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FREQUENCY OF ANEMIA AND CAUSATIVE RISK FACTORS IN PATIENTS PRESENTING TO TERTIARY CARE HOSPITAL: A CROSS SECTIONAL STUDY.

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ABSTRACT… Objectives: To determine the frequency of anemia and its causative risk factors in patients attending the gynecology outpatient department of Nishtar Medical University and Hospital. **Study Design:** Cross sectional study. **Setting:** Gynecology Outpatient Department attendees of Nishtar Medical University and Hospital. **Period:** 1st September to 31st December 2019. **Material & Methods:** Total 361 females between 19-49 years of age were enrolled and included those patients who consented to be tested for blood hemoglobin estimation. **Results:** Majority of patients 65% were between 19-35 years of age and 34% were 36-49years of age. Frequency of pregnant patients and non-pregnant patients was 63.4% and 36.6%. Frequency of anemia was 56.8%, mean hemoglobin 10.48±1.18 with mild, moderate and severe anemia were 36.8%, 17.2% and 2.8%. Majority of females 82.9%, never went to school and had primary education, 71.70% belong to very poor and poor socioeconomic status, 79.02% were multipara and 81.95% never and infrequently practiced the contraceptive methods. **Conclusion:** Frequency of anemia is very high in females presenting to tertiary care hospital being more common in younger age group. Frequent pregnancies, poor socioeconomic status and low level of educational attainment were the major determinants of anemia in females.

Key words: Anemia, Cross Sectional Study, Hemoglobin Level, Maternal Morbidity.

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INTRODUCTION

Anemia is defined as reduced level of hemoglobin that results in reduced oxygen carrying capacity of blood which precipitate multiple risks to mother and growing fetus. Iron deficiency anemia is the most prevalent anemia because of nutritional deficiency while other causes of anemia are genetic disorders like hemoglobinopathies and infectious diseases like malaria.[1] Females during their reproductive years[2] and children are affected more than males by anemia especially iron deficiency Anemia equally affects the fetus by causing small for gestation, preterm delivery, intrauterine growth restriction, low APGAR score, neonatal anemia and is also an independent reason of morbidity and mortality of all ages.[3]

Iron deficiency anemia is global public health problem being more prevalent in underdeveloped countries. Incidence of anemia is 9% in developed countries and 43% in underdeveloped countries.[3] In Africa, anemia accounts 35%,[4] Africa and Asia contributes to 85% in causing absolute anemia burden globally[5] almost two billion people are affected by anemia.[6] In Pakistan, the 52-68% female population was anemic.[7,8] The known risk factors in causing anemia are uneducation societies, poor socioecomic status, fertility rates in women, multiparty, frequent mensturation and nonuse of contraceptives.[9]

World Health Assembly approved a comprehensive plan for the reduction of anemia in underdeveloped countries. Subsequently Pakistan with India, Ethopia, Yemen, Nigeria, Malawi and Uganda have systematically established the investigation plan to combat with this problem.[10,11] In Uganda, Ministry Of Health has taken steps on improvement of nutritional interventions like production of bio fortified and

iron rich crops, iron supplementation and breast feeding promotion, family planning, delayed cord clamping, prevention of malaria and worm infestation and promotion of hand hygiene.[12,13]

In Pakistan, secondary analysis of National Nutrition Survey Data reported that anemic mothers are more likely to have anemic children in Pakistan. So they have devised some vertical and horizontal programs to combat anemia.[11] According to this survey, the prevalence of anemia in Pakistan is 18.1%.[11] We have performed this study in Nishtar medical university which the largest tertiary care center of South Punjab draining huge rural and urban area. Our aim was to observe the frequency of anemia in female patients attending the gynecology outdoor and have tried to find the reasons behind that. We have hypothesized that females during reproductive age groups, multiparous and with low level of education were more prone to develop anemia.

MATERIAL & METHODS

Total 361 patients were enrolled in cross sectional study conducted in outpatient department of gynecology and obstetrics in Nishtar Medical University from 1st September to 31ST December 2019. Their brief history was taken after proper consent according to predesigned proforma to rule out the risk factors. All those females were included who consented for the blood to be tested. Patients with chronic lung disease, chronic liver disease and chronic kidney disease were excluded from study. Permission from ethical committee of Nishtar hospital was obtained. Blood test was done by obtainting the blood sample by finger prick method. Hemolglobin analysis was performed by portable Hemocueanalyser. Results were to provide to patients verbally and in written report form.

Frequency of anemia, severity of anemia and their stratification was performed against the risk factors like age, educational status, socioeconomic status, status of pregnancy, parity, and contraception to rule the causative risk factors. Anemia was marked as hemoglobin less than 11gm/dl categorized into mild, moderate and severe anemia as 10-11 g/dl, 7-9.9 gm/dl and 4-6.9g/dl. Educational status was categorized as never went to school, primary education and more than primary education. Socioeconomic status was categorized as very poor (income less than Rs 10,000//month), poor (income Rs 10,000/ to 25,000/- per month) and middle (income more than Rs 25,000/month). Contraception was categorized as never practiced, infrequently practiced and regularly practiced.

Stratification was performed to examine association between the dependent variable (anemia) and other variables. Pearson Chi-Square test was applied to examine the significant difference and p-value of <0.05 was considered significant. Mean $\pm$ SD was used for the hemoglobin level.

RESULTS

Table-I showed that among total 361 female patients frequency of anemia was 56.8% where 36.8%, 17.2% and 2.8% were mild, moderate and severe anemia. Mean hemoglobin with standard deviation was 10.48 ± 1.18 gm /dl. Table-II represented the causative socio-demographic variables as risk factors and their association with anemia. Majority of anemic patients 55.5% were from younger age group (19-35 years) and 44.5% were between 36-49 years. The majority of anemic patients (95.17%) attained either no education or were just had primary education. Anemia was more prevalent in very poor and poor patients (71.70%). Majority of females (81.95%) never practiced or infrequently practiced contraception. Females having two and more than two children were more anemic (79.01%) than patients who were in their first pregnancy and had one child. Table-III represented females based on pregnancy status and duration of their pregnancy. Two hundred twenty nine patients were pregnant (63.43%) and among them 60.28% were anemic and 94.20% were mild to moderately anemic and 46.28% were in their third trimester.

Anemia	No. of Patients	Percentage (%)
Normal	156	43.2
Mild	133	36.8
Moderate	62	17.2
Severe	10	2.8

Table-I. Frequency of anemia (N=361).

Anemia	Age (Years)			T-Test
	19-35 years	36-49 years		
normal	120	34		0.000
Mild	91	57		
Moderate	22	27		
severe	2	8		
	Education Status			
	Never went to school	primary	middle	
normal	105	25	24	0.000
Mild	69	74	5	
Moderate	32	15	2	
severe	5	2	3	
	Socioeconomic			
	Very poor	poor	middle	
normal	36	62	58	0.000
Mild	17	67	49	
Moderate	37	18	7	
severe	7	1	2	
	Contraception			
	Never used	Infrequent	occasional	
normal	124	29	3	0.000
Mild	74	38	21	
Moderate	33	16	13	
severe	5	2	3	
	Parity			
	one	**2-4**	**>4**	
normal	36	53	67	0.000
Mild	8	36	89	
Moderate	35	24	3	
severe	0	8	2	

Table-II. Socio-demographic factors associated with anemia (n=361).

Anemia	Pregnancy Status		T-Test	
	Pregnant (n=229)	Non-pregnant (n=132)	0.004	
Normal	91	65		
Mild	79	54		
Moderate	51	11		
Severe	8	2		
	Duration of pregnancy (n=229)			**t-test**
	Ist Trimester	IInd Trimester	IIIrd Trimester	
Normal	18	30	43	0.000
Mild	9	4	66	
Moderate	0	14	37	
Severe	4	1	3	

Table-III. Frequency of anemia among patients on the basis of pregnancy status (n=361).

DISCUSSION

Anemia is the most prevalent disease in Africa and Asia affecting the males, females and children of all ages and having detrimental effects on their health. Frequency of anemia in our study is 56.8%, Faseeh[7] observed 66.8%, Olivia reported 32% in Uganda[9] and World Health Organization described that anemia affects 35% of Africal population.[4] Indian State-level Disease Burden Initiative Malnutrition Collaborator described that 54.5% of females were between 15-49 years of age.[14] We observed that majority of females 44% suffer from mild and moderate anemia. Faseeh reported that 18.5% females had moderate anemia[7]. Aqsa reported that 58% of females between 18-28 years were severely anemic.[8]

In our study we observed that young females were more anemic than females of more age during reproductive years. We observed 55.5% were between 19-35 years, Aqsa reported that females between 18-28 years are more prone to develop anemia.[8] Kassebaum observed that higher level of anemia is prevalent among older age women. He hypothesized that blood loss during frequent child births results in anemia in older age females.[15]

We observed that anemia was directly related to low socioeconomic status, low level of educational

attainment in females. Majority 95.01% either never went to school or had only primary education in our study. Almost 71.70% females belong to very poor and poor socioeconomic status. Bekele observed that 18.7% had no formal education and 31% had achieved secondary school and above.[3] Olivia stated that poor household is indicator of poverty and the poverty leads to more prevalence of anemia.[9] Bekele concluded that pregnant females with low income were four times more likely to develop anemia than high income group.[3]

We observed that majority of females (81.95%) never practiced or infrequently practiced contraception. Females having two and more than two children were more anemic (79.01%) than patients who were in their first pregnancy and had one child. Bekele reported that more than half of antenatal care patients, 202 (60.8%) had history of good contraceptive use.[3] He observed that family size is significantly associated with anemia, female patients with more than five children were prone to develop anemia.[3] Obse also reported the same, big family size is associated with more anemic mothers.[16]

We observed that more than half of female patients were pregnant (63.43%) and frequency of anemia was 60.28% and 94.20% were mild to moderately anemic and 46.28% were in their third trimester of pregnancy. Madiha reported that anemia also prevalent in women during their first pregnancy.[17] Bekele reported pregnant females with less than two years inter pregnancy interval were more prone to develop anemia.[3] Abdel Hafiz from Saudi Arabia observed high parity with frequent pregnancies make the females more likely to develop anemia.[18]

CONCLUSION

Frequency of anemia is very high in females presenting to tertiary care hospital being more common in younger age group. Frequent pregnancies, poverty and poor socioeconomic status were the major determinants of anemia in females.

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4	Shazia Siddiq	Study design, interpretation, Principal investigator, final reading.	
5	Asiya Fayyaz	Data collection, Study design, Interpretation, Final reading.	
6	Shagufta Tabassum	Data collection, Study design, Interpretation.