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EVALUATION OF HAEMATOLOGICAL PARAMETERS OF PREGNANT WOMEN BASED ON AGE GROUPS IN OLORUNSOGO ROAD AREA OF IDO, ONDO STATE

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ABSTRACT

Pregnancy is a physiological phenomenon but needs careful antenatal care to have healthy fetomaternal outcome. Human Pregnancy is not a disease, it is a physiological condition; pregnancy produces profound physiological changes that become more significant as pregnancy progresses. The study was conducted on pregnant women to evaluate the haematological parameters of pregnant women based on age groups in Olorunsogo Road area of Ido, Ondo State. One hundred (100) pregnant women were grouped into 2 age groups. The results showed no significant difference in haematological parameters of pregnant women when compared based on age group in years (17-30 years, > 30 years). The study revealed that there was no changes in haematological parameters of the pregnant women based on the 2 different age groups. These age groups may not have effect on the haematological parameters resulting to treating them in the same manner.

Keywords: *haematological parameters, pregnant women, ages*

INTRODUCTION

Pregnancy is a physiological phenomenon but needs careful antenatal care to have healthy fetomaternal outcome (Sobia *et al.,* 2013; Obeagu *et al.,* 2014). Human Pregnancy is not a disease, it is a physiological condition; pregnancy produces profound physiological changes that become more significant as pregnancy progresses. The hormonal changes start from the ovaries, and then later the placenta. The first hormone to make its appearance after conception is human chorionic gonadotropin (hCG) then followed by hormones like; estrogen, progesterone, prolactin, renin and human placental lactogen (Adnan, 2018). It is also worth mentioning that adequate levels of circulating thyroid hormones are of primary importance for normal reproductive function, all these changes are accompanied by growing uterus with gradual mechanical effect (Adnan, 2018). Pregnancy is the time during which one or more offspring develops inside a woman's womb. In a pregnancy, there can be multiple gestations, as in the case of twins or triplets. Childbirth usually occurs approximately 38 weeks after conception. In case of women who have a menstrual cycle length of 4 weeks, this is approximately 40 weeks from the last normal menstrual (Mohamed *et al.,* 2016).

The most common haematological parameters are the indicators of haemoglobin concentration. Low haemoglobin in the blood is widely identified as a haematological abnormality and it is associated with adverse pregnancy outcome (Swapan *et al.,* 2013). Physiologic anaemia is the term often used to describe the fall in haemoglobin concentration that occurs during normal pregnancy results from plasma volume increases above normal by the end of gestation although the red cell masses itself increase by some and still leads to a fall in haemoglobin concentration with a feature of normocytic and normochromic type of anaemia (Swapan *et al.,* 2013). It is very difficult to define a normal reference range for haemoglobin concentration during pregnancy. According to the standard laid down by WHO, anaemia in pregnancy is present when the haemoglobin concentration in the peripheral blood is 100ml or less. Anaemia contributes to intrauterine growth restriction, preterm labour, abortions and it is also a primary cause of low immunity of both the mother and the baby, which makes them prone for several life threatening infections (Imam and Yahaya, 2008). During this stage of pregnancy there is physiological adjustment in the circulatory system that the amount of haemoglobin may be significantly reduced below what is normal for an adult woman. This is referred to as physiological anaemia which is due to haemodilution resulting from the disproportionate increase in the plasma volume and red cell mass in pregnancy (Obeagu, 2018; Obeagu *et al.,* 2021; Obeagu *et al.,* 2021; Hope *et al.,* 2019)

.The study was done to compare the haematological parameters of pregnant women based on age brackets.

MATERIALS AND METHOD

Research design

The study is a hospital based cross-sectional study among pregnant women based on age groups.

Study area

This study was carried out at Olorunsogo area of Ido, OndoState.

Target population

A total of one hundred subjects were recruited for the study. One hundred (100) pregnant women were grouped into 2 age groups.

Blood collection

5ml of venous blood was collected from each participant into an Ethylene Diamine Tetra-acetic Acid (EDTA) bottle which was then used for the determination of full blood count.

Validation of instruments

The Full Blood Count (FBC) was re-validated with thin film after processed via automation.

Method of the test

Full Blood Count (FBC): Measurement of haemoglobin, red blood, cells, white blood cells and platelets count were done by automation using ADVIA® 2120i Haematology system (SIEMENS). The cell count was cross check by experienced Medical Laboratory Scientist on duty.

Method of data analysis

The data were presented in tables and were presented as mean ± standard deviation and added using statistical packages for social sciences (SPSS, Version 20.0) and level of significance set at as p≤ 0.05.

Ethical clearance

Ethical consideration was sought from the Ethical Committee, Federal Medical Center Owo, Ondo state to use their facility for this research. Before collection of samples, information regarding the study was explained to the subjects. Oral and written consent form to participation in the study was obtained. The names of the patients from which samples were taken was not in any case disclosed as confidentiality was strictly adhered

RESULT

Table 1: Hematological Parameters of pregnant women based on Age group

Parameters	17-30years	30years	t-VALUE	P-VALUE
PCV (%)	34.80±6.99	33.90 ± 9.87	1.737	0.786
HEMOGLOBIN (g/dl)	12.94±1.98	12.66 ± 2.79	1.647	0.897
RED BLOOD CELL COUNT (× 10^{12}/L)	4.58± 1.79	4.38 ±1.94	0.362	0.453
TOTAL WBC(× 10^{9}/L)	11.17 ± 3.97	11.45 ± 4.24	-3.346	0.432
LYMPHOCYTE (%)	51.5 ± 7.87	52.7± 8.56	-3.643	0.893

NEUTROPHIL (%)	46.6±6.93	45.76 ± 9.17	-1.238	0.476
MONOCYTES (%)	2.3±0.56	2.7 ± 0.2	-2.122	0.967
EOSINOPHIL (%)	0.6± 0.01	0.3 ±0.01	1.233	0.675
MCV(FL)	91.51 ± 6.9	93.85 ± 7.7	-2.843	0.472
MCHC(g/dl)	32.78 ± 8.4	34.51 ± 7.9	3.394	0.856
MCH(pg/CELL)	31.98 ± 3.6	30.63 ± 9.4	1.272	0.923
PLATELET COUNT(× 10^9/L)	214 ± 34.78	224 ± 19.74	-2.382	0.562
PDW	16.43 ± 4.96	15.53 ± 2.98	-0.847	0.934
PLATELETCRIT (%)	0.194 ± 0.03	0.195 ± 0.01	0.384	0.826
MPV	9.30 ± 4.04	9.58 ± 2.54	0.782	0.964

The table above showed no significant differences in PCV(34.80±6.99%, 33.90 ± 9.87%, p=0.786) RBC(4.58± 1.79x10^{12}/L, 4.38 ±1.94 x10^{12}/L, p=0.453), HGB(12.94±1.98g/dL, 12.66 ± 2.79g/dL, p=0.897), PDW(16.43 ± 4.96fL, 15.53 ± 2.98fL, p=0.934) WBC (11.17 ± 3.97x10^9/L, 11.45 ± 4.24x10^9/L, p=0.432), LYM (51.5 ± 7.87%, 52.7± 8.56%, p=0.841),Neutrophil (46.6±6.93%, 45.76 ± 9.17%, p=0.476), Monocyte(2.3±0.56%, 2.7 ± 0.2%, p=0.967), Eosinophil(0.6± 0.01%, 0.3 ±0.01%p=0.675) MCV (91.51 ± 6.9fL, 93.85 ± 7.7fL, p=0.472), MCH (31.98 ± 3.6Pg, 30.63 ± 9.4Pg, p=0.923), MCHC (32.78 ± 8.4g/dL, 34.51 ± 7.9g/dL, p=0.856), PLT(214 ± 34.78x10^9/L, 224 ± 19.74x10^9/L, p=0.959), MPV (9.30 ± 4.04fL, 9.58 ± 2.54fL, p=0.964) and Plateletcrit (0.194 ± 0.03%, 0.195 ± 0.01%, p=0.826) when compared between the two age group.

DISCUSSION

According to World Health Organization, one woman dies every minute from a pregnancy-related complication. The main causes of mortality are due to antepartum and postpartum haemorrhage, unsafe abortion, eclampsia, obstructed labour and infection (Chandra *et al*., 2012). Many physiological haematological changes occur during pregnancy due to continuous development of fetus (Chandra *et al*., 2012).These changes revert to normal after puerperium (Dennen *et al*., 2011). But, these changes are required to meet metabolic demands of mother and also ensure adequate oxygen delivery to fetus (Salas *et al*., 1993). Depending upon the degree of change in the haematological profile, the pregnancy outcome may vary (Akinbami *et al*., 2013). Thus, it becomes important to monitor haematological parameters during pregnancy, thereby improving its outcome.

It was observed in the hematological Profiles of pregnant women based on Age

that those of the age (17-30 years) had a packed cell volume or haematocrit of 34.80±6.99 (p-value 0.786); this is in tandem with World health organization standard of Packed cell volume or haematocrit volume of 33% to 38% as compared to 37% to 47% range associated with non-pregnant female. Also this correlates with the haematological profiles of pregnant women of the age bracket of 30 years and above having a Packed cell volume of 34.80±6.99 (p-value 0.786),which also falls within the World health organization standard for Packed cell volume. While Red cell count (4.58± 1.79x10^{12}/L and 4.38 ±1.94 x10^{12}/L, p=0.453), of the age brackets 17 years and 30 years and above, this however does not correlate with World health organization standard of 4.07 x 1012/L, however this does not pose any threat as this variations may be due to physiological changes at the different trimesters of their pregnancy. And more so the Total white cell count being (11.17 ± 3.97x10^{9}/L, 11.45 ± 4.24x10^{9}/L, p=0.432), this is in correspondence with (Chandra *et al.,* 2012) that white cell count increases up to the reference range(4.5 to 11.0 x 109/L).

CONCLUSION

The study revealed that there was no changes in haematological parameters of the pregnant women based on the 2 different age groups. These age groups may not have effect on the haematological parameters resulting to treating them in the same manner.

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