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Incidence of Anemia in the Population of Dir (Lower) Khyber Pakhtunkhwa

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Authors' Contributions

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ABSTRACT

Introduction: Iron deficiency anemia is one of the major global public health issue causes many serious diseases mostly found in the women and children of developing world.

Objective: To evaluate and assess the occurrence and disorder related to iron deficiency in the population of district Dir (Lower).

Materials and Methods: From all volunteers blood samples were collected from Vein through syringe and kept it in the EDTA tubes. Hemoglobin concentration was determined by the help of Hematology Analyzer. Following the guidelines of WHO, the value of a hemoglobin (Hb) was <11.5 gm/dl the cut-off for anemia. Data were analyzed by using SPSS.

Results: Overall 200 participants were examined of whom n=80 (40%) were anemic which was found higher in age 1-20 years n= 31 (15.5%), farmers n=28 (14%) and house wives n=20 (10%) and malaria patients n=7 (3.5%). While in gender wise study males n=57 (28.5%) were found more anemic than females n=23 (11.5%) P-value (0.95).

Conclusions: Awareness and education in public about iron deficiency anemia, its causes and related disorder can prevent anemia of iron deficiency. Knowledge about nutritional requirements and iron deficiency anemia in women can save children and whole family from many diseases like anemia. So knowledge, education and awareness in population especially in women are very necessary.

Keywords: Anemia, iron, disease, prevalence.

INTRODUCTION

Iron deficiency anemia is one of the most common nutritional problems of the globe affected 40% of the world population mostly found in children and pregnant women of the developing countries [1]. Anemia is an iron deficient blood disease due to lower concentration of hemoglobin (Hb) than normal for each sex, age, physiological situation and altitude. [2]. Across the globe approximately 43% of the young children have iron deficient anemia and the highest rate are at age of 1 - 2 years. Although in pre-school and school going children the percentage of anemia is estimated 50% and 46% respectively [3]. In Pakistan on the prevalence of anemia no statistical data is present. However its prevalence is documented in children 61.9% and is slightly higher in non-pregnant women 50.4% than pregnant women 49.6% during National Nutritional Survey (2011) [4]. World faces numerous nutritional problems including anemia which leads to severe health problems, such

as poor cognition, delay development and some behavioral problems [5]. Work ability, performance, body health and physical fitness are associated with parasitic infection and enrichment of iron [6]. Cancer, obesity, low dietary intake, inherited blood disease, chronic infections and chronic non-communicable diseases are also the major causes of anemia [7-8]. Many extensive adverse effects of iron deficiency anemia are infants' poor development, and poor cognitive performance in preschool and school-aged children, while loss of physical capacity, decline in work performance in young's and adults weekend immune system and enhance morbidity in all age groups [9]. Moreover, education, place of residence, breastfeeding, consumption of vegetables and fruits and pregnancy are associated with anemia [10]. Pakistan faces many nutritional and challenging diseases like anemia. It may require intake of iron rich foods in sufficient amount, attention of government, uses of balance diet on daily basis, population awareness and facilitation of population with proper nutrition and education. Low socioeconomic status, lack of health facilities and proper nutrition are the chief causes of iron deficiency anemia in Pakistan. To save population from different diseases related to iron deficiency, knowledge about iron, its importance and role in regulation and physiology of many body functions are required. The aim of this study is to explore the incidence of anemia related to iron deficiency in district Lower Dir Khyber Pakhtunkhwa Pakistan.

MATERIALS AND METHODS

Study area

Lower Dir district lies 71.8097° E and 34.9161°N its border is linked with district Swat, Dir (Upper), Bajaur, and Afghanistan on its east, south, north and west. The weather of this district is moderate. Its winter is cold and summer is hot in some areas of this district. Temperature in summer reaches to 42.5 C^0 and in winter its range is -1 C^0 with annual rainfall from 116mm to 243mm. Agriculture and rearing livestock is the main profession adopted by the peoples.

Data collection

The present study was carried out from July 2019 to November 2019 for the analysis of anemia in the population of Dir (Lower) Khyber Pakhtunkhwa. The total of 263 peoples were enrolled, out of these, 200 participants were contributed. The participants were at every age belonging to both the genders.

Socio-economic profile of the inhabitants

Socioeconomic status, environmental factors, comorbidities and occupation were noted. Animals rearing such as cow, buffalo, goat and sheep were in common practice. Agriculture is the main life style of the residents. Most of the residents were employed as unskilled laborers in construction sites.

Collection of Blood Sample

Venous blood was taken and carefully drawn into Potassium EDTA containing tubes. Through syringe blood samples were collected from Vein and kept it in the EDTA tubes. Each EDTA was labeled with name, age and sex. Hemoglobin concentration was determined by the help of Hematology analyzer. Following the guidelines of WHO, the value of a hemoglobin (Hb) was <11.5 gm/dl the cut-off for anemia for the school going children.

Data analysis

All the data collected were analyzed by using SPSS (16 version) for require parameters. For significance of various factors, analysis by logistic regression was done.

RESULTS

In present study out of the total examined participants (n=80/200) 40% were found with iron deficiency anemia which was found higher in males n=57/200 (28.5%) than females n=23/200 (11.5%) in gender wise evaluation (Table **1** and **5)** (P-value 0.95). In age wise satisfaction age 1-20 years were found more anemic n=31/200 (15.5%) followed by age 41-60 years which n= 29/200 (14.5%), age 21-40 years n=18/200 (9%) and age >60 are n=2/200 (1%) respectively as shown in Table **2** and **5** and Figure **1** (P-value 0.38). In relation to comorbidities a total of n=23/200 (11.5%) were comorbid patients of whom malaria patients were found more anemic n=7/200 (3.5%) followed by diabetics and hypertension n=6/200 (3%) and n=6/200 (3%) while typhoid n=3/200 (1.5%) and depression were n=2/200 (1%) respectively (Table **3** and **5)** (P-value0.359). In association with occupation, males farmers were found more anemic n=28/200 (14%) followed by labors n=19/200 (9.5%), students n=8/200 (4%) and employees n=2/200 (1%) respectively while in females, house wives were found more anemic n=

20/200 (10%) and students n=3/200 (1.5%) respectively as shown in Table **4** and **5** (P-value 0.07).

Table 1. Gender Wise Distribution of the Volunteers in Study Sample.

Gender wise	Frequency	Percentage
Males	137	68.5
Females	63	31.5

Table 2. Age Wise Distribution of the Participants in Study Sample.

Age wise	Frequency	Percentage
1-20	74	37
21-40	52	26
41-60	66	33
<60	8	4

Table 3. Comorbid Diseases in the Study Sample.

Comorbidities	Frequency	Percentage
Typhoid	4	2
Malaria	11	5.5
Diabetics	8	4
Depression	5	2.5
Hypertension	14	7

Table 4. Occupational Base Distribution in Study Sample.

Males	Frequency	Percentage
Student	25	16.5
Labor	59	35
Farmers	71	43
Employees	08	5.5
Female/ House wife	48	24
Student	13	6.5
Employees	02	01

Table 5. Anemia Satisfaction in Different Variables Groups.

Age wise	Anemic	Non anemic	P-value
1-20	31	43	0.38
21-40	18	34	
41-60	29	37	
<60	02	06	
Genders			
Males	57	80	0.95
Females	23	40	
Comorbidities			
Typhoid	02	02	0.359
Malaria	07	05	
Diabetics	06	02	
Depression	02	03	
Hypertension	06	08	
Occupations			
Males			
Student	08	17	0.07
Labor	19	40	
Farmers	28	43	
Employees	02	08	
Female/ House wives	20	28	
Student	03	10	
Employees	00	02	

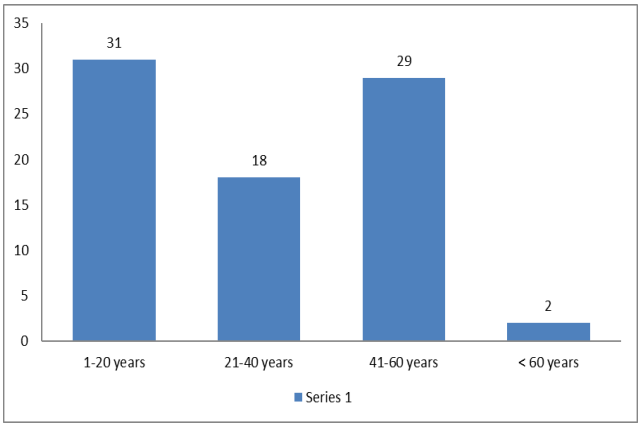

Figure 1. Shows distribution of anemia in different age groups.

DISCUSSION

Anemia is one of the public health nutritional problem of the globe which is commonly effected the population of developing countries. Iron rich foods as well as iron element in adequate amount is very essential for normal physiological function and fitness of the body. Around 40% of the world population have iron deficiency anemia which is mostly common in pregnant women and children. [1]. Iron deficiency anemia is mostly due to many infections like malaria dengue, diabetics, nutritional deficiencies, lack of proper foods, and low socio-economic status etc. Like

other developing world Pakistan is also still facing many nutritional deficiencies issues like anemia. According to the recent National Nutritional Survey (2018) the prevalence of anemia in children is documented is 53.1% which is slightly higher in boys than girls however 56.6% of the adolescent girls and 47.7% women aged 15-49 years were found anemic in Pakistan [11]. Present study indicates that the iron deficiency anemia is still the principle health problem in the population of Lower Dir Khyber Pakhtunkhwa, Pakistan. The research work in our country is very rare on iron deficiency anemia and risk factors regarding to some studies. The current work shows the overall prevalence of iron deficiency anemia is n=80 (40%) which is higher in males n= 57 (28.5%) age 1-20 years n=31 (15.5%), farmers n=28 (14%), house wives 20 (10%) and malarial patients n=7 (3.5%) respectively. Our finding is very similar to the study conducted by Khan *et al.,* on school going children and reported with 40 % prevalence from district Swat Khyber Pakhtunkhwa Pakistan [12]. Another study conducted by Akhtar *et al*., and reported 39.34 % prevalence of anemia from Lahore [13]. This study also strongly supported our findings. Jamali *et al*., reported 67.3% prevalence of anemia in female students from Dolatpur, Town Sindh [14]. Shahab *et al*., documented 66.8% anemia from Peshawar Pakistan [15]. In these studies the prevalence of anemia is high which may due to geographical differences or population size. Naz H. and Begum B. reported 54.3% prevalence of anemia in pregnant women from Korangi, Industrial area Karachi [16]. According to Qamar *et al*., 86% of pregnant women were anemic of whom 90% were house wives [17] which strongly supported our study regarding house wives. Malik *et al*., documented 80% of anemia from Bahawalpur Region of Pakistan [18]. However Ahmed *et al*., reported 44.34% of anemia from district Multan, Punjab Pakistan [19]. According to some studies in Pakistan 69% of children <2 years, 47% of children 54% girls, 30% boys and 39% adolescent and 30 % of females were reported to be effected by iron deficiency anemia [20-21]. Habib *et al*., conducted a study on adolescent girls and reported 47.9% anemia from Azad Jammu and Kashmir [22]. Iron deficiency occurs due to low intake of iron. Various foods are the best sources of iron but due to low intake not satisfying the requirements. Many factors like poverty, diseases, infections, pregnancy, and food habits are the main causes of anemia. Anemia is a principle health issue more efforts are needed to aware population from the requirements, advantages of iron with its sources. Knowledge about iron rich nutrition, supplementation, developing programs on health issues and proper diet plan to fulfill the requirement of the population is needed.

CONCLUSION

It is concluded that iron plays a vital role in our normal body function so the knowledge about iron, iron rich foods and nutrition, specific diet plan, use of healthy and alternate nutrition with proper education and knowledge in population about requirement and importance of iron and its sources are needed to save population from many diseases like anemia. Commonly women and children are more effected so awareness in women is very necessary about nutritional deficiencies and diet plan to prevent herself, her infants, children and family from anemia.

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