



## Prevalence of anemia in primary and middle schools of Tehsil Dargai District Malakand Khyber Pakhtunkhwa (KP), Pakistan

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### Abstract

Anemia is a global health problem and extremely dominant in developing countries. The purpose of the current study was to investigate the incidence of anemia in school aged children. In the present study, 100 blood samples were collected from school going children, among these 22 (22 %) children were anemic and 78 (78 %) were normal. The 05 anemic children were recorded from Govt primary school Koper and 15 children were documented normal. The Govt primary school Qadar Kali has 04 anemic children, while 15 were documented normal. Total of 06 anemic and 14 children were recorded from Govt primary school Hijab Kali. Similarly out of 20 children were documented from Standard education Wazir Abad, among these 03 children were anemic. From the Sina public school Stanadaro Kali total of 10 children were recorded, among these 02 children were anemic and 08 were normal. Similarly total of 10 children were documented from Malakand children academy Koper, among these 02 children were anemic, while 08 were normal. The anemia cause different complications like affect the heart or lungs, such as an abnormally fast heartbeat or heart failure.

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## Introduction

Anemia is the disorder of blood in which the concentration of hemoglobin is low than the normal level for age, sex and altitude. It is a global health problem and extremely dominant in developing countries (Benoist *et al.*, 2015). In Pakistan 65% kids have iron deficiency anemia (IDA) at the age of 7 to 60 years and other results guess diverse prevalent ratio such as 70% and 78%, respectively (Molla *et al.*, 1992; Thaver and Baig, 1994). IDA is frequently perceived in individuals of developing countries. The occurrence is recoded great, specifically in school going kids and pregnant females. The harshness of anemia was examined and initiate that around 54.36% of kids were harshly anemic (Chitra *et al.*, 2014). The most common reasons of anemia comprise parasitic infestations like malaria, hookworm and HIV infections. The disposing features such as are young age, illiteracy and little socio financial position. Others features like rural, urban and pregnancy, but anemia in pregnant women is a significant reproductive global health problem (Ethiop, 1993).

In Pakistan, dietary anemia has been recognized to be most common type of malnutrition was existing in children. Rendering to the 1977, micronutrient investigation of Pakistan about 38% of the population was documented to be anemia. It also has consequence on child growth, intellectual and psychomotor growth (WHO, 2001). Although, investigator described that about 750 million kids are affected by Iron Deficiency. Anemia and most frequently in kids and women in developed countries (Christofides, 2005). About 700,000 kids aged of 1 to 2 years are iron deficient and 240,000 had anemia iron shortage (Looker *et al.*, 1997). Red blood cells (RBCs) designate the range of Hb, while erythropoietin arranges the discharge of RBC from bone marrow that formed from interstitial fibroblasts in the kidney. Although trouble in numerous vital micronutrients complements can consequence on the making of new cells like vitamins B2 (Riboflavin) and B6 (Pyridoxine) are important for manufacture of the globin protein whereas iron has to be combined into the last Hb molecule (Clayton, 2006). The ecological

features like smoking, oxygen, and high altitude, while biological features like gestation effected on the Hb obtainability within the blood (UNICEF; UNU; WHO, 2001). The purpose of current study was to investigate the occurrence of anemia in primary and middle schools of tehsil Dargai district Malakand Khyber Pakhtunkhwa (KP), Pakistan.

## Materials and methods

### *Study site*

The current study was conducted in district Malakand, lies diagonally in between the 34.5030° North latitude and 71.9046° East longitudes. It is located to the Bajaur, Lower Dir, Swat and Bunair. It is covered by hills that were overgrown with diverse types of trees. The total area of district is 952 square kilometers. According to 2017 census the estimated population of district is 720,295 with urban 68200 and rural 652,095 respectively. The soil of the region is humid and loamy and irrigated by the river Swat. The average rainfall is low and lands are irrigated artificially.

### *Blood samples collection and complete blood picture (CBP) test*

2ml of venous blood was taken in a sterile syringe from each school going children and poured in EDTA (Ethylene diamine tetra acetate) tube. The tubes were immediately transported to Rehman computerize medical laboratory Batkheela Malakand. The blood was then passed on the complete blood picture (CBP) machine and all values of hemoglobin (Hb), mean cell volume (MCV) mean cell hemoglobin (MCH), mean cell hemoglobin concentration (MCHC) were drawn on the machine. If the values were below from the normal range (13.5 to 17.5 g/dl in male) then it is considered anemia and if the values were higher from the normal then it is called as polycythemia.

## Results

In the present study, 100 blood samples were collected from school going children, among these 22 (22 %) children were anemic and 78 (78 %) were normal. Similarly 05 anemic children were recorded from Govt primary school Koper and 15 children were

documented normal. The percentile values of class 2<sup>nd</sup>, 3<sup>rd</sup> and 4<sup>th</sup> were 20 %, 60 % and 20 %, respectively. The Govt primary school Qadar Kali has

04 anemic children, while 15 were documented normal. The percentile ranges of class 1<sup>st</sup>, 3<sup>rd</sup> and 4<sup>th</sup> were 50 %, 25 % and 25 %, respectively (Table 1).

**Table 1.** Prevalence of anemia in primary schools of district Malakand.

Govt primary school Koper					Govt primary school Qadar Kali		
S. No	Class	Students	Anemic	% Anemic	Students	Anemic	% Anemic
01	1 <sup>st</sup>	04	00	00.00	04	02	50.00
02	2 <sup>nd</sup>	04	01	20.00	04	00	00.00
03	3 <sup>rd</sup>	04	03	60.00	04	01	25.00
04	4 <sup>th</sup>	04	01	20.00	04	01	25.00
05	5 <sup>th</sup>	04	00	00.00	04	00	00.00
Total	-----	20	05	100	20	04	100

Total of 06 anemic and 14 children were recorded from Govt primary school Hijab Kali.

of 20 children were documented from Standard education Wazir Abad, among these 03 children were anemic. The percentile values of class 3<sup>rd</sup> and 4<sup>th</sup> were documented 66.67 % and 33.33 %, respectively (Table 2).

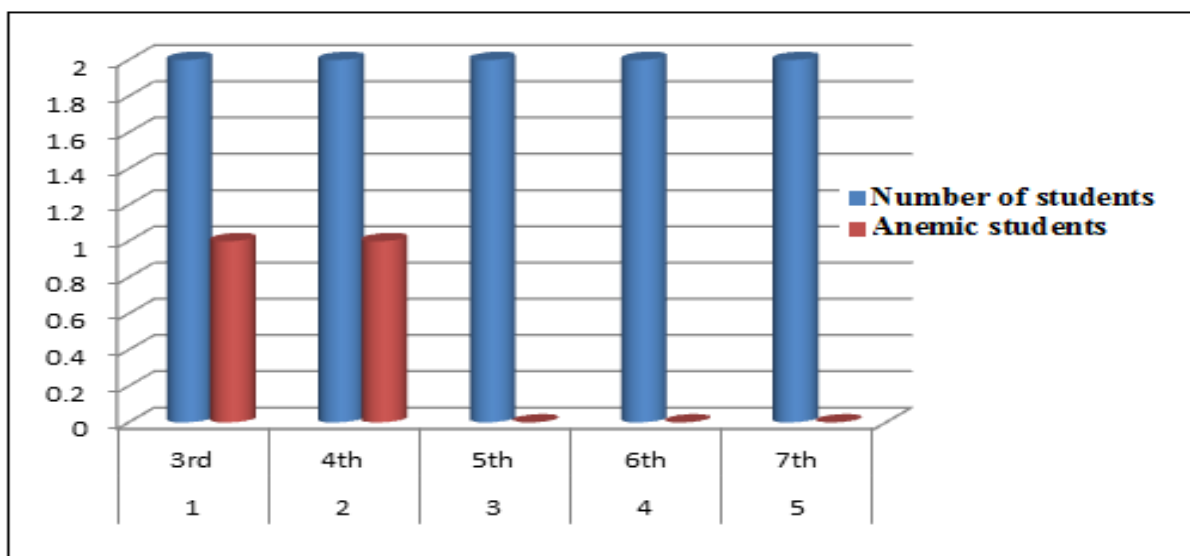
The percentile ranges of class 1<sup>st</sup>, 2<sup>nd</sup> and 4<sup>th</sup> were 33.34 %, 50 % and 16.66 %, respectively. Similarly out

**Table 2.**Prevalence of anemia in primary and middle schools.

Govt primary school Hijab Kali					Standard education Wazir Abad			
S. No	Class	Students	Anemic	% Anemic	Class	Students	Anemic	% Anemic
01	1 <sup>st</sup>	04	02	33.34	3 <sup>rd</sup>	04	02	66.67
02	2 <sup>nd</sup>	04	03	50.00	4 <sup>th</sup>	04	01	33.33
03	3 <sup>rd</sup>	04	00	00.00	5 <sup>th</sup>	04	00	00.00
04	4 <sup>th</sup>	04	01	16.66	6 <sup>th</sup>	04	00	00.00
05	5 <sup>th</sup>	04	00	00.00	7 <sup>th</sup>	04	00	00.00
Total	-----	20	06	100	-----	20	03	100

From the Sina public school Stanadaro Kali total of 10 children were recorded, among these 02 children were anemic and 08 were normal. Similarly total of

10 children were documented from Malakand children academy Koper, among these 02 children were anemic, while 08 were normal (Figs 1& 2).



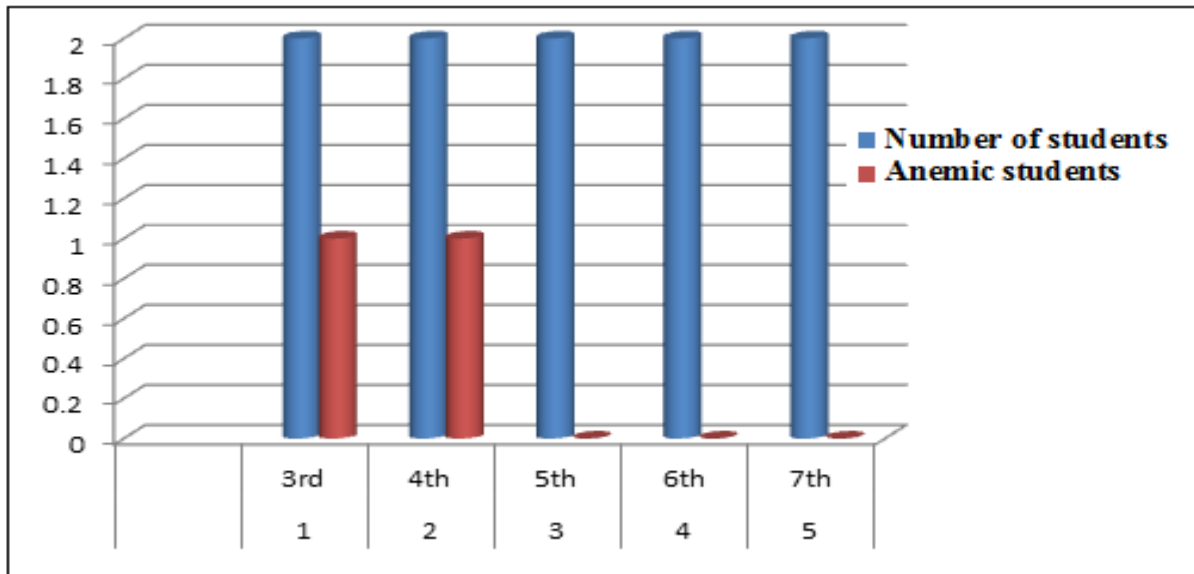
**Fig. 1.**Anemic ratio in Sina public school Stanadaro Kali.

### Discussion

A study was conducted by Ullah *et al.*, 2014 and collected total of 420 blood samples of school going children at the age of 05 to 12 years containing both sexes of district Karak Pakistan. The percentile value of documented anemia in school going children was 34.0 %. In tehsil Banda Daud Shah, tehsil Takhti Nasrati and Karak was recorded with 43.6 %, 32.1% and 26.4% respectively. The occurrence of anemia in

school going children was recorded 60 % in Africa, 46 % Latin America, 63 % Eastern Mediterranean, 49 % Southeast Asia I, 66 % Southeast Asia II and North America 7 % respectively by the Stoltzfus, 2003.

In Pakistan the study directed by National Health survey for Pakistan (NHSP) in 1990-1994 indications that the dietary anemia in children below age of 05 years was 62.9%.



**Fig. 2.** Anemic ratio in Malakand children academy Koper.

The occurrence of anemia amongst urban school children of Panjab was 51.5 % by the Verma *et al.*, 1998. In the adjacent country, India the percentile ration of anemia was documented with 56.5 % in school going children. It shows that it is due to absence of nutrient and food by the Jain and Jain, 2012. In district Dera Ismail khan Pakistan, the percentile ration of anemia was recorded 58.82 % in school going male children of age 06 years, while 70 % of girls with maximum age of 06 years 100 % and 10 years of 66.66 % by the Ramzan and Salam, 2009. The occurrence of anemia among school going children was 35 % in hilly area of Northern Morocco by the Zimmermann *et al.*, 2003.

### Conclusion

In this study, 100 blood samples were collected from school going children, among them 22 (22 %) children were anemic and 78 (78 %) were normal.

The low level of RBCs (anemia) causes different complications like affect the heart or lungs, such as an abnormally fast heartbeat (tachycardia) or heart failure. The high level of RBCs (Polycythemia) causes blood clots, which can lead to a heart attack or stroke and blood pressure complications.

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