

With regard to practice, 156 (78%) reported washing hands with soap after defecation. 41 (20.5%) reported they used to walk barefooted outside home. 128 (64%) reported to consume citrus fruits often. 83 (41.5%) reported to drink either coffee or tea following a meal. 96 (48%) reported to regularly consume green leafy vegetables, fresh meats. 83 (41.5%) had reportedly checked their haemoglobin in the past 6 months. 118 (59%) reported that they have consumed iron folic acid tablets following the diagnosis of anaemia. 187 (93.5%) reported to consume home cooked food in regular basis. 149 (74.5%) reported to skip meals once in a while. 87 (43.5%) reported to cook in iron utensils (Table 4).

DISCUSSION

Anaemia is a global public health problem and is estimated to be in 42% of pregnant women and 30% of non-pregnant women in developing countries¹⁴. It is also responsible for significant mortality and morbidity among women⁵. Iron deficiency anaemia was found to be most common type most women suffer from and it is preventable through various life style modifications and appropriate dietary changes⁶. The baseline knowledge, attitude and practice are very important for providing the tailor-made information so as to aid in the above said modifications⁹.

The present study was cross sectional study carried out among females attending a tertiary care hospital for a period of 3 months with objective of knowing the pattern of knowledge, attitude and practice towards anaemia among them. The total sample size estimated was 200. Informed consent was obtained from all the participants included into the study.

In the present study, Majority had known what anaemia actually is. Two third had correctly stated at least one cause of anaemia. Many had also stated ways to prevent anaemia correctly. Around 60% were aware that heavy menstrual bleeding can lead to anaemia. 54% were aware that anaemia leads to heart failure. About 70% were aware that anaemia can complicate labour and result in maternal death. In a study by Shahzad S et al, ever participant had known about anaemia and similar to present study most have also known the cause of the disease¹¹. Abu BAZ et al reported many have stated general weakness and tiredness as the symptoms of anaemia¹². In contrast to the present study where the knowledge was good among many participants, Around SAEH et al reported it to be on the lower side among their participants³.

With regard to attitude, almost 85% thought anaemia is serious illness in the present study on the other hand only a few suspected that they would suffer from anaemia. Two third were interested in knowing their anaemic status and about half were willing to check for haemoglobin every year. Almost every participant's thought anaemia is correctable.

More than half were of positive attitude towards consuming medications and preparing iron rich foods. Some participants lacked the knowledge that bare foot walking can cause anaemia and around 30% were of idea consuming milk aids in the absorption of iron. Similar to the present study where only smaller proportion had thought that they were likely to be anaemic a study by Huang C et al also reported the same. In contrast to the present study in the study by Huang C et al only one third thought anaemia to be serious problem. In the same study most had thought they were capable of cooking iron rich foods¹⁴. A study by Jose S et al presented results similar to the present study where almost 45% thought anaemia to be serious health problem. Two third thought it was important to prepare iron rich foods and almost 60% mentioned it was not difficult to prepare iron rich foods and same proportion was confident about preparing it too¹⁵. Angadi and Ranjitha reported almost 60% of their participants included iron rich foods in diet and only half had the idea that iron and folic acid tablets prevent anaemia¹⁶.

In the present study, most participants were washing hands with soap following defecation. One in five reported to walk bare footed outside home. Around 60% reported to consume citrus fruits often and about half consumed green leafy vegetables and fresh meet. A majority were consuming home cooked food in regular basis and many too have skipped meals once in a while. Around 60% consumed iron and folic acid tables following the diagnosis of anaemia. 43.5% reported to be cooking in iron utensils. Munira L et al reported that feeling nauseated following the intake of iron tablets is a hindrance to the practice¹⁷. Similar to present study, study by Raksha M et al also reported 60% women to have the idea regarding iron rich foods¹⁸. The limitations of the study were that the practice part was self-reported and the generalisability of the results have to be done cautiously.

CONCLUSION

People were lacking knowledge regarding the role food interaction plays in the absorption of iron. They were also unaware regarding the complications of anaemia as it can even lead to heart failure. Addressing the above knowledge gap is essential in the fight against anaemia. Only few participants suspected that they will be anaemic and the above act as hindrance for subjecting themselves to screening activities. Addressing the identified gaps in knowledge and attitude domains will in turn increases the proportion of people with good practice towards anaemia. In practice domain, many had reported to drink coffee or tea following meal and less than half were eating green leafy vegetables or fresh meat in practice and they are modifiable.

Statements And Declarations:

Competing Interests: Nil

Conflicts Of Interest: Nil

Manuscript Category - Full Length Article

Specific Contribution- It is essential to conduct regular screening programmes for anemia and also conduct health education camps emphasising the role of food interactions. This study will explain the current status of Knowledge, Attitude and Practice towards anaemia.

IEC Serial ID - 115/SVMCH/IEC-Cert/October23 (IEC - SVMCH & RC)

Table 1: Sociodemographic And Baseline Characteristics Among The Study Participants.

Variables		Frequency (n=200)	Percentage (%)
Age group (in years)	18-30	21	10.5
	31-40	54	27
	41-50	68	34
	51-60	36	18
	>60	21	10.5
Place of residence	Urban	82	41
	Rural	118	59
Education	Illiterate	21	10.5
	Primary	34	17
	Middle	56	28
	High school	40	20
	Higher secondary	34	17
	Graduate and above	15	7.5

Occupation	Unemployed	19	9.5
	Unskilled	51	25.5
	Semiskilled	29	14.5
	Skilled	12	6
	House wife	72	36
	Retired	17	8.5
Monthly income (in rupees)	<5000	45	22.5
	5,001-10,000	89	44.5
	10,001-25,000	31	15.5
	25,001-50,000	24	12
	>50,000	11	5.5
Marital status	Married	138	69
	Unmarried	24	12
	Separated/widowed	38	19
Vegetarian	Yes	49	24.5
	No	151	75.5
BMI	Underweight	17	8.5
	Normal	91	45.5
	Overweight	65	32.5
	Obesity	27	13.5
History of recent pregnancy	Yes	63	31.5
	No	137	68.5
Miscarriage	Yes	89	44.5
	No	111	55.5
Heavy menstrual bleeding	Yes	73	36.5
	No	127	63.5

Table 2: Distribution According To Correct Answer To The Knowledge-based Questions.

Sno	Question	N=200	%
K1	Do you know what is anaemia?	167	83.5
K2	Do you think the following can cause anaemia?	148	74
K3	Symptoms of anaemia	153	76.5
K4	Ways to prevent Anaemia	129	64.5
K5	Unsafe drinking water practice can cause anaemia	78	39
K6	Heavy menstrual bleeding can cause anaemia	121	60.5
K7	Do you know iron rich foods?	154	77
K8	Beverages like tea and certain foods hinder iron absorption	97	48.5
K9	Anaemia can cause heart failure	108	54
K10	Anaemia can complicate labour and cause maternal death	143	71.5

Table 3: Distribution According To Attitude Towards Anaemia In Adult Female Patients.

Sno	Question	Yes n=200	%
A1	Do you think anaemia is a serious health problem?	169	84.5
A2	Do you think you are likely to be anaemic?	78	39
A3	Are you interested in knowing your anaemia status?	147	73.5
A4	Are you willing to check haemoglobin yearly once?	113	56.5
A5	Do you think anaemia can be corrected?	194	97
A6	Are you willing to take medication if you are found to be anaemic?	135	67.5
A7	Do you feel confident in preparing iron rich foods?	115	57.5
A8	Do you think anaemia is more common in women than men?	140	70
A9	Do you think barefoot walking can cause anaemia?	93	46.5

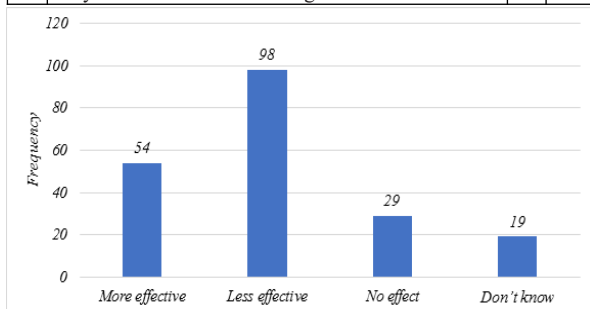


Fig 1: Bar Chart Showing Distribution According To What Participants Feel About Consuming Iron Supplements With Milk.

Table 4: Distribution According To Practice Towards Anaemia In Adult Female Patients.

S No	Question	Yes	
		n=200	%
P1	Washing hands with soap after defecation	156	78
P2	Walking barefoot outside home	41	20.5
P3	Eating fresh citrus fruits often	128	64
P4	Drinking coffee/ tea/ milk after a meal	83	41.5
P5	Regularly consumes green leafy vegetables, fresh meats	96	48
P6	Have you checked haemoglobin in the past 6 months	83	41.5
P7	If anaemic, have you taken iron and folic acid tablet in past 1 year	118	59
P8	Consumption of home cooked meals on regular basis	187	93.5
P9	How often do you skip meals	Regularly	51 25.5
		Once in a while	149 74.5
P10	Are you cooking in iron utensils	87	43.5

REFERENCES

- World health organization (WHO), Micronutrient deficiencies: Prevention and control guidelines, 2015; Geneva, Switzerland.
- The global prevalence of anemia in 2011. WHO; 2015
- Benoist B, McLean E, Egli I, Cogswell M. Worldwide prevalence of anemia 1993-2005 (Isted). WHO; 2008
- Chowdhury, S., Rahman, M., Moniruddin, A.B.M. Anemia in pregnancy. *Medicine Today*, 2014; 26 (1): 49-52.
- Khan KS, Wojdyla D, Say L, Gulmezoglu AM, Van Look PF. WHO analysis of causes of maternal death: a systematic review. *Lancet*. 2006;367:1066-74.
- McLean E, Cogswell M, Egli I, Wojdyla D, DeBenoist B. Worldwide prevalence of anemia, WHO vitamin and mineral nutrition information system 1993-2005. *Public health nutrition* 2009; 12(4): 444-454.
- S. Govindappagari and R. M. Burwick, "Treatment of iron deficiency Anemia in pregnancy with intravenous versus oral iron: systematic review and meta-analysis," *American Journal of Perinatology*, vol. 36, no. 4, pp. 366-376, Mar. 2019, doi: 10.1055/s0038-1668555.
- L. Bandyopadhyay, M. Maiti, A. Dasgupta, and B. Paul, "Intervention for improvement of knowledge on anemia prevention: A school-based study in a rural area of West Bengal," *International Journal of Health & Allied Sciences*, vol. 6, no. 2, pp. 69-74, 2017.
- Ghana Demographic and Health Survey (GDHS). (2008). Ghana Statistical Service (GSS), Noguchi Memorial Institute for Medical Research (NMIMR), and ORC Macro *Ghana Demographic and Health Survey 2007*. Calverton, Maryland: GSS, NMIMR, and ORC Macro;
- Singh M, Rajoura OP, Honnakamble RA. Anemia-related knowledge, attitude, and practices in adolescent schoolgirls of Delhi: A cross-sectional study. *Int J Health Allied Sci* 2019; 8:144-8.
- Shahzad S, Islam K, Azhar S, Fiza S, Ahmed W, Murtaza Z. Impact of knowledge, attitude and practice on iron deficiency anaemia status among females of reproductive age group (20-21-year-old) studying in Government Home Economics College Lahore, Pakistan. *International Archives of BioMedical and Clinical Research*. 2017;3(4):31-6.
- Abu B, Louw V, Dannhauser A, Raubenheimer J, Van den Berg L. Knowledge attitudes and practices (KAP) regarding iron deficiency (ID) among mothers in an anemia endemic population in Northern region of Ghana. *Maternal and Child Nutrition*. 2013;3:42-55.
- Aboud SA, El Sayed HA, Ibrahim HA. Knowledge, Attitude and Practice Regarding Prevention of Iron Deficiency Anemia among Pregnant Women in Tabuk Region. *International Journal of Pharmaceutical Research & Allied Sciences*. 2019 Apr 1;8(2).
- Huong C, Chua JL, Ng RY, Panse DK, Misra S, Sumera A. Knowledge, attitude and practices (KAP) towards anaemia among female university students in Malaysia: A Cross-sectional study. *Mal J Nutr*. 2022 June;28(2):203-215.
- Jose S, Antony SC, Isaac BR. Impact of Knowledge, Attitude and Practice on Anemia status among women in coastal Kochi, Kerala. *Int J of Multidisciplinary and Current Research*. 2016 Mar;4:295-8.
- Angadi N, Ranjitha A. Knowledge, attitude, and practice about anemia among adolescent girls in urban slums of Davangere City, Karnataka. *Int J Med Sci Public Health*. 2016 Mar 1;5(3):416-9.
- Munira L, Viwattanakulvanid P. Knowledge, attitude, and practice towards anemia prevention among female students in Indonesia: a mixed method study. *Int J Eval & Res Educ*. 2024 Feb;13(1):361-8.
- Raksha M, Shameem VP. Knowledge, attitude and practice study regarding anemia in antenatal women. *International Journal of Reproduction, Contraception, Obstetrics and Gynecology*. 2016 Jul 1;5(7):2101-2103