ORIGINAL ARTICLE

ASSOCIATION OF SOCIODEMOGRAPHIC FACTORS AND DIETARY PREFERENCE WITH ANAEMIA AMONG MALES: A CROSS SECTIONAL STUDY

Syed Yasir Hussain Gilani, Saima Bibi*, Sidra-tul-Muntaha, Hina Iftikhar*****

Department of Medicine, *Paediatrics, Ayub Medical College, Abbottabad, **Department of Anaesthesia, Ayub Teaching Hospital, Abbottabad, ***Department of Community Medicine, Ayub Medical College, Abbottabad, Pakistan

Background: Anaemia is a problem of paramount importance but research about its impact and socio-demographic characteristics in adult men is scanty. The current study aimed to determine the frequency and association of socio-demographic factors and dietary preference with anaemia in male patients. **Methods:** This cross-sectional study was conducted in Department of Medicine, Ayub Teaching Hospital Abbottabad. A total of 144 patients were enrolled. Patients were interviewed on basis of a questionnaire and examined for symptoms of anaemia. Admitted patients from medicine ward who were aged above 20 years were included in the study. Unconscious patients and those who were unable to communicate were excluded from the study. Data was analyzed using SPSS-22. **Results:** This study included a total of 144 patients. Respondents were in the age range of 22–90 years with mean age 49.66±16.474 years. A total of 90 (62.5%) patients belonged to rural areas and 54 (37.5%) belonged to urban areas, 50 (34.7%) were unemployed and 94 (65.3%) were employed. Presence of anaemia was found to be significantly associated with concomitant presence of chronic diseases (p<0.05). **Conclusion:** Moderate anaemia is common in our males, and is significantly associated with presence of chronic diseases. No significant association of anaemia was found with dietary preferences.

Keywords: Anaemia, Dietary, Cornice, Males, Haemoglobin, Hb

Pak J Physiol 2024;20(3):56–8, **DOI:** https://doi.org/10.69656/pjp.v20i3.1754

INTRODUCTION

Anaemia is a global health problem, affecting individuals of almost all age groups. It has devastating effects on quality of life particularly in vulnerable groups like elderly, pregnant and lactating women, males living in poor socioeconomic conditions and children. In addition to its contribution to increasing mortality in vulnerable groups, it also causes impaired cognition, increases risk of infections and thus reduced overall performance of individuals.[1]

According to WHO, anaemia is defined as a decrease in the number of red blood cells (RBC's) and thus causing a decrease in their oxygen carrying capacity in the blood, as a result it takes a toll on physiologic functions of the body. The cut off level for haemoglobin level to decide for presence of anaemia varies according to age, gender, residence, smoking behaviour and pregnancy.[2]

Anaemia is classified into mild, moderate and severe according to level of haemoglobin in blood[2], and is affected by socio-demographic factors[3], body mass index[1], and eating habits[4]. It's also classified by its cause, the most prominent being iron deficiency.[5] Other causes of anaemia include deficiency of micronutrients like vitamin B_{12} and folate, parasitic infestation, chronic diseases, and inherited or acquired disorders affecting haemoglobin synthesis.[2]

Global estimates by WHO suggest that around 1.6 billion people are suffering from anaemia that amounts to 24.8% of the total world population. Worldwide, among different categories the prevalence is estimated to be 42%, 47% and 12.7% for pregnant women, children, and adult men respectively.[6]

In spite of a number of individual aetiologies of anaemia, multiple factors are simultaneously present in a large number of patients especially in resource stricken societies making it difficult to ascertain the exact aetiology. Some common aetiologies include parasitic infections, nutrient deficiency like iron, B_{12} and folate, haemoglobin disorders and chronic diseases.[7]

Majority of the research regarding anaemia has been conducted on women and children, thereby ignoring this important public health problem and its factors in adult men.[8] The current study aimed to determine the frequency and association of socio-demographic factors and dietary preference with anaemia in male patients admitted to a tertiary care hospital of Hazara division.

MATERIAL AND METHODS

This cross-sectional study was conducted from 15th Jan to 15th Jul 2024 in Department of Medicine, Ayub Teaching Hospital Abbottabad after obtaining ethical approval from Institutional Ethical Review Committee and informed consent from the patients. Non-probability convenience sampling was done. Using OpenEpi, a sample size of 138 was obtained with anticipated frequency of anaemia in males as 9.9%[1], confidence interval of 95% and absolute precision of 5%.

Data was collected from 144 patients on a questionnaire having 20 questions about employment status, income, residence, dietary habits, and presence of chronic diseases. Blood complete picture and peripheral smear reports were obtained for Hb level and morphological types of RBC's.

Patients were classified as having mild, moderate and severe anaemia with the cut-off values of Hb 11–12.9 g/dL, 8–10.9 g/dL, and below 8 g/dL respectively. Only admitted patients from medicine ward who were above 20 years of age were included in the study. Unconscious patients and those who were unable to communicate were excluded from the study.

Data obtained was computed into SPSS-22. Qualitative variables were described as frequencies and percentages and quantitative variables were described as Mean±SD. Chi-square test was applied to determine association between categorical variables considering $p \leq 0.05$ as significant.

RESULTS

This study included a total of 144 patients in the range of 22–90 years with mean age of 49.66±16.474 years. Out of these, 90 (62.5%) patients belonged to rural areas and 54 (37.5%) belonged to urban areas, 50 (34.7%) were unemployed and 94 (65.3%) were employed. Seventy-nine (54.9%) were mildly anaemic (Hb=11–12.9 g/dL), 49 (34%) were moderately anaemic (Hb=8–10.9 g/dL) and 16 (11.1%) were severely anaemic (Hb<8 g/dL).

Sixty (41.7%) patients had microcytic hypochromic anaemia, 79 (54.9%) had normocytic normochromic anaemia, and 5 (3.5%) had microcytic normochromic anaemia. Presence of anaemia was found to be significantly associated with chronic diseases (p=0.036). No association was significant with other variables like dietary preferences, coffee or tea immediately after meal, educational status, employment status, and iron supplements.

Table-1: Association of variables with severity of anaemia [n (%)]

Variables	Normal (Hb >13 g/dL)	Mildly anaemic (Hb 11–12.9 g/dL)	Moderately anaemic (Hb 8–10.9 g/dL)	Severely anaemic (Hb <8 g/dL)	*p*
Age groups					
Below 40 years	18 (40.9%)	13 (37.1%)	13 (26.5%)	3 (18.8%)	0.319
40 to 60 years	13 (29.5%)	12 (34.3%)	22 (44.9%)	10 (62.5%)	
Above 60 years	13 (29.5%)	10 (28.6%)	14 (28.6%)	3 (18.8%)	
Residence					
Rural	28 (63.6%)	18 (51.4%)	31 (63.3%)	13 (81.3%)	0.234
Urban	16 (36.4%)	17 (48.6%)	18 (36.7%)	3 (18.8%)	
Educational status					
Uneducated	15 (34.1%)	14 (40.0%)	21 (42.9%)	12 (75%)	0.291
Matric and below	15 (34.1%)	10 (28.6%)	16 (32.7%)	3 (18.8%)	
Above matric to Bachelors	10 (22.7%)	9 (25.7%)	7 (14.3%)	1 (6.3%)	
Above bachelors	4 (9.1%)	2 (5.7%)	5 (10.2%)	0 (0%)	
Employment status					
Unemployed	11 (25%)	11 (31.4%)	21 (42.9%)	7 (43.8%)	0.261
Employed	33 (75.1%)	24 (68.6%)	28 (57.1%)	9 (56.3%)	
Number of family members					
Less than 5	21 (47.7%)	15 (42.9%)	21 (42.9%)	6 (37.5%)	0.164
6–10	20 (45.5%)	15 (42.9%)	26 (53.1%)	10 (62.5%)	
More than 10	3 (6.8%)	5 (14.3%)	2 (4.1%)	0 (0%)	
Marital status					
Unmarried	6 (13.6%)	2 (5.7%)	4 (8.2%)	0 (0%)	0.351
Married	38 (86.4%)	33 (94.3%)	45 (91.8%)	16 (100%)	
Intake of iron supplements					
No	43 (97.7%)	35 (100%)	47 (95.9%)	15 (93.8%)	0.559
Yes	1 (2.3%)	0 (0%)	2 (4.1%)	1 (6.3%)	
Presence of chronic disease					
No	26 (59.1%)	15 (42.9%)	19 (38.8%)	3 (18.8%)	0.036*
Yes	18 (40.9%)	20 (57.1%)	30 (61.2%)	13 (81.3%)	
Meat as a dietary preference					
Never	11 (25%)	12 (34.3%)	13 (26.5%)	7 (43.8%)	0.436
Once a week	25 (56.8%)	20 (57.1%)	33 (67.3%)	9 (56.3%)	
Twice a week	7 (15.9%)	2 (5.7%)	3 (6.1%)	0 (0%)	
Often	1 (2.3%)	1 (2.9%)	0 (0%)	0 (0%)	
Vegetables as a dietary preference					
Once a week	0 (0%)	0 (0%)	1 (2%)	1 (6.3%)	0.616
Twice a week	7 (15.9%)	6 (17.1%)	6 (12.2%)	2 (12.5%)	
Often	37 (84.1%)	29 (82.9%	42 (85.7)	13 (81.3%)	
Intake of coffee/tea immediately after meal					
No	33 (75%)	17 (48.6%)	25 (51%)	10 (62.5%)	0.095
Sometimes	3 (6.8%)	6 (17.1%)	9 (18.4%)	0 (0%)	
Yes	8 (18.2%)	12 (34.3%)	15 (30.6%)	6 (37.5%)	

*Significant

DISCUSSION

More than half of our study population was found to be anaemic. This is in contrast to a study in Malaysia where only 12.6% men were reported to be anaemic.[9] Majority of patients who were anaemic belonged to age group of 40–60 years. This is contrary to the result of study

conducted in US in which majority of anaemic males belonged to age group of 80–85 years.[10] However, our findings are consistent with other studies that report anaemia to be more prevalent among males with advancing age especially those above 50 years of age.[11] In a study conducted in KPK, 72% anaemic patients were found to be iron deficient as they had microcytic hypochromic RBC's[5] which is much higher than our result in which 41.7% had microcytic hypochromic anaemia, rest of them had normocytic normochromic anaemia or some other combinations. More than half of our study population was mildly anaemic. Similar results were also reported from another study in Karachi, where 69% were mildly anaemic with 18.4% and 12.6% having moderate and severe anaemia respectively.[12]

Anaemia was significantly associated with presence of chronic diseases in our study. This association has also been explained in other studies where the cause has been attributed either to poor oral intake or secondary effects of underlying chronic disease liked diabetes or renal disease.[13,14] Our study revealed no significant association of anaemia to employment status of the participating men. Similar results were also reported in a study from Jordan where anaemia was not significantly associated with the employment status.[15] Our study reported no significant association of anaemia with dietary preferences and intake of tea immediately after meal. This is in contrast to a study conducted in Turkey where intake of tea and dietary intake was significantly associated with anaemia.[16] Results showed that most of the patients (both anaemic and non-anaemic) didn't take iron as a dietary supplement. This is in accordance with a study conducted in Lahore which showed that intake of iron supplements was not significant among patients.[17]

Presence of anaemia in this study was determined on the basis of Hb level only and other indicators like serum ferritin level were not considered. No causal relationships could be established as the study was cross-sectional.

CONCLUSION

Moderate anaemia is common in our males, and is significantly associated with presence of chronic diseases. No significant association of anaemia was found with dietary preferences.

REFERENCES

1. Ugwuja EI, Ogbonnaya LU, Obuna AJ, Awelegbe F, Uro-Chukwu H. Anemia in relation to Body Mass Index (BMI) and socio-demographic characteristics in adult Nigerians in Ebonyi State. J Clin Diagn Res 2015;9(1):LC04–7.
2. McLean E, Cogswell M, Egli I, Wojdyla D, de Benoist B. Worldwide prevalence of anaemia, WHO vitamin and mineral nutrition information system, 1993–2005. Public Health Nutr 2009;12(4):444–54.
3. Mankelkl G, Kinfe B. Sociodemographic factors associated with anemia among reproductive age women in Mali; evidenced by Mali malaria indicator survey 2021: spatial and multilevel mixed effect model analysis. BMC Womens Health 2023;23:291.
4. Rasool A, Naseem Y, Waqas M, Ahmad S, Rasool M, Khan Y, *et al.* Effect of socio-demographic profile and dietary preference on prevalence of anaemia in females of child bearing age. Stud J Ayub Med Coll 2015;1(2):51–4.
5. Ilyas MMQ, Shujaat AK, Kalsoom F, Ghulam M, Saira A, Sobia N, *et al.* Prevalence of iron deficiency in adult population: A case study from Khyber Pakhtunkhwa (KPK), Pakistan. Int J Physical Sci 2012;7(11):1874–7.
6. Ismail IM, Kahkashan A, Antony A, Sobhith VK. Role of socio-demographic and cultural factors on anaemia in a tribal population of North Kerala, India. Int J Community Med Public Health 2017;3(5):1183–8.
7. Adamu AL, Crampin A, Kayuni N, Amberbir A, Koole O, Phiri A, *et al*. Prevalence and risk factors for anaemia severity and type in Malawian men and women: urban and rural differences. Popul Health Metr 2017;15:12.
8. Kumar P, Sharma H, Sinha D. Socio-economic inequality in anaemia among men in India: a study based on cross-sectional data. BMC Public Health 2021;21(1):1345.
9. Awaluddin SM, Shahein NA, Che Abdul Rahim N, Mohd Zaki NA, Nasaruddin NH, Saminathan TA, *et al*. Anemia among men in Malaysia: A population-based survey in 2019. Int J Environ Res Public Health 2021;18(20):10922.
10. Le CH. The prevalence of anemia and moderate-severe anaemia in the US population (NHANES 2003–2012). PloS One 2016;11(11):e0166635.
11. Abdo N, Douglas S, Batieha A, Khader Y, Jaddou H, Al-Khatib S, El-Khatib M, *et al*. The prevalence and determinants of anaemia in Jordan. Eastern Mediter Health J 2019;25(5):341–9.
12. Nageen A, Kidwai SS, Bashir F, Ara J, Munir SM. Anemia —an unnoticed entity in Asian males: a focus on the anemic parameters of adult males in Pakistan. Br J Med Med Res 2017;22:1–7.
13. Idris I, Tohid H, Muhammad NA, A Rashid MR, Ahad AM, Ali N, *et al*. Anaemia among primary care patients with type 2 diabetes mellitus (T2DM) and chronic kidney disease (CKD): a multi centred cross-sectional study. BMJ Open 2018;8(12):e025125.
14. Noma T, Kabayama M, Gondo Y, Yasumoto S, Masui Y, Sugimoto K, *et al*. Association of anemia and SRH in older people: the SONIC study. Geriatr Gerontol Int 2020;20(7):720–6.
15. Zaytoun SS, Khan EA. Sociodemographic risk factors of iron deficiency anemia in young adult males of upper Egypt. Khyber Med Univ J 2016;8(3):123–7.
16. Yakar B, Karakaya G, Onalan E, Pirinççi E, Dönder E. Associations of dietary, body mass index, lifestyle and sociodemographic factors with iron deficiency anaemia. Fam Pract Palliat Care 2021;6(3):124–30.
17. Ullah A, Sohaib M, Saeed F, Iqbal S. Prevalence of anemia and associated risk factors among pregnant women in Lahore, Pakistan. Women Health 2019;59(6):660–71.

Address for Correspondence:

Dr Saima Bibi, Department of Paediatrics, Ayub Medical College, Abbottabad, Pakistan. **Cell:** +92-300-5635010
Email: drsaima79@yahoo.com

Received: 4 Sep 2014 **Reviewed:** 7 Sep 2024 **Accepted:** 11 Sep 2024

Contribution of Authors:
SYHG: Study design, data collection and drafting of work
SB: Data analysis and interpretation
SM: Literature search and proof reading
HI: Data collection and literature search

Conflict of Interest: None **Funding:** None