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ORIGINAL ARTICLE

Evaluation of the frequency of anemia, and its risk factor among female students of Peoples University of Medical & Health Sciences for women, Shaheed Benazir Abad.

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ABSTRACT… Objective: To evaluate the frequency of anemia and its risk factor among female students. **Study Design:** Cross Sectional study. **Setting:** PUMHSW, Nawabshah. **Period:** September 2019 to February 2020. **Material & Methods:** Three hundred and fifty female students were included from various departments and academic years. Data was collected on prescribed performed with their consent, than statistically analyzed with SPSS. **Results:** Sample size of the study was 350. The age group 18 to 21 years 194 (55.4%) was dominating in the study, Further, hostlers were 207(59.1%, p=.004), married 5 (1.4%), belonged to middle socioeconomic status 327 (93.4%), literacy level of the parents, and dietary habits were major risk factors among study subjects. Furthermore, Anemic were 139 (39.7%), in which mild anemia found in 79 (22.6%), moderate anemia in 53(15.1%) and severe anemia in 7(2.0%). **Conclusion:** Current study identified the high prevalence of anemia among students. This study concluded the frequency of anemia in health sciences student of PUMHSW Nawabshah was 39.7%. Further; this study also determined risk factors associated with anemic status, and explored the dietary risk factors of anemia.

Key words: Medical Students, Prevalence, PUMHSW.

INTRODUCTION

Throughout the world Anemia is impacting over approximately ¼ of world population in developed as well as developing countries. It course but the mostly found form of this disease iron deficiency anemia (IDA).[1]

Anemia is defined as a clinical condition characterized with decreasing concentration of hemoglobin in blood under the normal state for peoples for different ages, gender as well living conditions.[2]

It's a globally existing public health issue, that it putting its huge impacts over social & economical conditions of developed and developing states. Generally it is more prevalent in young children and pregnant women, while it can occur at any stage of life.[3]

During pregnancy this disease is counted in severe as when concentrations of hemoglobin decreases from 7 grams per deciliter, mild 7 to 9.9 grams per deciliter and, and mild 10 to 11 grams per deciliter. In under developed states anemia has major consequences over maternal and fetal state, because it is major cause of morbidity as well as mortality during pregnancy.[4]

Among the developing states, the main reason of this disease are nutritional deficiencies like (deficiency of iron, vitamin-B, and folate), multifactorial deficiency and parasitic infections like malaria. The major factor in anemia in females from age group from 9 to 25 years were gender, ages, diet, blood lost during menstrual process

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stress and helminthic infection.[5-8]

For many studies done it is determined the rate of anemia during pregnancy depends upon risk factors like, age during pregnancy, number of pregnancies occurred, social and economic status and trimester. While the ratio of hemoglobin concentration in blood is more dependable factor.[9]
It has been witnessed that those student of medical & health sciences who stay at hostels are under the higher risks of anemia due to their longer academic schedules, inadequate diet posting in different clinics stress.[10]

It is also reported by most of the researches that it anemia can occur due to some factor associated with fatigue, poor concentration, reduced work capacity & general malaise. Skipping of the food, consumption of fast food, eating far from home put them under dietary efficiencies.[11-13]

The other health issue that increases the threats of anemia in student of health science is a chronic loss of blood by variations in menstrual process and worm. Being aware of such complications the student of medical & health sciences still revise even having a proper access to health care facilities.[14]

Students of medical & health sciences comes under feeble groups which suffer from that disease due to longer study schedules, curriculum activities and clinical posting.[15]

The students staying in the hostels far from their family gets reflected from their diet pattern at home. Certain variation in diet plan of student put impacts in physical as well as mental condition of the student which affects the academic performances.[16-17]

By examining the diet patterns of young student it is found that the students skip their foods specially at breakfast and lunch, they avoid vegetable by consuming which result in form of limited nutrition diversity and components of nutrition containing energy, salt, vitamins & minerals, pulp and fats and carbohydrates gets unbalance.[18]

According to standards based by WHO the anemic prevalence qualifies moderated significances. Generally it more prevalent in young children and pregnant woman, while it can occur at any stage of life, there is an urgent requirements of identifying the risk factors of anemia in urban population areas.[19-22]

Additionally, another study revealed that students of university mostly make habit of eating high caloric & high fatty foods and low fiber rate which put log lasting impacts on their health.[23]

59.9 percent prevalence of anemia (having hemoglobin less than 11 grams per deciliter) was found across the region out of which 23.7% to 87.9% in Rwanda.[24]

Additionally, there are some significant factors responsible for anemia in children containing water used by people, social & economical factors, growth, and structure of family, Demography, maternal health and recent illnesses (ranging from 1.0 percent to 16.7 percent) at the population level.[25]

Worldwide prevalence of anemia risk factors, according to WHO (World Health Organization) estimates. Out of that number, anemia affects students under the age of 18 in a prevalence of 47%, pregnant women in a prevalence of 41%, non-pregnant women in a prevalence of 30%, and persons over the age of 60 in a prevalence of 24%.[26]

This disease is more common in some social classes than others. As in places of lower socioeconomic status, anemia is more common among those with lower levels of education. Its prevalence, particularly after 48 hours of delivery, ranges from 50% to 80% in developing countries, while it is only approximately 50% in developed nations.[27]

The practice of consuming unhealthy foods was highly common among university students. The extensive consumption of fast food, chips, and sweets among university students in Bulgaria was a major source of frequent excuses. The

consumption of fruits and vegetables among Polish students was found to be low.[28]

According to a different study done in Bulgaria, girls were shown to be bigger snack users than boys. In addition, compared to females living at home with their parents, the risk is now too prevalent among university students. Students who lived with their parents or other family members were also found to consume fruits and vegetables more frequently than those who did not.[29]

Students studying health and science at south Indian universities have anaemia at a rate of 43%, per WHO criteria. Compared to men 68%, there was a substantial gender disparity in the percentage of students who had anaemia.[30]

It can happen at any age between 19 and 25 years who remained in hostels from February 2016 to June 2016 in female university students in Tabuk, Saudi Arabia, it is typically more common in small children and pregnant women. The prevalence of iron deficiency anaemia in students residing in hostels was found to be high.[29]

One of the main danger factors for female students is their diet. University students are at risk for developing anaemic for a variety of reasons, and anaemia is more common because of improper diet intake. The additional factors contributing to anaemia risk were eating too little iron and vitamin C, drinking too much tea, and eating red meat only sometimes (around twice per week).[27]
A cross-sectional study carried out in Turkey in 2019 found that male university students' hemoglobin levels were considerably lower than those of female students. Male residents of the hostel have anaemia more frequently than female residents do. Additionally, compared to children who were underweight, overweight pupils were more likely to have anaemia. There is a connection between low hemoglobin, high ESR, and high RBC. Reduced hemoglobin, higher ESR, RBC count, and blood indices showing the presence or absence of anaemia among university students are correlated.[31]

It was discovered that Yemeni university students in the province of Hodeida have iron deficiency anaemia. Additionally, eating breakfast regularly rather than sporadically plays a crucial role in preventing IDA. Consuming insufficient amounts of fruits, vegetables, meat, fish, and chicken, drinking tea, having a low household income, and smoking may cause the prevalence rate of IDA to increase.[32]

MATERIAL & METHODS

The study was conducted from September 2019 to February 2020 Peoples University of Medical and Health Sciences for Women, Shaheed Benazir Abad after approval from ethical committee (PUMHSW/SHA/REGISTRAR47-55). This study investigated the academic discipline preferences of undergraduate students at PUMHSW SBA, including MBBS, BSPH, DPT, BS Nursing, and Pharm-D programs. The study sample consisted of 346 students, with MBBS having the highest representation (35.3%), followed by DPT (24.9%), BSPH (16.5%), BSN (14.5%), and Pharm-D (9.0%). The higher frequency of MBBS students is attributed to the larger class size of approximately 250 candidates per academic year, compared to 50-60 students in other health science disciplines.

The data was collected on pre-designed structured questionnaire. The questionnaire was consisted of both open ended and closed ended questions. After collection data was analyzed in statistical Package for Social sciences (SPSS) for windows version 23. In which categorical variables, frequency and percentage is calculated, for continuous variable mean and SD ± is analyzed and for the association of variables Chi-square test was computed.

RESULTS

A total of 350 subjects which included students from various health disciplines such as BS public health, BS Nursing, Physiotherapy and MBBS participated in the study.

Majority of the study subjects were belonged to 18 to 21 year of age 194 (55.4%). Further, mean of the age was 21.29 with Standard deviation +1.738. Among study subjects the hostlers were

207(59.1%) and only 5 (1.4%) were married.

A large number of the study subjects 327 (93.4%) were fall in middle socioeconomic status. See (Table-I)

Socioeconomic Status	Frequency (%)
Lower	16 (4.6%)
Middle	327 (93.4%)
upper	7 (2.0%)
Total	350 (100.0%)

Table-I. Distribution of socioeconomic status of study subjects:

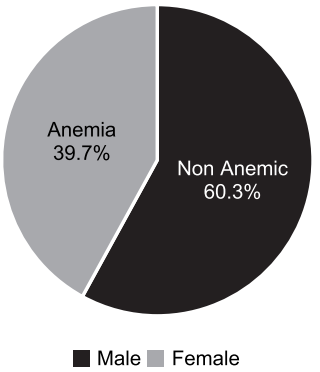

Figure-1. Distribution of anemia among subjects

Hemoglobin	Frequency (%)
Non anemic < 12 g/dl	211 (60.3%)
mild anemia 10 -12 g/dl	79 (22.6%)
moderate 8-9 g/dl	53 (15.1%)
Severe anemia 8 g/dl	7 (2.0%)
Total	350 (100.0%)

Table-II. Distribution of anemia status of subjects:

Addiction	Frequency (%)
Pan	2 (.6%)
Supari	28 (8.0%)
Other	2 (.6%)
None	318 (90.9%)
Total	350 (100.0%)

Table-III. Distribution of history of addiction:

History of drug addiction seen in 32 (9.9%).

Chronic Illness in Last Year	Frequency (%)
Malaria	15 (%)
Typhoid	29 (8.3%)
Renal Diseases	1 (.3%)
Hepatitis	1 (.3%)
Other	2 (.6%)
None	302 (86.3%)
Total	350 (100.0%)

Table-IV. Distribution chronic illness in last Year:

Malaria, and Typhoid were common 15 (4.3%), and 29(8.3%).

History of Worm Infestation	Frequency (%)
Yes	7 (2.0%)
No	343 (98.0%)
Total	350 (100.0%)

Table-V. Distribution of history of worm infestation:

Only 7 (2.0%) have history of worm infestation in last 6 months.

Menstrual Cycle Length	Frequency (%)
less than 21 days	41 (11.7%)
Between 21 to 35 days	214 (61.1%)
More than 35 but less than 90 days	15 (4.3%)
Irregular menstrual pattern	80 (22.9%)
Total	350 (100.0%)

Table-VI. Distribution of menstrual cycle length:

Place of Living	Anemic Status			Total	P-Value
	Mild Anemia	Mod-erate Anemia	Severe Anemia		
With family	22	6	0	28	.004
At hostel	57	47	7	111	
Total	79	53	7	139	

Table-VII. Association between anemic status and hostel residency:

There is significant association between anemic status and residence of the student (p=.004). Subjects 80 (22.9%) have history of irregular menstrual pattern.

Bowel Habits	Anemic status			Total	P-Value
	Mild Anemia	Moderate Anemia	Severe Anemia		
Regular	67	37	6	110	.009
Irregular	12	16	1	39	
Total	79	53	7	139	

Table-VIII. Association between anemic status and bowel movements:

There is significant association between anemic status and bowel moments (p=.009).

Socioeco-nomic Status	Anemic Status			Total	P-Value
	Mild Anemia	Moderate Anemia	Severe Anemia		
Lower	3	4	0	7	.810
Middle	74	49	7	130	
Upper	2	0	0	2	
Total	79	53	7	139	

Table-XI. Association between anemic status and socioeconomic status of subjects:

There is no any significant association between anemic status and socioeconomic status among subjects (p=.810).

DISCUSSION

This is a cross-sectional study conducted from September 2019 to February 2020, at PUMHSW, Shaheed Benazir Abad in this study the convenience sampling technique was used. The response rate of the study subjects was 99.6%.

Anemia is a major health concern, affecting the various regions of the world including developed, and developing countries. In 2020, WHO stated the prevalence of anemia is 40%,[9] the current study determined the prevalence of anemia in the current study is (39.7%). Adding, mean of Hb% (12.129) with a standard deviation of 1.998. Further, the further frequencies of mild, Moderate anemic were (22.6%), (15.1%), and (2.0%) respectively.

Aging is one of the major risk factors for anemic conditions. Literature supported that various factors associated with growing age with a female which results in anemia in women.[29] The current study reported that the majority of the study subjects belonged to 18 to 21 years of age (55.4%). Further, the mean of the age was 21.29 with a Standard deviation + 1.738, which compared with the cross-sectional study conducted in Ethiopia determined that 50% were age from 15 to 25 years, and this age group more susceptible to fall anemia, and also compared with the study conducted at Tehran Iran in 2018 investigated that period of blood loss and/or prolonged improper diet, accelerated growth in adults as well as during schooling have sound relation with the anemia.[7,33] This study revealed that among study subjects, the frequency of anemia seen high among hostler (59.1%), which is very comparable with the cross sectional study conducted in Faisalabad in 2015 determined that 39.2% of the students living in the hostel, which fallen in anaemia, further, anaemia to be a major health problem among the girls residing the hotel due to poor dietary intake. Thus, the diet plays an important role in anaemia status. The girls may suffer from energy deficiency as well as other diseases as a result of their poor intake of nutrients from the food provided in the hostels.[34]

Literature supported that young age, insufficient diet were strongest socioeconomic determinants of anaemia of anemia. The current study revealed that (98.5%) were single, whereas the review study of developing countries, shows overall 10% population included in research was anemic due to low economic status or conditions.[35] Generally it is more prevalent in young children and pregnant woman, while it can occur at any stage of life can occur at any stage of life.[19] The current study revealed that A large number of the study subjects (93.4%) were fall in middle socioeconomic status ,which is comparable with cross sectional study conducted in Indonesia reported that 32% of the study subjects living with socioeconomic ,further impacting the socioeconomic status improper diet like fast book ,and beverages are cofactors for anaemia in Middle to upper class status.[36]

Literature supported that regular bowel have significant relation with the metabolism of nutrients, among nutrients irregular bowel movement is significant relation with iron deficiency anaemia. The current study revealed that maximum of the subjects has regular bowel moments but, (14.6%) agreed for irregular bowel moments, a study conducted at Italy showed association of Iron deficiency anemia with different GIT diseases, among them 36 patients (51%) had atrophic gastritis, celiac disease, Helicobacter gastritis 19,04,13 patients respectively.[37]

Chewing of pan which contain chalia sometimes tobacco and other substances which are harmful. Regarding the use of dietary substances which have no nutritious value also could be the cause of anemia in both gender among younger age, like the habit of chewing and pan was reported significant.[38] The current study revealed that history of drug addiction observed in (9.9%), these finding are matching with the study of India, Out of 1500 pupils, 1050 gave their responses to the survey. 227 individuals in total confirmed that they use tobacco products. Out of this, 196 (86.34%) of the participants were boys, while 31 (13.6%) of the participants were girls. Out of 196 guys, 150

(76.5%) smoke one to five times per day, and 46 (23.4%) chew areca nut and gutkha once to five times per day. 25 of the 31 females smoke one to five times per day (80.6%), and six of the girls (or 19.4%) chew areca nut and gutkha one to five times per day. 210 girls and 530 boys out of 740 participants were fully aware of the harmful long-term repercussions of tobacco use.[39]

Malaria and typhoid are health devastating as well as causes huge household and economic burden for its control and treatment in constrained throughout the world which continues to carry a disproportionately higher share of the global disease burden. Literature supported that maltreatment, and repeated medical or maltreatment have significant relation with the anaemia. This study revealed that malaria (4.3), typhoid (8.3%), renal diseases 1 (.3%), hepatitis (.3), which is comparable with the study at Ghana that showed anemia in association with malaria was present in 16 (29.6%) of patients and typhoid in 12 (48.0%) of patents included in that study.[43] Further, typhoid and malaria remain widespread in low-resource populations due to inadequate sanitation and other socio-demographic factors, but they remain silent and never present as anaemia due to the abundance of natural foods containing iron and citrus fruits, which stimulate the immune system of patients in various parts of the world.[40]

The current study revealed Only (2.0%) have history of worm infestation in the last 6 months, which is comparable with the study at Swat where worm infestation with anemia seen in 14.22% patients female of young age. this finding also supported that worm manifestation is considered as a risk factor for anemia among young adult especially in the female gender.[41]

Several studies have shown a positive association between inadequate sleep patterns, specifically less than six hours of sleep, and anemia. The frequency of anemia varies between males and females, with literature supporting a higher frequency of anemia in females as age increases. The current study revealed that the age of menarche was between 12 to 14 years in 84.3% of the participants, with a mean age of 13.13, same type of pattern of anemia due to poor sleep was seen in females those were 25.9%.[42-43]

Literate supported that heavy menstrual bleeding is frequently reported by adolescents, which is chief manifestation among anaemic condition. This study revealed that heavy flow of menstruation in (22.9%), which compares with the cross-sectional study conducted in USA showed 35.0 % of females were anemic due to iron deficiency and main cause was heavy menstruation.[44]

CONCLUSION

This study concluded the frequency of anemia in health sciences student of Peoples University of Medical & Health Sciences for Women, Shaheed Benazir Abad was 39.7%. Further; this study also determined risk factors associated with anemic status. Furthermore, bowel moments, chronic illness, worm, and dietary pattern have sound contribution in anemic status among health sciences students at PUMHSW.

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