



A SHORT PROJECT ON HEMATOLOGY SKILLS BETWEEN MBBS AND BDS STUDENTS.

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ABSTRACT

Introduction: Medical colleges are conducting 2 hours of practicals for MBBS students and 2 hours of practicals for BDS students. Students and teachers ratio are the same. Teaching methodology is also identical. The practicals are started with an introduction to practicals followed by a demonstration for about 20 minutes. Then students are made to do the practicals and then evaluated. We would like to analyse whether MBBS students are learning better skills or BDS students.

Aims and Objectives: This study was undertaken to compare the

hematology skills of MBBS and BDS students. **Materials and Methods:** This study was done on 40 students of our medical and dental college. Parameters studied were total RBC count and their total hemoglobin concentration. Values obtained were analyzed by unpaired t test. **Results:** Mean and std deviation of RBC count and hemoglobin concentration in MBBS boys are 5.031 ± 0.6614 and 13.82 ± 2.8275 respectively. Mean and std deviation of RBC count and hemoglobin concentration of BDS boys are 6.096 ± 0.7100 and 12.82 ± 2.1857 respectively. Mean and std deviation of RBC count and hemoglobin concentration in MBBS girls are 4.918 ± 1.0194 and 12.41 ± 1.441 respectively. Mean and std deviation of RBC count and hemoglobin concentration in BDS girls are 4.453 ± 0.9493 and 11.94 ± 1.2995 respectively. **Conclusion:** MBBS boys and girls are having better practical skills compared to BDS boys

and girls. When BDS girls are compared to MBBS girls they are not significantly different as even BDS girls are having values closer to normal values.

KEYWORDS: RBC count, Hb, Practical skill, MBBS and BDS.

INTRODUCTION

The red blood cells are the most numerous blood cells in the human body also called as erythrocytes. The red blood cell carries oxygen throughout our body.^[1] The main function of erythrocytes is to carry O₂ from the lungs to the tissues and transport of CO₂ from the tissues to the lungs for expiration and also hemoglobin contributes to the buffering action of blood and ATP and NO release from red blood cells helps blood flow to the muscle and vaso dilation. RBC is biconcave in shape having a diameter of about 7 to 8.5 µm.^[2] Hematological indices are influenced by ethnic background age, sex, nutritional and social factors.^[3-7] In males normal red blood cell count ranges between 4.2-5.4 millions per cumm of blood and 3.6-5.0 millions per cc mm of blood in females. Total Hemoglobin concentration ranges from 14-18 grams per deciliter of blood for males and 12-16 grams per deciliter of blood in females.

Hemoglobin playing an important role in transferring oxygen from the lungs to the tissues. In extracellular fluid hemoglobin acts as an important pH buffer. Determination of hemoglobin is very important to screen anemia and to find out its severity and also evaluate response of a patient to anemia therapy. Decrease in RBC count is termed as anemia. It also occurs due to either decrease in number of erythrocytes or decrease in hemoglobin count or both.

Medical colleges are conducting 2 hours of practical's for MBBS students and 2 hours of practicals for BDS students. Students and teachers ratio are the same. Teaching methodology is also identical. The practicals are started with an introduction to practicals followed by a demonstration for about 20 minutes .Then students are made to do the practicals and then evaluated. We would like to analyse whether MBBS students are learning better skills or BDS students.

OBJECTIVES

The aim of the study is to compare the hematological skills (RBC count and Hb%) between MBBS and BDS students.

MATERIALS AND METHODS

We have selected 40 students from our medical and dental college, Mukka, Mangalore. Informed consent were taken from the study group. Ethical approval was taken from the Institute Ethical approval committee. 20 students from the medical college were divided into two groups of 10 boys and 10 girls. The 20 students from the dental college were divided into two groups of 10 boys and 10 girls.

Estimation of hemoglobin is done by Sahl's method.^[8] Hemoglobin concentration is estimated by converting hemoglobin into acid hematin by reacting with N/10 HCL. The formed colour is compared with standard colours.^[9]

Procedure followed for RBC count

1. Prick the tip of the finger with all aseptic condition.
2. With the help of mouth piece draw blood into the dry pipette up to 0.5 mark.
3. Immediately draw RBC diluting fluid (Dacie's) up to 101 mark in to same pipette.
4. Then mix the contents of the bulb.
5. Allow it for 2 minutes and discard first 2 drops and charge the Neubauer's counting chamber and count the cells.

Procedure followed for hemoglobin estimation

1. Hemoglobinometer is filled with N/10 HCL up to lowest mark 2gm% with the help of a dropper.
2. Prick the tip of the finger with all aseptic condition
3. Suck blood up to 20 cc mm mark into the hemoglobinometer pipette.
4. Immediately transfer the blood into hemoglobinometer tube having N/10 HCL
5. Leave the solution in the hemoglobinometer tube for 10 minutes. (conversion of hemoglobin to acid hematin).
6. After 10 minutes dilute the acid hematin by adding distilled water drop by drop.
7. Then match the color of the solution in the hemoglobinometer tube with the standard color of the comparater against natural light.
8. When the color of the solution matches with the comparater, note down the hemoglobin concentration in gm%.
9. The average of two values is recorded.

Methodology followed by other labs for RBC count

Preparation of labeled plastic tube and preparing 1:200 diluting fluid. Then adding the diluent to the tube and mix the sample for 5 minutes. Then take 20 μ l to the tube and mix the contents. Clean the haemocytometer and coverslip with 70% ethanol and distilled water and keep it for dry. Diluent is filled in the chamber and then keep it in the petridish with wet filter paper for 1 to 2 minutes. After focus it under 40x.

Methodology followed by other labs for Hemoglobin count

Adding 5ml of Drabkin's reagent in to the test tube. By Sahl's pipette draw 0.02 of blood and add that 0.02 blood into the Drabkin's reagent by rinsing. Keep it for 10 minutes. With the help of spectrophotometer at 540nm read the values.

RESULTS

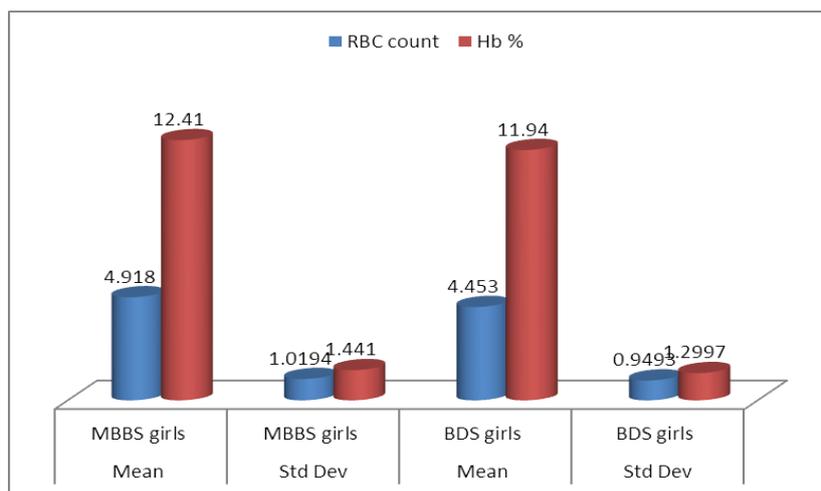
Mean and std deviation of RBC count in MBBS boys are 5.031 ± 0.6614 and their mean and std deviation of hemoglobin concentration are 13.82 ± 2.8275 . Mean and Std deviation of RBC count in BDS boys are 6.096 ± 0.7100 and their mean and std deviation of hemoglobin concentration are 12.82 ± 2.1857 . Mean and std deviation of RBC count in MBBS girls are 4.918 ± 1.0194 and their mean and std deviation of hemoglobin concentration are 12.41 ± 1.441 . Mean and std deviation of RBC count in BDS girls are 4.453 ± 0.9493 and their mean and std deviation of hemoglobin concentration are 11.94 ± 1.2995 .

Table 1: Mean \pm SD of RBC count and Hb % in MBBS and BDS boys.

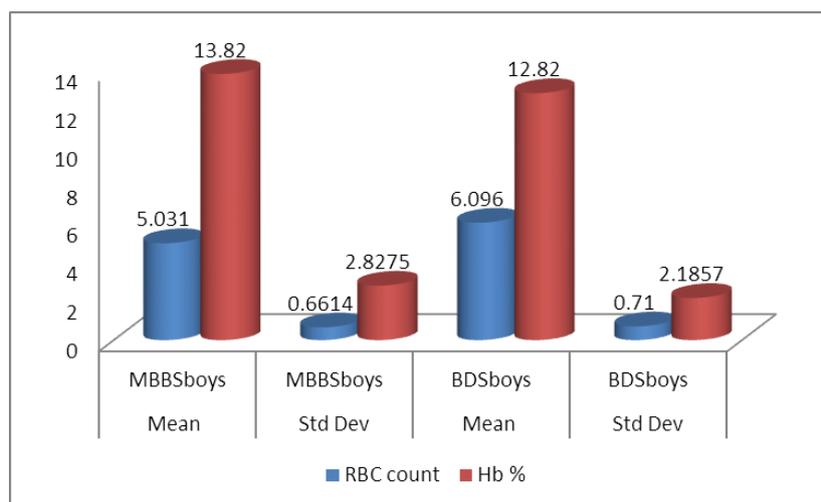
PARAMETERS	MBBS Boys (n=10) Mean \pm SD	BDS Boys (n=10) Mean \pm SD
RBC count	5.031 ± 0.6614	6.096 ± 0.7100
Hb%	13.82 ± 2.8275	12.82 ± 2.1857

Table 2: Mean \pm SD of RBC count and Hb % in MBBS and BDS girls.

PARAMETERS	MBBS Girls (n=10) Mean \pm SD	BDS Girls (n=10) Mean \pm SD
RBC count	4.918 ± 1.0194	4.453 ± 0.9493
Hb%	12.41 ± 1.441	11.94 ± 1.2997



Graph 1: Mean \pm SD of RBC count and Hb % of the girl students.



Graph 2: Mean \pm SD of RBC count and Hb % of the boy students.

DISCUSSION

RBC count ordered as a part of complete blood count to diagnose different diseases. Physiological increase in red blood cell count is seen in high altitude and after strenuous exercise. When hemoglobin level is too low and unable to supply sufficient oxygen to the tissue, person may suffer breathing problem and fatigue.^[10] Counting of red blood cells are the common medical test plays an important role in the diagnosis of diseases like anemia and Alport syndrome.^[11] Increased level of erythrocyte count increases the possibilities of polycythemia vera.^[12] For diagnosis of many disease automation have helped in majority of hematological experiments. Traditionally technician manually identifies and counts the cells using microscope. This procedure is difficult, observer dependent and takes lots of time. The reliability of the results depends on the experience and efficiency of the observer.^[13-15]

In our study we have tried to assess the hematological skills learnt by the MBBS and BDS students. The procedure and training given is same to both MBBS and BDS students. The MBBS students appear to have learnt the practicals better than the BDS students. The same methodology is carried out in other medical colleges. There are not many studies available to compare the skills of MBBS and BDS students. The probable reason for the MBBS students to do better practicals is because of more number of theory hours teaching for them. Lot of emphasis is given during orientation and theory classes. In case of BDS students the mind set for dental care is more rather than general human care. BDS students spend less number of hours in theory teaching and also have additional two subjects to learn during their first year of course. The text books prescribed for MBBS students has far more depth in knowledge than BDS students. This could be one of the reasons for the BDS students underperforming in the practicals.

CONCLUSIONS

MBBS boys are having better practical skills compared to BDS boys. MBBS girls are also performing practicals well because their mean and std dev values are closer to the normal values. When BDS girls are compared to MBBS girls they are not significantly different as even BDS girls are having values closer to normal values.

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