Analysis of demographic variables in female suffering from IDA visiting the gynecology OPD at PMCH Nawabshah Sindh Pakistan.

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ABSTRACT

Background: Anemia is a common issue of countries like Pakistan and other who are under development. Demographic variable plays vital role in the management of anemia. In the developing nations up to 43% of their population are facing problems of anemia.

Objectives: The aim of the current research is to assess the diverse demographic variables that are related with anemia according to their hemoglobin level and demographic variables with anemia. **Study Design:** This was a Cross-sectional study. **Place and duration of study:** This study was performed at PMCH Nawabshah Sindh Pakistan from august 2017-july 2018. **Material and Methods:** 385 mothers aged between 18-50 years were recruited for study belonging to the nearby towns of Nawabshah simple random sampling method was used. Data was collected after a well-organized developed consultation schedule. **Results:** Total 385 female subjects were studied. The age range from 18 to 30 years subjects were 256(66.5%) and 31 to 50 years were 129 (33.5%). A large number 295 (76.6%) of subjects were married and 90 (23.4%) were unmarried. Al Most all of study subjects were house wives by occupation. Breast feeders were 74(19.2%) and rest 311(80.8%) were non breast feeder. A large portion of study population 240 (62.3%) from the rural setup and 145 (37.7%) were from city areas. There were 207(53.8%) subjects from lower class, 131(34%) and 47(12.2%) middle class and upper class respectively. Regarding educational status 201(52.2%) participants were illiterate at all levels rest of them were educated from primary to graduation level. There was history of menopause in 25(6.5%) and no menopause in 360(93.5%) of cases. There was no pregnancy in 372 (96.6%) and 13(3.4%) pregnant. IDA was present in 203(52.7%) female while rest of them 182(47.3%) have the hemoglobin within normal reference range. **Conclusion:** As a growing nation, people of Pakistan had low demographic position and are traditionally bound. Current research analyzed that anemia was highly prevalent in female subjects with history of marriages at early age. Decreased educational status, decreased antenatal or postnatal care, near to the ground everyday earnings, living in joint families, decreased nutritional range, other habits like smoking are the important factors related with anemia in females.

KEY WORDS: Anemia, hemoglobin, Demographic variables, Nawabshah

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INTRODUCTION

Anemia is a common blood disorder that is defined by World Health Organization (WHO) as hemoglobin less than normal amounts and is characterized by deficiency of iron, an essential mineral content. Hemoglobin it is highly iron containing protein, the oxygen is transported from lungs to the body by means of red blood cells. The World Health Organization (WHO) Sex-specific definition of anemia defines female subjects as anemic those with < 12 g/dl and male subjects as anemic those with Hb < 13 g/dl [1].

More than 01.62 billion population of the globe is affected by anemia. Anemia is a condition in which the hemoglobin levels are decreased than the normal. Nutritional deficiency is one of the most important factors

all over the world and about a quarter of the global population is facing dietary deficiency and anemia is frequently noted in deficient population [2]. Anemia is the main health issue of the rising nations. The global prevalence of anemia in the developing nations is 43.00% in comparison to the developed nations where the incidence of anemia is 09.00%. A large number of maternal deaths i.e. about 01.15 million is related with anemia and about 05.91 million deaths are reported in prenatal period yearly all around the world. These mortalities usually occur in the under developed nations [3]. Iron deficiency is responsible for about half of the anemia burden around the world [4]. A quarter of global population is iron deficient and half of these subjects are women of child bearing age [5]. Anemia has maternal as well as fetal concerns, and is the chief cause mortality in pregnant female particularly in under developed countries [6,7]. The most important predictors of anemia occurrence are low socio-economical class, multiparous women and educational status [8]. Frequently women with anemia had history of poor food intake [9].Prevalence of anemia is more common in those Pakistani pregnant women who are the sufferers of dietetic deficiency and have no history of routine antenatal checkups, and belonging to poor socio economical class [10].

More than 51.00% of women in Pakistan had standard values of hemoglobin. From all female victims of anemia, about 26.00% of pregnant women and 20.00% of non-pregnant women had iron deficiency anemia as reported in national nutritional analysis [11].The current study was aimed to analyze the frequency of anemia in child bearing age women and relation of anemia with different variables like, age, matrimonial position, socio economic status, addiction and educational status.

METHODOLOGY

After taking ethical permission, this cross-sectional study was carried out at the gynecology department of PMCH Nawabshah among the women belonging to district Nawabshah and its surroundings. Data was entered on predesigned proforma. Written informed consent was taken from subjects involved in study. All female subjects age ranging from 18-50 years were included. Subjects not willing to give information and participate in study were excluded.

Chronically ill subjects with diagnosed comorbidities were also excluded. Females with menopause were also excluded. In this study 385 mothers age ranging between 18 to 49 years were recruited. The sample size was calculated by Rao-software for sample size. A well designed interview proforma was used and data was collected. Fieldwork activity was performed by hired female students from the department of social sciences. The dependent variable was hemoglobin and the independent variables included were demographics, lifestyles, and dietary variables. Hem Cue meter was used to measure the hemoglobin concentrations and outcomes were categorized as normal, moderate anemia, and severe anemia. The working ability and the sensitivity of the questionnaire were tested before actual data collection. Frequencies, percentage, mean and SD was applied to describe the data through uni-variate analysis. Bivariate analysis was used to analyze the association among dependent and independent variables. Chi-square and Gamma tests were performed to observe the significance of associations. The comparative significance of variables like dependent and independent were analyzed by multiple linear regressions (Multivariate analysis).

Results

Descriptive statistics

Total 385 female subjects were studied.

Mean age of subjects with SD was 32.03 SD ±8.471years, and age ranged between 18 and 45 years. RBC count was 4.2805 SD ± .55430 million/cumm, Hb% 10.689 SD ±

1.8417g/dl,HCT 33.326 SD ± 5.2037, MCV 77.415 SD ± 10.5813, MCH 25.221SD ± 3.7648, MCHC 32.512SD ± 2.0440, WBCs count was 8180.16SD ± 2390.210 and mean platelet counts were 277.92 SD ± 92.451. table 1.

Demographic variables:

Total 385 female subjects were studied. The age range from 18 to 30 years subjects were 256(66.5%) and 31 to 50 years were 129 (33.5%). A large number 295 (76.6%) of subjects were married and 90 (23.4%) were unmarried. Al Most all of study subjects were house wives by occupation. Breast feeders were 74(19.2%) and rest 311(80.8%) were non breast feeder. A large portion of study population 240 (62.3%) from the rural setup and 145 (37.7%) were from city areas. There were 207(53.8%) subjects from lower class, 131(34%) and 47(12.2%) middle class and upper class respectively. Regarding educational status 201(52.2%) participants were illiterate at all levels rest of them were educated from primary to graduation level. There was history of menopause in 25(6.5%) and no menopause in 360(93.5%) of cases. There was no pregnancy in 372 (96.6%) and 13(3.4%) pregnant. IDA was present in 203(52.7%) female while rest of them 182(47.3%) have the hemoglobin within normal reference range. figure 1.

Table 2: Crosstab Age Groups * Iron Deficiency Anemia * Marital Status

A large number 295 (76.6%) of subjects were married and 90 (23.4%) were unmarried.

IDA was present in 203(52.7%) female (54.6% married and 46.7% unmarried). while rest of them 182(47.3%) have the hemoglobin within normal reference range (45.4% were married and 53.3% unmarried.)From 385 females that were studied, overall IDA was present in 161(54.6%) of married female while no IDA in 134(45.4%) cases. in married subjects whom age range from 18 to 30 years there was IDA in 88 (29.8%) subjects, , in married subjects whom age range from 31 to 50 years there was IDA in 73 (24.7%). On other hand in married subjects whom age range from 18 to 30 years there was no IDA in 78 (26.4%) subjects, , in married subjects whom age range from 31 to 50 years there was no IDA in 56 (19.0%).

While in unmarried subjects whom age range from 18 to 30 years there was IDA in 42 (46.7%) subjects, there was no unmarried subject in age group of 31-50 years.

Table 2One-Sample Test

The one sample test with 95% Confidence Interval of the Difference with upper and lower limits has shown that the statistics of Age Groups t 55.426, df 384, Sig. (2 tailed) .000, Marital Status t 57.125, df 384, Sig. (2-tailed) .000, Breast Feeding t 89.904 df 384, Sig. (2-tailed) .000, Address t 55.674 df 384, Sig. (2-tailed) .000, Socio Economical Class t 44.489 df 384, Sig. (2-tailed) .000, Education t 35.662df 384, Sig. (2-tailed) .000, Postmenopausal t 153.887df 384, Sig. (2-tailed) .000, Iron Deficiency Anemia t 57.805df 384, Sig. (2-tailed) .000 and Pregnancy t 213.314df 384, Sig. (2-tailed) .000 as shown in table 3. The test results were statistically significant here.

Table 3.Paired sample correlations:

Paired sample statistics and paired sample correlations were checked among HB pairs with other variable of CBC in terms of mean standard deviations, standard error of mean, correlations and significance levels as shown and detailed in table 4 in detail. Correlations and significance of IDA with demographic variables were shown in Table 4.

Paired Samples Test

Paired Samples Test with Paired Differences with 95% Confidence Interval of the Difference with upper and lower limit has shown that statistically significant relation in between IDA with age group p<0.000, Marital Status p<0.000, Breast Feeding p<0.000, Address p=.010, Socio-Economical Class

p=.010, Education p<0.000, Postmenopausal p<0.000and Pregnancy p<0.000. **table 5.Correlations of IDA with demographic variables**

Pearson's Correlations with sig. (2-tailed) had shown that the correlation of IDA with different demographic variable some are significant and some of them are not significant statistically as shown in table 6.

DISCUSSION

Pakistani females are not much concerned about their healthiness and food, and usually do not know much about the dietary value of food. Nearly a great portion of females during their pregnancy and lactation become anemic. Mostly females are unaware about the decreased levels of hemoglobin in their reproductive age (15 to 45 years). Studies indicate that two thirds of females belonging to the countryside area of Pakistan have anemia. In current research it was analyzed that 52.7% of the rural women were having anemia, the results of current study are comparable with a study in which 54.3% of women in Karachi were reported to have anemia [11].

In a report by WHO (World Health Organization), 58.00% of pregnant women in the unindustrialized South Asian states had anemia [12]. The insufficient iron resources are essential problems for supplementation as reported by WHO. The other related main hurdles are less efficient awareness and counseling of the subjects. Inadequate source of iron tablets, poor approach to pre-natal health care services and also the tough traditional belief in contrary to use of medicines during the gestational period. Another mis-concept in pregnant females belonging to rural areas is that they may have surplus blood that causes the baby weighty and results in difficult delivery [13]. In current study the rural subjects were dominant; here the percentage of rural population of current study is 62.3% which is high.

The severity of anemia ranges different from mild, moderate to severe anemia in different studies [14.]

This study was consist of all three levels of anemia, showing mild to severe anemia and normal hemoglobin levels, where HB% ranges from 5gm% to 15g%.

In terms of health, educated females are the chief agents of revolution. The nations where the women has higher literacy rate, they have usually good health, low mortality rates in infants and children, lower productive health problems, improved lifespan, and where the literacy rate is low all is in reverse. In current study the illiterate females were 52.2% which is very high and indicating the high concern about education level in Pakistan.

Low socio-economic conditions and abnormal habits of eating are the components related with severity of anemia [15.]

In present study the majority of subjects were belonging to lower class 53.8%, while 34% were from middle class and 12.2% from upper class. Anemia was common in lower class as compared to the other classes.

The culture of Pakistan is traditional. Male and females both, especially belonging to the countryside area are involved in smoking (Cigarettes/Hookah). Fitness and reproductive wellbeing are directly affected by smoking; tiredness, weakness and physically inactivity are also noticed in subjects with smoking. The hormonal system of body is also disturbed in smokers [16].Smoking is widespread amongst females from Southeast Asian nations, the hemoglobin levels are decreased in females with smoking in comparison to the nonsmoker females. In gravida females smoking is greatly related with decreased hemoglobin levels [17].

Here in our setup the ratio of smoking was negligible in study population. Because most of subjects were belonging to rural areas and female smoking was not a traditional tool here in present set up.

Table 1: Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Age in Years	385	18	45	32.03	8.471
RBC Count	385	1.20	5.80	4.2805	.55430
hemoglobin level	385	5.0	15.0	10.689	1.8417
Haemotocrit	385	10.0	45.8	33.326	5.2037
Mean Corpuscular Volume	385	49.0	100.0	77.415	10.5813
Mean Corpuscular Hemoglobin	385	15.8	37.0	25.221	3.7648
Mean Corpuscular Hb Concentration	385	25.0	38.0	32.512	2.0440
White Cell Count	385	1300	16200	8180.16	2390.210
Platelets	385	66	680	277.92	92.451
Valid N (list wise)	385				

Table 2: Crosstab Age Groups * Iron Deficiency Anemia * Marital Status

Marital Status				Iron Deficiency Anemia		Total
				Yes	No	
Married	Age Groups	18 - 30 Years	Count	88	78	166
			% of Total	29.8%	26.4%	56.3%
		31 -40 Years	Count	73	56	129
			% of Total	24.7%	19.0%	43.7%
	Total		Count	161	134	295
			% of Total	54.6%	45.4%	100.0%
Un-married	Age Groups	18 - 30 Years	Count	42	48	90
			% of Total	46.7%	53.3%	100.0%
	Total		Count	42	48	90
			% of Total	46.7%	53.3%	100.0%

Table 3: One-Sample Test						
	Test Value = 0					
					95% Confidence Interval of the Difference	
	t	df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Age Groups	55.426	384	.000	1.335	1.29	1.38
Marital Status	57.125	384	.000	1.234	1.19	1.28
Breast Feeding	89.904	384	.000	1.808	1.77	1.85
Address	55.674	384	.000	1.377	1.33	1.43
Socio=Economical Class	44.489	384	.000	1.584	1.51	1.65
Education	35.662	384	.000	1.792	1.69	1.89
Postmenopausal	153.887	384	.000	1.935	1.91	1.96
Iron Deficiency Anemia	57.805	384	.000	1.473	1.42	1.52
Pregnancy	213.314	384	.000	1.966	1.95	1.98

Table 4. Paired sample statistics and paired sample correlations					
	Mean	Std. Deviation	Std. Error Mean	Correlation	Sig.
Iron Deficiency Anemia	1.47	.500	.025	-.055	.283
Age Groups	1.34	.473	.024		
Iron Deficiency Anemia	1.47	.500	.025	.067	.189
Marital Status	1.23	.424	.022		
Iron Deficiency Anemia	1.47	.500	.025	.119	.020
Breast Feeding	1.81	.395	.020		

Iron Deficiency Anemia	1.47	.500	.025	-.070	.169
Address	1.38	.485	.025		
Iron Deficiency Anemia	1.47	.500	.025	.020	.701
Socio-Economical Class	1.58	.699	.036		
Iron Deficiency Anemia	1.47	.500	.025	.000	.985
Education	1.79	.986	.050		
Iron Deficiency Anemia	1.47	.500	.025	-.046	.367
Postmenopausal	1.94	.247	.013		
Iron Deficiency Anemia	1.47	.500	.025	.091	.076
Pregnancy	1.97	.181	.009		

Table 5. Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		95% Confidence Interval of the Difference							
		Mean	Std. Deviation	Std. Error Mean	Lower	Upper			
Pair 1	Iron Deficiency Anemia - Age Groups	.138	.707	.036	.067	.208	3.823	384	.000
Pair 2	Iron Deficiency Anemia - Marital Status	.239	.633	.032	.176	.302	7.404	384	.000
Pair 3	Iron Deficiency Anemia Breast Feeding	-.335	.599	.031	-.395	-.275	-10.976	384	.000
Pair 4	Iron Deficiency Anemia - Address	.096	.721	.037	.024	.168	2.617	384	.009
Pair 5	Iron Deficiency Anemia – Socio-Economical Class	-.112	.851	.043	-.197	-.026	-2.575	384	.010
Pair 6	Iron Deficiency Anemia - Education	-.319	1.106	.056	-.430	-.209	-5.668	384	.000
Pair 7	Iron Deficiency Anemia - Postmenopausal	-.462	.568	.029	-.519	-.405	-15.983	384	.000
Pair 8	Iron Deficiency Anemia - Pregnancy	-.494	.516	.026	-.545	-.442	-18.767	384	.000

Table 6. Correlations of IDA with demographic variables

Iron Deficiency Anemia	Pearson Correlation	1	-.055	.067	.119*	-.070	.020	.000	-.046	.091
	Sig. (2-tailed)		.283	.189	.020	.169	.701	.985	.367	.076
Age Groups	Pearson Correlation	-.055	1	-.392**	.011	.062	-.003	.060	.187**	.133**
	Sig. (2-tailed)	.283		.000	.828	.229	.952	.237	.000	.009
Marital Status	Pearson Correlation	.067	-.392**	1	.254**	-.037	-.032	-.095	.146**	.103*
	Sig. (2-tailed)	.189	.000		.000	.473	.536	.062	.004	.043
Breast Feeding	Pearson Correlation	.119*	.011	.254**	1	-.043	.040	.024	-.129*	.055
	Sig. (2-tailed)	.020	.828	.000		.405	.433	.635	.012	.284
Address	Pearson Correlation	-.070	.062	-.037	-.043	1	.048	-.065	-.013	-.062
	Sig. (2-tailed)	.169	.229	.473	.405		.347	.206	.804	.222
Socio-Economical Class	Pearson Correlation	.020	-.003	-.032	.040	.048	1	-.020	-.051	.033
	Sig. (2-tailed)	.701	.952	.536	.433	.347		.698	.316	.520
Education	Pearson Correlation	.000	.060	-.095	.024	-.065	-.020	1	-.045	.004
	Sig. (2-tailed)	.985	.237	.062	.635	.206	.698		.380	.932
Post-menopausal	Pearson Correlation	-.046	.187**	.146**	-.129*	-.013	-.051	-.045	1	-.049
	Sig. (2-tailed)	.367	.000	.004	.012	.804	.316	.380		.335
Pregnancy	Pearson Correlation	.091	.133**	.103*	.055	-.062	.033	.004	-.049	1
	Sig. (2-tailed)	.076	.009	.043	.284	.222	.520	.932	.335	

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

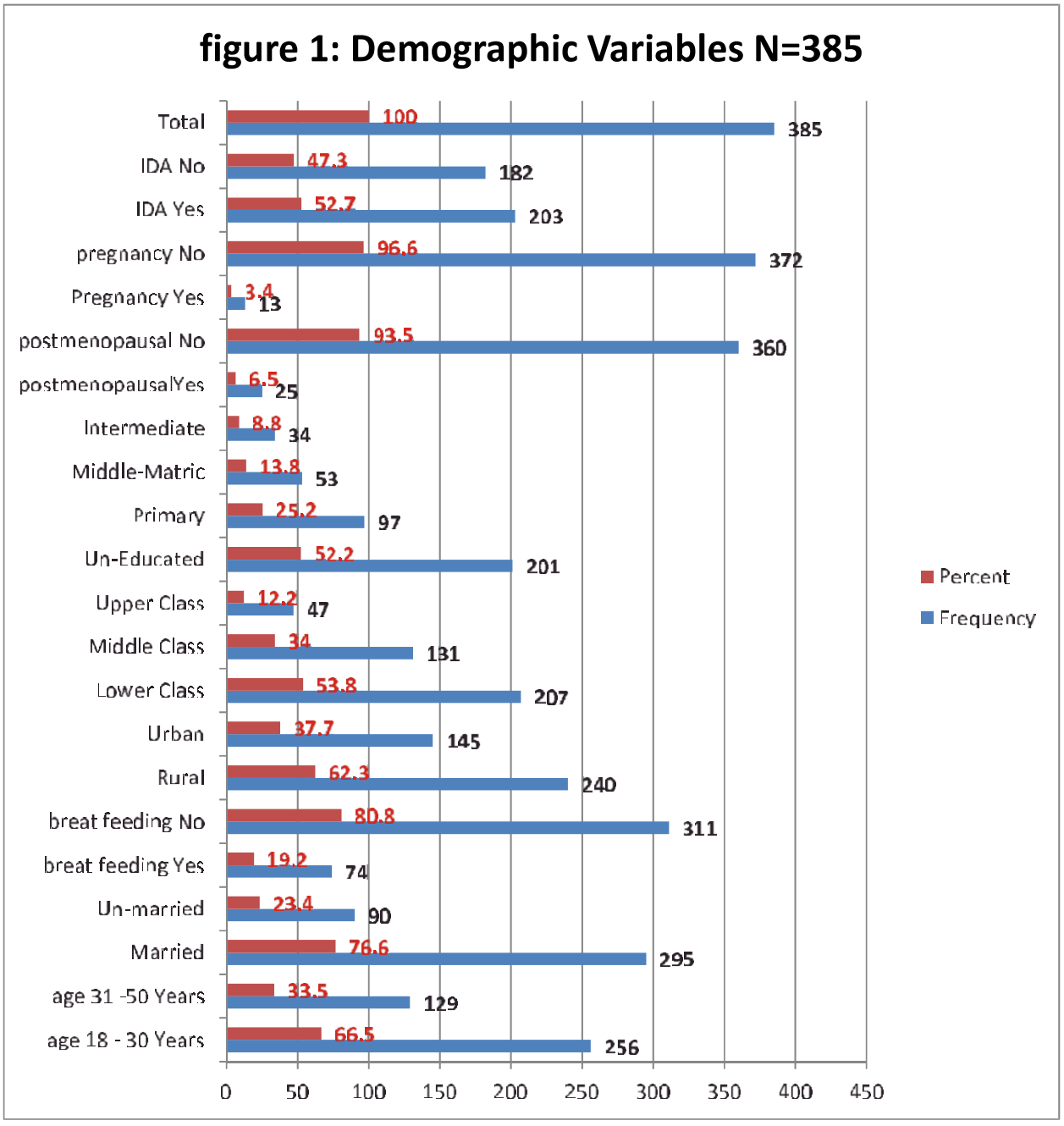
figure 1: Demographic Variables N=385
Total
IDA No
IDA Yes
pregnancy No
Pregnancy Yes
postmenopausal No
postmenopausalYes
Intermediate
Middle-Matric
Primary
Un-Educated
Upper Class
Middle Class
Lower Class
Urban
Rural
breat feeding No
breat feeding Yes
Un-married
Married
age 31 -50 Years
age 18 - 30 Years
100
385
47.3
182
52.7
203
96.6
372
3.4
13
93.5
360
6.5
25
8.8
34
13.8
53
25.2
97
52.2
201
12.2
47
34
131
53.8
207
37.7
145
62.3
240
80.8
311
19.2
74
23.4
90
76.6
295
33.5
129
66.5
256
0
50
100
150
200
250
300
350
400
450
Percent
Frequency

Essential problems like; decreased performance in daily life activities, exhaustion and recurrent anemia may occur due to inadequate nutritional status of women. In women belonging to the rural areas of Pakistan have inadequate dietary status and decreased intake of calories than the standard recommendations. In women theIron deficiency anemia is the most common in women and is due to severe dietary deficiency all over the globe as per report of Red Crescent Pakistan [16]. In Ghana and Cairo when food supplementation were given to subjects with anaemia resulted in improved hemoglobin levels, so it is seen that there is association among anaemia and food intake [18,19].

The women especially from the rural areas are facing many issues including the social, cultural, wellbeing and environmental challenges. The chief issues of women is the early marriages with increased number of pregnancies, longer periods of breast feeding and other unusual domestic odd jobs, these issues never let women be free from disease. Females who gave first birth earlier than the age of 18 years were found to have more risk of developing anemia [20]. In present study 19.2% women's were breast feeding to siblings and 3.4% subjects were pregnant. The growth and development is achieved more rapidly in the adolescence period (10 -18 years) in girls [21].

Hence this period of adolescence requires more consideration regarding the provision of balanced nutritional diet especially in females. Premature marriages and gestation related ailments are more prevalent in the rural women in comparison to the urban women, as the rural community is more typical and traditional than urban society in Pakistan. Prenatal care not only consists of the wellbeing of subjects but it also consists of education and awareness regarding different issues and aspects of gestation [22]. Routine prenatal appointments and counseling decrease the occurrence of anemia and The deficient awareness of the nutritious diet is the major factor for developing anemia during pregnancy and the occurrence of anemia is reduced by recommended prenatal visits and counseling [23.]

CONCLUSION

Anemia is a common health issue of female population of all age groups, pregnant, non pregnant, breast feeders, non breast feeders, menstruating, postmenopausal, rural and urban, literate and illiterate, addicts and non addicts, lower socioeconomically and other classes as well. So there is strong need of prevalence study of local and national population in relation to anemia and its causative risk factors keeping in mind record the different demographic variables.

Recommendations: Further, this study can be continued on large female sample size from different age and area groups and also including other risk factors which influence the RBC count and Hemoglobin levels.

Conflict of Interests: There is no conflict of interest to be declared for currentresearch by the authors.

Funding: No Governmental and Nongovernmental organizations / institutional authority financially supported for this study.

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