ORIGINAL RESEARCH PAPER

VOLUME-6 | ISSUE-5 | MAY - 2017 | ISSN No 2277 - 8179 | IF : 4.176 | IC Value : 78.46

INTERNATIONAL JOURNAL OF SCIENTIFIC RESEARCH

PREVALENCE OF ANEMIA AMONG FEMALE MEDICAL STUDENTS

Physiology

Anusha Merline J — Professor, Physiology Department, Dr Somervell Memorial CSI Medical College, Karakonam, Trivandrum, Kerala, India - 695504

Delinda Linu Swornila — Associate Professor, Physiology Department, Dr SMCSI Medical College, Karakonam, Trivandrum, Kerala, India

Pramod Thomas — Biostatistics Department, Believers Church Medical College Hospital, Thiruvalla

Prasanna Kumari L — Professor, Physiology Department, Dr SMCSI Medical College, Karakonam, Trivandrum, Kerala, India

ABSTRACT

Background: Anemia is a nutritional problem, mainly caused by iron deficiency. Medical students form an integral part of health care system. The present study aimed to estimate the prevalence of anemia among young female medical students of a medical college in a rural area of South Kerala.

Materials and Methods: The present cross sectional study was conducted on 196 participants after obtaining due ethical permission from institutional ethical. Pre-structured questionnaire was administered to obtain the data on clinical and socio- demographic information and hemoglobin levels were estimated using cyanmethhemoglobin method.

Results: Prevalence of anemia was found to be 16.8%. Anemia was found to be more prevalent among normal BMI participants (p = 0.032) and less prevalent among those who included green leafy vegetables in their regular diet.

Conclusion: Anemia can be prevented by regular intake of green leafy vegetables.

KEYWORDS:

Anaemia, BMI, Prevalence, Medical Students, Adolescence

INTRODUCTION

Anemia has been defined by World Health Organization (WHO) statistics (1982) as a condition in which the haemoglobin content of blood is lower than normal as a result of a deficiency of one or more essential nutrients, regardless of the cause of such deficiency. Iron deficiency anemia in adolescent girls is a significant risk factor for maternal mortality, high incidence of low birth weight babies, high perinatal mortality and fetal wastage as per WHO (2001). Jere, Thomas (2001) and Halterman, Kaczorowski, Aligne, Auinger, Szillasyi (2001) had reported that iron deficiency among adolescent girls in America, China and India was found to be 8.7%, 11.3% and 27.5% respectively. It frequently occurs due to inadequate iron intake, chronic blood loss or disease, malabsorption or a combination of all these factors. Shams, Asheri, Kianmer (2010) reported the prevalence of iron deficiency among female medical students in Tehran as 47.4%. Sanjeev, Vasant (2008) reported that, mean height and weight of subjects with anemia is significantly less than subjects without anemia, which suggests that anaemia affects the overall growth of adolescents.

The medical student also comes under the vulnerable group that suffers from anemia, because of stress, having long schedules of studying, clinical postings etc. The appropriate nutrition requirements increase significantly during certain periods of life thus placing individuals during these periods at greater risk of deficiency. Anaemia during adolescence is associated with a low work capacity, a poor pregnancy outcome, as well as lasting effects on learning and cognitive functions, attention, behaviour, health and growth.

Sanjeev and Vasant (2008) carried out a study in an urban area under Urban Health Training Centre of a Medical College, Nagpur among a total of 296 adolescent females (10-19 years old) and according to their observations, the prevalence of anaemia was found out to be 35.1%. In a study from Kerala, conducted by Manjula, Parameshwari, Lillykutti, Sobha (2014) reported the prevalence of anaemia among medical students in Kerala as 19.13%.

The present study was conducted to estimate the prevalence of anaemia among young female medical students in a tertiary care center, South Kerala. We also measured the severity and factors associated with anemia.

Materials and Methods

Cross sectional study conducted in Dr. Somervell Memorial CSI Medical College, a tertiary care centre in South Kerala. All female medical students in the age group 17-22 who consented for the study were the study participants. Students diagnosed with anemia and other co-morbid diseases like hypothyroidism, chronic renal diseases etc, were excluded. A pre-designed self administered questionnaire was given to all the participants. It had personal details, height (cm), weight (kg), dietary history, menstrual history and socio-economic status. The weight in Kg was measured using a standard weighing machine and the height in meters was also recorded. Hemoglobin estimation was done by cyanmethhaemoglobin method in the physiology department by trained lab personal. Under aseptic precaution 1ml of blood was collected in EDTA coated test tubes and hemoglobin level was estimated. Grading of anemia and Body Mass Index (BMI) was done as per the WHO (2001) grading system. A hemoglobin level of 12-14 gms/dl was taken as normal. Mild anemia is defined as hemoglobin of 10-11.9g/dl, moderate between 7-9.9 g/dl and severe anemia less than 7 gm/dl. BMI was calculated as weight in kilogram divided by the square of the height in meters. BMI less than 18.5 kg/m2 is categorized as low, between 18.5-24.9 kg/m2 as normal and above 25kg/m2 as high. Descriptive measures and chi square tests were used for analysis. P <0.05 was taken as statistically significant. SPSS 21 was used for analysis of the data.

Results

Out of 196 female medical students who participated in the study, 33 (16.8%) students were found to be anemic. According to BMI criteria, 18.5% participants were under weight, 10.8% were overweight and the remaining normal. Among the 33 anemics, according to BMI, 1 (3%) were underweight, 29 (87.9%) normal and 3 (9.1%) overweight. Level of BMI was observed to be significantly associated with anemia (Chi- value= 6.871, p= 0.032) (Table 1, Figure 2)

Table 1: Clinical and social data classified according to anemia status

	Anemic n (%)	Chi value, p- value
Religion Hindu Christian Muslim	8 (24.2) 18 (54.5) 7 (21.2)	0.273, 0.872
Family Type Joint Nuclear	31 (93.9) 2 (6.1)	0.015, 0.902
Food Type Vegetarian Non- vegetarian	0 33 (100)	3.405, 0.361
Green leafy Yes No	27 (84.4) 5 (15.6)	0.358, 0.560
Fruits intake Daily Weekly Occasionally	13 (40.6) 16 (50.0) 3 (9.4)	1.389, 0.499
Drugs Yes No	6 (18.8) 26 (81.3)	0.944, 0.392
Passing Worms Yes No	2 (6.5) 29 (93.5)	2.086, 0.189
BMI Under weight Normal Over weight	1 (3) 29 (87.9) 3 (9.1)	6.871, 0.032 *

* Significant

Figure 1: Prevalence of anemia among medical students

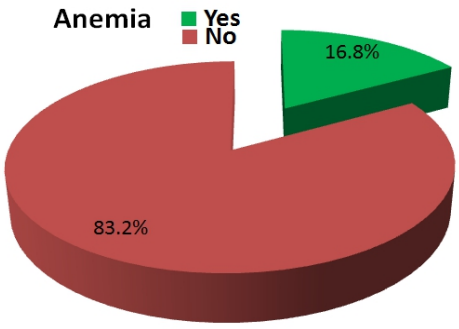
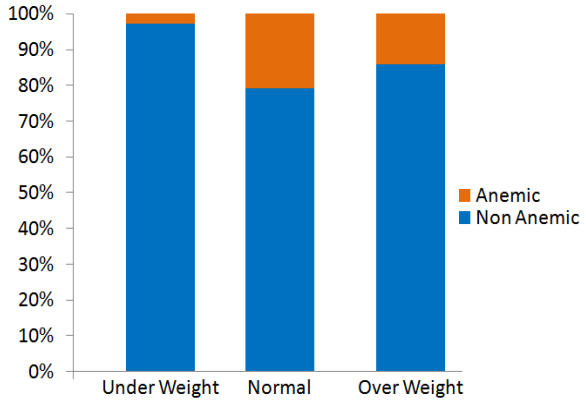


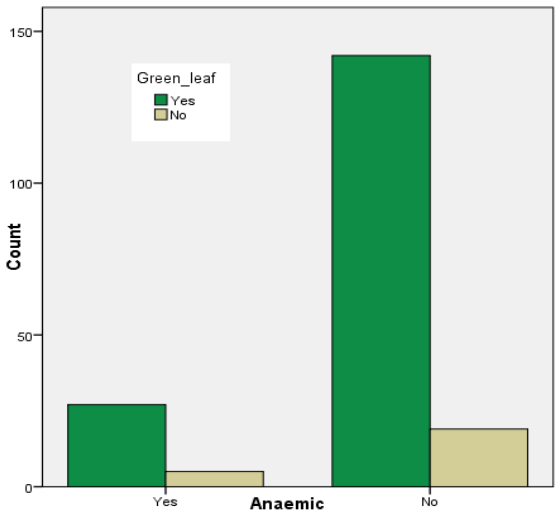
Figure 2: Anemia classified according to level of Body Mass Index.



Hemoglobin level of the students ranged from 10 to 14gms/dl with mean 12.15gm/dl (SD=0.928). Among the students, 9 (4.6%) were vegetarians. The habit of consuming green leafy vegetables was observed to be as 88% and 36.3% consumed fruits on a regular basis while 16.3% were taking fruits occasionally. The average age of menarche was found to be 12.75 (SD=1.2) in the recruited group. Also, it was noted that, 26.6% had menarche at the age of 14 or above. History of irregular menstrual period was reported as 11.4% and 46% had 5 to 7 days duration of menstrual flow.

Type of family (Joint/ nuclear) was not associated with anemia. Even though we could not establish any significance between food type and anemia, 17.6% of the non vegetarians were found to be anemic (Table 1). Also we observed a higher percentage of anemia among those who did not include green leafy vegetables in their daily diet (20.8% Vs 16.0%) (Figure 3).

Figure 3: Green leafy vegetable consumption versus anemia



Discussion:

WHO states that worldwide, nutritional anemia is the most common type of anemia and a great public health problem which can affect all ages especially females. The present study was undertaken in the female medical students of a tertiary medical center. We found the prevalence of anemia as 16.8% in our study group. This result is better than the findings reported by Manjula, Parameshwari, Lillykutti, Sobha (2014) which showed the prevalence of anemia among female medical students of Kerala as 19.13%. This difference is expected as our participants are part of self financing medical institution and belongs to higher socio- economic class compared to the previous reported government medical college.

Mean hemoglobin level in the present study was 12.15 (SD= 0.928). Our sample size was better than other studies in the similar fields. Our mean hemoglobin level was slightly lesser than other reported studies by Sachin and Arun (2013) in Bilaspur (n= 96, mean= 12.40, SD=1.95).

Anemia was more prevalent among participants who did not consume green leafy vegetables on a regular basis. This support the study done by Saratha, Singh, Datta (2010). Majority of our participants (95.4%) were non vegetarians.

In our study, we found that, among the participants with normal BMI, 21.0% were found to be anemic. Those who belong to the underweight and overweight category, 2.8% and 9.1% were anemic. This finding is replication of the study published by Manl, Ayat & Amal(2013) which reported that, anemia is more prevalent among female students with normal BMI than those with underweight or overweight category. This could be due to the individual's special concern over food habits due to their BMI status.

Conclusion

Prevalence of anemia among female medical students was found to be 16.8%, which is less compared to the similar studies reported. This might be due to the fact that our participants are part of self financing medical institution and belongs to higher socio- economic class compared to the previous reported government medical college. Anemia was found to be more prevalent among female students with normal BMI than those with underweight or overweight category Nutritional awareness can prevent anemia to a certain extent by enhancing the consumption of green leafy vegetables.

ANNEXURE

Questionnaire

PROFORMA	
Name:	
Age:	
Sex:	
Religion:	
Course:	
Year of study:	
Family Details	
Type of family: nuclear / joint	
Parents Occupation:	
Parents Education.	
Parents Income.	
Anthropometric detais	
Height: cms	
Weight: Kg:	
BMI	
Food habits	
Vegetarian / Non vegetarian:	
Consume green leafy vegetables:	Yes /No
Frequency of intake of fruits and getables	daily / weekly / occasionally
Taking any medication / drugs-	Yes /No
History of any other disease (please specify the disease)	
History of passing worms in the stools	Yes /No
Menstrual history	
Age of menarche	
Type of menstrual cycle: Regular /Irregular	
Duration of menstrual cycle: less than 2 days	
2-4 days.	
5-7 days	
More than 7 days	
Number of pads used per day	
Are you aware of cause and significance of anemia: Yes / No	

References

1) WHO (1982). World Health Statistics, Quarterly 35: 52. Retrieved from https://www.ncbi.nlm.nih.gov
2) World Health Organization. (2001). Iron deficiency anemia, Assessment, Prevention and Control: A guide for programme Managers. Retrieved from www.who.int>nutrition>publications
3) Jere D. Haas, Thomas Brownlie IV.(2001) Iron deficiency and reduced work capacity, a critical review of the research to determine a causal relationship. J Nutrition Vol:131:676s- 88s
4) Halterman JS, Kaczorowski JM, Aligne CA, Auinger P, Szillasyi PG. (2001). Iron deficiency and cognitive achievement among school aged children and adolescents in the united states, Pediatrics Vol:107:1381-1386
5) Shams. S, Asheri H, Kianmehr A, Ziaee V, Koochatzedeh J, Monajemzadeh M, Nouri M, Irani H, Gholami N. (2010). The prevalence of iron deficiency anemia in female medical students in Tehran – Singapore Med J. Vol:51(2):116- 119
6) Sanjeev M Chaudhary and Vasant R Dhage. (2008). A study of anemia among adolescent females in the Urban area of Nagpur, Indian J Community Med Vol: 33(4):243-245
7) Manjula VD, Parameshwari P, Lillykutty Pothen, Sobha A. (2014). Prevalence of anemia among female undergraduate students of government medical college Kottayam, Kerala, International Journal of Medical and Health sciences. Volume 3 (2): 133- 138
8) Sachin Pandey, Arun Singh. (2013). A cross sectional study of nutritional anaemia among medical students in a medical college, at Bilaspur, Chhathisgarh. National Journal of Medical Research Vol3 (2)April- June.
9) Saratha A, Singh Z, Datta SS. (2010). Prevalence of Anemia among Young Adult Female Students in a Medical teaching Institution in Pondicherry. Indian Journal of Maternal and Child Health. Vol 12(4): 1- 8
10) Manal H, Ayat A, Amal Z. (2013). Study of hemoglobin level and body mass index among preparatory year female students at Taibah University, Kingdom of Saudi Arabia. Journal of Taibah University Medical Sciences Vol 8(3), 160–166.