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PREVALENCE OF ANAEMIA AMONG THE STUDENTS AT SHAH ABDUL LATIF UNIVERSITY, KHAIRPUR.

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Abstract

Introduction: Iron deficiency, which leads to nutritional anaemia, is a serious health problem in economically developing nations like Pakistan. **Objective:** To determine the incidence of anemia in male and female students at Shah Abdul Latif University, Khairpur. **Methodology:** In this study, a total of 179 students were evaluated, with 63 (35.1%) being male and 116 (64.8%) being female. The participants were selected from various departments of Shah Abdul Latif University using a convenience sampling method, with informed consent obtained from each individual. The study participants underwent interviews and screening for anemia. Demographic information, such as age and gender, was gathered using a pre-designed questionnaire. Blood samples were collected in EDTA vacutainers and analyzed using a Hematology Analyzer Huma Reader Plus. The data was then analyzed using the SPSS software version 26.0. **Results:** The average age of the participants was 19.4 ± 1.1 years. 47.5% (n=85) of the 179 students studied were found to have anemia. The prevalence was higher in female students at 55.8% (n = 64) compared to 33.3% (n=21) in male students. The mean levels of haemoglobin and red blood cells were found to be significantly different between male and female students ($P < 0.05$). No significant differences were observed in other hematological parameters between the two groups. **Conclusion:** The female students had a higher prevalence of anaemia than male students, more study with a bigger sample of healthy college students is needed to corroborate these findings and safeguard the well-being of potential moms.

Keywords: Anaemia, Shah Abdul Latif University, Khairpur

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INTRODUCTION

A growing issue in emerging nations is nutritional anaemia[1]. Adult females between the ages of 18 and 25 are most often affected by this issue. Iron deficiency anaemia was found in 50% of females of reproductive age worldwide[2]. Previous data from Lahore, Pakistan, in 2015 revealed that 50% of Pakistani girls of reproductive age were suffering from anaemia, while 21% of females aged 9-29 years have the same condition in Punjab, Pakistan[3]. The same frequency has been recorded in neighbouring India[4]. Age, sex, socioeconomic status, nutritional inadequacies, stress, menstrual blood loss, and helminthic infection were the main etiological factors responsible for anaemia in this age group[2,5]. This finding may imply that dietary status significantly affects the rate of anaemia in young women. The long hours spent in class, on clinical rotations, under stress, and eating poorly in dorms put medical students at a heightened risk of anaemia[6]. Fatigue, overall malaise, decreased work ability, and difficulty focusing has all been linked to anaemia by several studies.1 It makes it hard for young students to learn, think, pay attention, and do their regular activities. It may also cause them to miss classes at college[7,8]. Anaemia is a serious public health concern and an indication of poor nutrition and health, according to the World Health Organization (WHO). It is most prevalent in South-East Asia, the Eastern Mediterranean, and Africa[2,9]. Anaemia is far more common among young girls than boys, according to previous studies; hence, further investigation into the causes of anaemia among young women and the implementation of public health interventions are necessary to combat the problem. Thus, this research aimed to determine how common anaemia is among undergraduate students of Shah Abdul Latif University, Khairpur. The present research aims to investigate the haematological parameters in young university students aged 18 to 22 years since this age group is sensitive to dietary deficiencies due to their increased physiological demands for micronutrients, especially iron.

METHODOLOGY

Students from both sexes at Shah Abdul Latif University in Khairpur were recruited via a convenience sample method. A printed notice regarding the study was sent to seek participants. A sel-administered questionnaire was used to interview potential individuals initially. At Shah Abdul Latif University, 63 male and 116 female students between the ages of 18 and 22 were interviewed and checked for anaemia in several Departments. Age, gender, and other socio-demographics were recorded. A sample of blood was taken from each student who had provided informed permission once it was determined that they did not have any glaring health problemsThe information was gathered during a two-month period. Professional personnel drew blood samples through venipuncture into a 3 mL vacutainers tube containing EDTA. The levels of various blood components, including Red blood cells (RBCs), Haemoglobin (Hb), hematocrit (Hct), mean corpuscular volume (MCV), mean corpuscular haemoglobin (MCH), mean corpuscular haemoglobin concentration (MCHC), as well as the counts of red blood cells (RBC), white blood cells (WBC) and

platelets, were measured using the Huma Reader Plus Hematology Analyzer, manufactured by a French company. The WHO haemoglobin threshold for anaemia was 12 g/dL for women and 13 g/dL for men 2. Hematocrit levels 36% for females and 41% for males were considered abnormal[5]. The typical RBC range for males was $4.2–5.8 \times 10^3/mm^3$, while for females it was $3.6–5.6 \times 10^3/mm$. The following were the cutoff values for the red blood cell indices: MCV 80 fL, MCH 27 pg, and MCHC 32 g/dL were deemed abnormal, but WBC counts 3.4×10^3 /L or >11.5/L were deemed abnormal[6]. Microcytic anaemias (MCV, < 80 fL), normocytic anaemias (MCV, 80-100 fL), and macrocytic anaemias (MCV, >100 fL) are characterised by the upper and lower limits of the mean red blood cell volume (mean corpuscular volume [MCV]). We used descriptive statistics to analyse each of our variables. Mean and standard deviation were given for quantitative criteria like age and laboratory test results. Displaying qualitative data included the use of both percentages and frequency distributions alongside one another. To evaluate whether or not there was a difference that was statistically significant between the two groups that were comprised of men and women, a chi-square test was carried out, and the p-value that corresponded to this test was calculated. The level of significance that was selected was less than or equal to 0.05. The statistical analysis was performed on the data by employing the computer software programme known as SPSS version 26.0.

RESULTS

There were 179 pupils in all. The sample's average age was 19.4 1.1 years. The age range of 18 to 22 years had the biggest proportion of students—63 (35.1%) of men and 116 (64.8%) of women. All of the subjects were from middle- or upper-class backgrounds.

Table 2 illustrates a comparison of various haematological parameters between male and female university students. The data indicates that the mean haemoglobin and mean red blood cell counts were significantly different between men and women (P < 0.001). However, no significant differences were observed in the mean values of HCT, RBC, MCV, MCH, MCHC, WBCs, platelets, and platelet count between male and female students.

The prevalence of anaemia was found in 47.5% (n=85) of students out of 179 BS students. While anemia was more found in 55.8% (n = 64) females than in 33.3% (n=21) male students. In terms of severity, out of 47.9% (n=85) anaemic students, 38% (n = 68) were mildly anaemic (Hb <12.0 g/dl), 13% (n = 11) were moderately anaemic (Hb <10.0 g/dl), and 7.1% (n=6) of students found with severe anaemia (Hb <8.0 g/dl). In terms of severity, out of 64 anaemic females, 79.7% (n = 51) were mildly anaemic (Hb <12.0 g/dl), 11% (n = 7) were moderately anaemic (Hb <10.0 g/dl), and 9.4% (n = 6) had severe anaemia (Hb <8.0 g/dl).

Table 3 illustrates the prevalence of abnormal iron status indicators among male and female students at Shah Abdul Latif University. The data shows that the haemoglobin status of male subjects was higher to that of female subjects, with 11.7% (n=21) of males being considered anaemic (Hb < 13.0 g %) and 35.8% (n=64) of females being anaemic and having haemoglobin concentrations < 12.0 g%. The abnormal hematocrit levels were found in 13.9% of females and 0.4% of males. Furthermore, 43.1% of female students had microcytic anemia, compared to 63% of male students. Hematological parameters,

Indicator	Male (n = 63) Mean ± SD (Ranges)	Female (n = 116) Mean ± SD (Ranges)	P – value
Hgb (g%)	13.5 ± 1.8 8.2 – 16.7	11.6 ± 1.6 6.90 – 14.6	< 0.05
PCV (%)	5.0 ± 0.6 4.0 – 6.9	4.5 ± 0.7 2.3 – 6.3	> 0.05
RBC (×103/mm3)	39.6 ± 5.5 25.4 – 54.7	36.3 ± 5.5 22.2 – 52.9	< 0.05
MCV (fl)	80.2 ± 6.6 61.0 – 92,7	80.9 ± 9.6 59.0 – 117.8	> 0.05
MCH (pg)	27.2 ± 3.4 18.7 – 36.0	28.0 ± 8.2 17.4 – 79.5	> 0.05
MCHC (g/dl)	32.9 ± 2.1 27.2 – 39.5	32.9 ± 2.8 26.1 – 48.1	> 0.05
WBC (x103/µl3)	8.1 ± 1.9 5.3 – 13.7	8.4 ± 2.7 3.8 – 19.2	> 0.05
Platelet count (thousand/µl)	261.5 ± 55.5 139 – 412	278.1 ± 70.9 141 - 469	> 0.05

Variable	Male (n=63)		Female (n=116)	
	N	%	N	%
Normal	42	66.7	52	44.8
Mild Anaemic	17	27.0	51	44.0
Moderate Anaemic	4	6.3	7	6.0
Severe Anaemic	0	0	6	5.2
Total	63	100%	116	100%

Indicator	Male (n=63)		Female (n=116)		P - value
	N	%	N	%	
Hb % Normal Abnormal	40 23	63.5 36.5	54 62	46.6 53.5	< 0.05
HCT Normal Abnormal	28 35	44.4 55.5	64 52	55.2 44.8	> 0.05
RBC (x10-3/mm3) Normal Abnormal	59 4	93.6 6.3	108 8	93.1 6.9	< 0.05
MCV (fl) < 80 ≥ 80	23 40	35.5 63.5	50 66	43 56.9	< 0.05
MCH (pg) < 27	24	38.1	61	52.6	> 0.05

≥ 27	39	61.9	55	47.4	
MCHC (g/dl) < 32 ≥ 32	 18 45	 28.6 71.4	 42 74	 36.2 63.8	 > 0.05
WBC (x10-3/uL) < 3.4 ≥ 3.4	 4 59	 6.4 93.6	 12 104	 10.3 89.7	 > 0.05
Platelet count (thousand/μL) < 150 > 150	 2 61	 3.2 96.8	 4 112	 3.4 96.6	 > 0.05

including HCT, MCH, MCHC, and WBCs, were significantly different between genders. Additionally, there was a significant difference in platelet count between male and female students, with a low count found in 3.5% of females and 3.2% of males. Other hematological parameters did not show significant differences between the two groups. Overall, 40.8% of students were found to have microcytic anemia and 1.7% were found to have macrocytic anemia.

DISCUSSION

The current study found the prevalence of anaemia among 47.5% (n=85) of students. Previous studies reported a lower rate of prevalence of anaemia, 33.4%, 30.4%, and 12.6% among university students, respectively[15,17,18]. While anaemia was more found in 55.8% (n = 64) females than in 33.3% (n=21) male students. A previous on the Ayub Medical College students revealed that anaemia was more found in 73.7% of female students than in 8.4% of male students. Another study documented more anaemia in 8.42% of females compared to 4.27% of male students[13]. In addition, The prevalence of anaemia among female university students was found to be 26.7% at the University of Sharjah, UAE. The high prevalence of iron deficiency anemia (IDA) among the female population may be due to

a variety of factors such as inadequate iron intake, poor absorption of iron, lack of other essential micronutrients in the diet, lack of awareness about IDA, and overall poor nutritional status. Women are generally more susceptible to anemia than men, especially during their reproductive years, due to menstrual blood loss and socio-economic factors that may lead to a lower quality diet compared to men[19,20]. Previous research on university students in Bengali found that 55.3% of the students had IDA, with 63.3% being female and 36.7% being male[21]. Another study in India revealed that 32.0% of medical students had IDA, with 44.0% being female and 20.0% being male[22]. Additionally, studies in Saudi Arabia, United Arab Emirates, and Iran have reported IDA prevalence rates of 23.9%, 29.0%, and 3.8% respectively among university students[23-25]. Adolescents have a high rate of IDA, which may be caused by the increased need for iron during periods of rapid growth and menarche, as well as a lack of iron-rich foods in the diet. Additionally, poor dietary choices and the consumption of foods and drinks that inhibit iron absorption, such as tea, coffee, and cola, can also contribute to anemia[26]. Factors such as poverty, lack of access to proper nutrition and healthcare, and low levels of education may also contribute to a higher prevalence of IDA in some populations[27]. Furthermore, this study identified factors such as low-income families, lack of regular breakfast,

not consuming enough red meat, fish, chicken, vegetables, and fruits, and certain lifestyle habits such as drinking tea, chewing khat, smoking and unawareness about anaemia and its causes as being significantly associated with IDA among the study participants.

The current study found that a majority of students, 25.8%, had mild anaemia, followed by 7.2% with moderate anaemia, and a small percentage, 0.5%, had severe anaemia[12-15]. Previous studies have also reported similar findings with a large proportion of students suffering from mild anaemia and a smaller proportion with moderate anaemia. For example, one study found that 68.9% of students had mild anaemia and 31.0% had moderate anaemia, while another study found 69.2% and 30.8% of subjects with mild and moderate anaemia respectively. None of these studies reported any subjects with severe anaemia[10,11]. According to another research, 88.4%, 7.3% and 2.3% students had mild, moderate and servere anemia, respectively[14].

CONCLUSION

An alarmingly high rate of 47.5% of students with anaemia necessitates further investigation using a larger sample of healthy college students to confirm these findings and ensure the well-being of potential mothers.

Ethics approval: The ERC gave ethical review approval

Consent to participate: written and verbal consent was taken from subjects and next of kin

Authors' contributions: All persons who meet authorship criteria are listed as authors, and all authors certify that they have participated in the work to take public responsibility of this manuscript. All authors read and approved the final manuscript.

Conflict of interest: No competing interest declared.

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