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A CROSS-SECTIONAL STUDY ON PREVALENCE AND DETERMINANTS OF ANAEMIA AMONG ADULT POPULATION OF WEST TRIPURA DISTRICT, NORTH EAST INDIA.

Epidemiology

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ABSTRACT

Background: Anaemia,a nutrition-related disease is a major public health problem in developing countries. Objectives: 1. To estimate the prevalence of anaemia among adult population of West Tripura. 2. To study the sociodemographic factors associated with anaemia among them. **Methodology:** This was a cross-sectional study conducted among adult population of Dukli block, West Tripura District and 450 adults were included in the study.

Results: The prevalence of anaemia among adults was 65.8% with 26.90%, 36.70%, and 2.20% adults suffering from mild, moderate and severe anaemia respectively. Age, sex, education and occupation were found to be significant determinants of anaemia in bivariate analysis (p value <0.05). Multiple logistic regression analysis revealed that higher age and females had higher odds of having anaemia. (p value-<0.00). **Conclusion:** The burden of anaemia was high especially among females and in higher age group and hence screening should be done routinely even in higher age groups.

KEYWORDS

Anaemia, adults, sociodemographic factors, Tripura

INTRODUCTION:

Anaemia is a condition in which there is a reduced number of red bold cells (RBC); or the haemoglobin concentration within RBC is less than normal. Anaemia is one of the serious nutrition-related diseases, which is associated with increased morbidity and mortality, and can lead to cardiovascular and neurological events[1,2].It is a major public health problem, especially in developing countries[3].It is common in adult and the prevalence of anaemia is increasing with advancing age [4].

According to NFHS 4 India report 22.7% males and 55.3% females between the age of 15-49 years were suffering from anaemia in India, whereas the NFHS 4 State report revealed that 35.5% males and 65.1% females between the age of 15-49 years were suffering from anaemia in Tripura showing a high burden of anaemia in the state.[5,6]

Several studies have been conducted in India focusing on pregnant women, adolescents and children[7-9]. However, anaemia affects individuals of both sexes and all ages, and there is a need for localized studies to improve our knowledge of prevalence and associated risk factors among general populations of adults, including nonpregnant women and men. Considering the fact that, the burden of anaemia in the age group of 15-49 years was high in Tripura[6], similar studies was needed with a broader age group so that context-specific preventive strategies can be implemented. Hence, the present study was conducted with the objective to estimate the prevalence of anaemia among adult population of West Tripura and to study the sociodemographic factors associated with anaemia among them.

MATERIALS AND METHOD:

This cross-sectional study was conducted in a randomly selected block of West Tripura District named Dukli RD Block between August 2018 to July 2019. The study included adult population (>18 to 60 years) who were residents in the area for >1 year and consented to take part in the study. The study excluded any pregnant women and those who were physically or mentally unfit to give valid information. The study was conducted as a part of the study titled "Consumption pattern of food and food products/ items high in fat, salt and sugar among selected cities/ towns and rural population of India (HFSS study)". The original study is a multi-centre study which was conducted in 2 randomly selected blocks of West Tripura District and included household members >6 years of age. Cluster sampling was adopted and 30 clusters were selected from each block using PPS technique. The present study is based on the additional data collected from 450 adults on haemoglobin status from one randomly selected Dukli RD Block of West Tripura District.

Considering the prevalence of anaemia among adults to be 36.4% (P)[10] with a relative precision of 20% of prevalenceand at 5% level of significance,sample size was estimated to be 168. However, considering a design effect of 2 (since cluster sampling technique was adopted in the study) and a non-response rate of 20% the estimated sample size was found to be 404. The present study included 450 adults from Dukli RD Block of West Tripura District. Data was collected by a pre-tested, structured, interview schedule and venous blood was taken from the respondents after taking informed consent from them for Haemoglobin estimation. Haemoglobin estimation was done using Haemoglobin testing meter (haemoglobin monitor with strips) and the haemoglobin status was communicated to the participants. Data analysis was done in SPSS v. 25 and statistical analysis was done using Chi-square test, Fisher's exact testand multiple logistic regression analysis and p value of < 0.05 was considered as statistically significant. Anaemia and Severity of anaemia was defined as per WHO recommendations for haemoglobin levels to diagnose anaemia at sea level.[11]

RESULTS:

The study was conducted among 450 adults of Dukli RD block of West Tripura.

Table 1. Socio-demographic profile of the study respondents.

		Frequency (%)
Age	< 30 yrs	98 (21.8%)
	31-40 yrs	140 (31.1%)
	41-50 yrs	122 (27.1%)
	51-60 yrs	90 (20%)
Sex	Male	79 (17.6%)
	Female	371 (82.4%)
Religion	Hindu	418 (92.9%)
	Muslim	32 (7.1%)
Community	General	153 (34%)
	SC	141 (31.3%)
	ST	38 (8.4%)
	OBC	118 (26.2%)
Education	Illiterate	93 (20.7%)
	Primary	91 (20.2%)
	Secondary & H/ S	252 (56%)
	Graduate & above	14 (3.1%)

Occupation	Unemployed / student / pensioner	20 (4.45%)
	Government Service	13 (2.88%)
	Business / private service	12 (2.66%)
	Farmer / daily labour	104 (23.11%)
	Home maker	301 (66.88%)
Marital status	Married	364 (80.9%)
	Unmarried	37 (8.2%)
	Widow / separated	48 (10.7%)
Type of family	Nuclear	441 (98%)
	Joint	9 (2%)

The socio-demographic profile of the study respondents showed that majority of the participants were between 31 to 40 years (31.10%), female (82.4%), Hindu by religion (92.9%) belonging to General category (34%). 66.88% of the respondents were homemaker, and 56% of the respondents had secondary or H/S education. (Table 1)

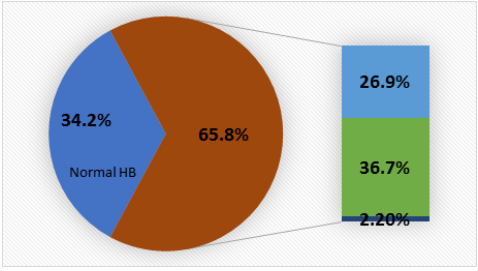

Fig 2:Pie chart showing prevalence of anaemia

Fig 2. is a pie chart showing the burden of anaemia in the study population. The present study revealed that the prevalence of anaemia among adults was 65.8% with 26.90% adults suffering from mild anaemia, 36.70% adults suffering from moderate anaemia and 2.20% adults suffering from severe anaemia respectively.

Table 2: Socio-demographic factors associated with anaemia

		Anaemia	Normal HB	P value
Age	< 30 years	64 (65.3%)	34 (34.7%)	0.03*
	31-40 years	93 (66.4%)	47 (33.6%)	
	41-50 years	70 (57.4%)	52 (42.6%)	
	51-60 years	69 (76.7%)	21 (23.3%)	
Sex	Male	32 (40.5%)	47 (59.5%)	0.00*
	Female	264 (71.2%)	107 (28.8%)	
Religion	Hindu	275 (65.8%)	143 (34.2%)	0.98*
	Muslim	21 (65.6%)	11 (34.4%)	
Community	General	109 (71.2%)	44 (28.8%)	0.06*
	SC	81 (57.4%)	60 (42.6%)	
	ST	24 (63.2%)	14 (36.8%)	
	OBC	82 (69.5%)	36 (30.5%)	
Education	Illiterate	65 (69.9%)	28 (30.1%)	0.01*
	Primary	65 (71.4%)	26 (28.6%)	
	Secondary & H/ S	162 (64.3%)	90 (35.7%)	
	Graduate & above	4 (28.6%)	10 (71.4%)	
Occupation	Unemployed / student / pensioner	11 (55%)	9 (45%)	0.00*
	Govt	6 (46.2%)	7 (53.8%)	
	Business / private service	6 (50%)	6 (50%)	
	Farmer / daily labour	58 (55.8%)	46 (44.2%)	
	Home maker	215 (71.4%)	86 (28.6%)	
Marital status	Married	239 (65.7%)	125 (34.3%)	0.11*
	Unmarried	20 (54.1%)	17 (45.9%)	
	Widow / separated	37 (75.5%)	12 (24.5%)	
Type of family	Nuclear	288 (65.3%)	153 (34.7%)	0.19**
	Joint	7 (87.5%)	1 (12.5%)	

* p value calculated using Chi square test

** p value calculated using Fisher's exact test.

Table 2 shows the socio-demographic factors associated with anaemia. The study revealed that the burden of anaemia was higher in the age group of 51 to 60 years compared to other age groups and age was a significant determinant of anaemia among adults (p value-0.03). Again, the study revealed that 71.2% of the females were suffering from anaemia compared to 40.5% males and gender was significantly associated with anaemia (p value- 0.00). Beside the burden of anaemia was high among those who were illiterate (69.9%) or primary education (71.4%) and education was significantly associated with anaemia (p value- 0.01). The study also revealed that majority of the homemakers were suffering from anaemia (71.4%) compared to other professions and occupation was significantly associated with anaemia (p value- 0.00).

Table 3: Multiple Logistic Regression analysis showing factors associated with anaemia.

		OR	95% Confidence Interval for OR		Significance
Age Group	< 30 yrs	.53	.268	1.078	.081
	31-40 yrs	.57	.298	1.093	.091
	41-50 yrs	.40	.212	.772	.006
	51-60 yrs	1	-		
Gender	Male	.27	.132	.580	0.001
	Female	1	-		
Education	Illiterate	2.45	.643	9.381	.189
	Primary	3.05	.810	11.534	.099
	Secondary & H/ S	2.57	.731	9.079	.141
	Graduate & above	1	-		
Occupation	Unemployed / student / pensioner	.62	.229	1.679	.346
	Govt	.68	.193	2.420	.555
	Business / private service	1.08	.280	4.213	.905
	Farmer / daily labour	1.15	.588	2.240	.686
	Home maker	1	-		

Table 3 shows multiple logistic regression analysis using those factors as independent variables, which were found to be significantly associated with anaemia in bivariate analysis. The present study revealed that those with an age of 51 to 60 years had the highest odds of having anaemia compared to other age groups and those between 41 to 50 yrs had 60% less chance of having anaemia [OR-0.40 (0.21-0.77)] compared to those between 51 to 60 years. Again, the study revealed that males have 73% less chance of having anaemia compared to females [OR-0.27 (0.13 - 0.58)] and it was statistically significant (p value- 0.00).

DISCUSSION:

The present study revealed that the prevalence of anaemia among adults was 65.8% with 26.90% adults suffering from mild anaemia, 36.70% adults suffering from moderate anaemia and 2.20% adults suffering from severe anaemia respectively. The finding is very high compared to a study conducted in Surat by Parekh A et al where 36.4% adults had anaemia; with 10.1%; 20.9% and 5.4% having mild, moderate and severe anaemia, respectively[10].However, in the present study though the overall burden of anaemia was high, but the burden of moderate and severe anaemia was low compared to the Surat study.

The present study showed that the prevalence of anaemia among males was 40.5% and among females was 71.2%. Similar finding was obtained from a study conducted in North India by Verma P et al which showed that 53.2% males and 70.1% females were suffering from anaemia.[12] However, this finding is high compared to the NFHS 4 Tripura report[6]which revealed that 35.5% males and 65.1% females were suffering from anaemia in Tripura. Again, a study conducted by Mathew L et al in rural population of South India[13] showed the prevalence of anaemia was 57.2% among women and 39.3% among men which is low compared to the present study. Again, the present study also showed that burden of anaemia was significantly high among females compared to males. Similar finding was obtained in the study conducted by Mathew L et al[13] where females had significantly higher burden of anaemia compared to males (P<0.001). Thus the present study revealed a high burden of anaemia among males and females with a significantly higher burden among females in the area.

The present study revealed that those with an age of 51 to 60 years had the highest odds of having anaemia compared to other age groups and those between 41 to 50 yrs had 60% less chance of having anaemia [OR-0.40 (0.21-0.77)] compared to those between 51 to 60 years.

Similar finding was obtained from a study conducted in Rural Haryana by Shashikant et al [14] where anaemia was found to be positively associated with age more than 50 years with significantly higher odds in the age group of 50–59 years. Beside the present study also revealed that education and occupation of the participants were significantly associated with anaemia. However on multiple logistic regression analysis no significant association was found.

CONCLUSION:

The present study revealed a high burden of anaemia among the adult population thus indicating that the problem of anaemia is not only limited to the traditional group of pregnant and lactating women and children. The burden of anaemia was high especially among females and higher age group indicating the need for routine screening among them. Hence, Iron supplementation with specific preventive strategies should be implemented in the area with a special focus on elderly and females.

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Conflict of interest: NIL

REFERENCES:

1. Penninx BW, Pahor M, Woodman RC, Guralnik JM. Anemia in old age is associated with increased mortality and hospitalization. J Gerontol A-Biol. 2006;61(5):474–9. 2.
2. Culleton B-F, Manns B-J, Zhang J, Klarenbach S, Hemmelgarn BR. Impact of anemia on hospitalization and mortality in older adults. Blood. 2006; 107(10):3841–6.
3. De Benoist B, McLean E, Egli I, Cogswell M. Worldwide prevalence of anaemia 1993–2005: WHO Global Database on Anaemia. Geneva: World Health Organization; 2008.
4. Woodman R, Ferrucci L, Guralnik J.Anemia in older adults. CurrOpinHematol 2005, 12:123–128.
5. National Family Health Survey-4. India Fact Sheet. 2015-16. Available from: http://rchiips.org/NFHS/NFHS-4.html. Accessed on: 22.02.20.
6. National Family Health Survey-4. State Fact Sheet Tripura. 2015-16. Available from: http://rchiips.org/NFHS/NFHS-4Reports/Tripura.pdf. Accessed on: 18.02.20.
7. S. Chaudhary, V. Dhage, A study of anaemia among adolescent females in the urban area of Nagpur. Indian Journal of Community Medicine, 2008; 33 (4): 243
8. G.S.Toteja, P.Singh, B.S.Dhillon. Prevalence of anemia among pregnant women and adolescent girls in 16 districts of India. Food and Nutrition Bulletin, 2006; 27 (4): 311–315,.
9. Pasricha, J. Black, S. Muthayya. Determinants of anemia among young children in rural India.Pediatrics, 2010; 126 (1):140–149.
10. Parekh A, Parekh M, Vadasmiya D. Study of Anaemia in Surat, Western India. National journal of medical research. Sept 2012; 2 (3):369
11. WHO. Haemoglobin concentrations for the diagnosis of anaemia and assessment of severity. Vitamin and Mineral Nutrition Information System. Available from:https://www.who.int/vmnis/indicators/haemoglobin.pdf. Accessed on: 12.02.2019.
12. Verma P, Singh S, Ghildiyal A,Kumar A, Krishna A. Prevalence of anaemia in adults with respect to socio-demographic status, blood groups and religion in north indian population. Int J Biol Med Res. 2012; 3(4): 2422-2428
13. Mathew L, Zivot C, Humphries S, Dodd W, Patel K, Dewey C. Burden and Determinants of Anemia in a Rural Population in South India: A Cross-Sectional Study. Hindawi Anemia. 2018.
14. Kant S, Kumar R, Malhotra S, Kaur R, Haldar P. Prevalence and Determinants of Anemia among Adult Males in a Rural Area of Haryana, India. Journal of Epidemiology and Global Health. 2019; 9(2): 128–134.