

# ACR

## Archives of Clinical Research



Official Journal of the Faculty of Clinical Sciences, Ambrose Alli University, Ekpoma

Volume 7

Issue. 1

Sept 2023

ISSN No: 2630-7278

# Archives of Clinical Research

(ACR)

Volume 7, Number 1. September 2023.

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## Editorial

### COVID-19 Pandemic lockdown and cancellation of Surgical Services in Nigeria

**Onuminya J. E**

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COVID-19 is a coronavirus disease 2019 caused by a novel coronavirus termed severe acute respiratory syndrome coronavirus 2 (SARS-COV-2) first reported in Wuhan, China in December 2019 and was declared a global pandemic on March 11, 2020.<sup>1-4</sup>

COVID-19 pandemic is a devastating acute respiratory distress syndrome associated with high mortality. The economic implications of the disease and the burden on health care are enormous. Although, the majority of cases are asymptomatic, but highly infective carriers, who shed the virus actively and spread the airborne disease through droplets. The fear of COVID-19 resulted in global lockdown of persons, economic, academic, political, social and religious activities, leading to restrictions of movement, social and physical distancing, washing of hands, wearing of nose masks by everyone in public places and the use of personal protecting equipment by frontline health workers at risk of contamination and infection.<sup>1,2</sup> Most health institutions were shut down and only a few specialized hospitals were opened for emergency and skeletal outpatient services. Even then workforce was reduced to essential needs and elective surgical procedures were postponed, as both patients and surgical teams were not safe from COVID-19 when testing and treatment were not universally available at the onset of the disease.<sup>2</sup>

However, with the availability of the testing some specialised centres took elective cases provided the patients tested negative for COVID-19 within 72hours of surgery.<sup>1</sup> As the COVID-19 vaccination became globally accepted, and the COVID-19 scare wanes normalcy has gradually been restored in terms of surgical services including elective procedures in most hospitals with or without testing, but some questions are begging for evidence-based answers: Dr O.O Awe, a plastic surgeon shared his heart provoking thoughts on surgical services in the plastic

unit of Irrua Specialist Teaching Hospital (ISTH), Irrua in Esan Central Local Government Area of Edo State, Nigeria, a centre of excellence for viral haemorrhagic diseases and management of COVID-19 in Nigeria in his paper published in this issue of the journal titled: ‘plastic surgery during COVID-19 lockdown in Nigeria: any need for postponement of elective surgeries?’” Though he agreed that COVID-19 is a reality, he thinks the consequences of the global lockdown were unduly harsh on people and contributed to the late presentation of COVID-19 cases and recorded global high rate of mortality. He reported that the plastic unit of the Department of Surgery, ISTH, Irrua did not suspend surgical services throughout the COVID-19 pandemic lockdown and the majority of COVID-19 cases encountered were young adults who presented early with mild diseases and quick recovery following treatment. He claimed that the effects of the COVID-19 scare and subsequent lockdown were more severe on people than the disease itself, and he advised that in the future pandemic, global guidelines should be domesticated as the severity of the disease may not be universally the same. A stitch in time saves nine - the plastic unit of ISTH, Irrua relying on the local guidelines kept the unit open for routine surgical services including elective surgeries which were carried out uninterrupted and uneventful throughout the COVID-19 pandemic lockdown period.

The rate of COVID-19 infection among patients who had plastic surgery procedures during this period was low (5.6%), and it did not seem reasonable to have cancelled cases as a result of the COVID-19 pandemic lockdown. Those who tested positive for the disease were mainly asymptomatic and appropriate early diagnosis and treatment converted them to negative for the coronavirus in less than three weeks, they had their surgery and were discharged home in good conditions without stigmatization.<sup>1</sup>

Opening the unit for these patients to access surgical services during the COVID-19 pandemic lockdown provided the opportunity for the asymptomatic carriers to be identified and treated early; as these patients are the main concern, that necessitated social and physical distancing and eventual lockdown.<sup>1-4</sup> It sounds more logical to keep the specialized health facilities open during pandemic to help in curbing the

spread of the disease than completely quarantining the whole nation.<sup>1</sup> Total quarantine leads to late presentation which needs admission into the intensive care unit for system support with its attendant high rate of mortality.

Elective surgeries therefore should not be delayed or postponed during the pandemic if the COVID-19 test result is negative.

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## Trends and outcome of instrumental vaginal delivery at Irrua Specialist Teaching Hospital: a five-year review

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### Abstract

**Background:** Instrumental Vaginal delivery (IVD), a key component of essential obstetric care is a procedure used to shorten the second stage of labour reducing the need for caesarean sections in women who require assistance using either the forceps or Vacuum. However, despite its value in improving Obstetric outcomes in resource-limited situations, instrumental deliveries are steadily declining. The study aimed to ascertain the trend and outcome of instrumental vaginal deliveries at the Irrua Specialist Teaching Hospital over a 5-year period. **Methods:** A retrospective cross-sectional study was done among women who gave birth in Irrua Specialist Teaching Hospital, located in Irrua, Edo state over a 5-year period; from 1<sup>st</sup> January 2016 to 31 December 2020. The labour ward registers and patient case notes were used to gather information on sociodemographic factors, the type of instrumental delivery used, the Apgar scores of newborns delivered, indications, and complications. The information was then entered into a proforma and analyzed using SPSS software for Windows version 24.0. **Results:** During this study period, there were 4,703 deliveries, 41 (0.87%) of which were instrumental deliveries. The rates were 0.77% and 0.10% for vacuum and forceps deliveries respectively. The mean age of the parturient was 29.1 ±5.1 years; Unbooked patients were 8 (19.5%) while 33 (80.5%) were booked. Prolonged second stage of labour was the commonest indication for IVD 19 (46.3%). The perinatal outcome showed that 82.5% had Apgar scores of 7 and above at one minute. This was increased to 95% at the 5th minute. Nineteen of the mothers were free of complications. The commonest complication was perineal laceration occurring in 22 women who had IVD with vacuum extraction contributing 21(95%). **Conclusion:** Despite being a less invasive procedure than a caesarean section, this study is relatively low with a declining trend and indications for the procedure are similar to those found elsewhere. To prevent its extinction, efforts must be undertaken (via training and retraining) to revitalize the practice of Instrumental Vaginal Deliveries especially in tertiary institutions such as this setting where Obstetricians are being trained.

**Keywords:** Instrumental vaginal Delivery, Forceps delivery, Vacuum delivery, Maternal Mortality, Perinatal Outcome, Irrua, trends, Complications

### Introduction

Since the beginning of time, childbirth has been a fundamental aspect of human existence. It is a powerful and transformational experience. Although giving birth is a natural act, several interventions have been developed thanks to medical advances to improve safety for both the mother and the baby.

Instrumental deliveries have become a crucial part of obstetric care among these interventions, especially when vaginal delivery becomes difficult or even dangerous.

Most pregnant women anticipate having a spontaneous vaginal delivery at the end of their pregnancy with little to no need for Operative procedures. For the majority, this anticipation comes true still, for some, assistance may be needed in the form of cesarean sections or operational vaginal

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delivery to prevent harmful results for both the mother and the fetus.<sup>1</sup>

Instrumental vaginal delivery is applying obstetric forceps or vacuum devices to the vaginal delivery of the fetus to avoid poor birth outcomes and reduce the cesarean-section rate.<sup>2</sup> It is a practice that has been modified and improved over its history, spanning over two centuries. It is a key element of essential obstetric care, and significantly reduces maternal and neonatal morbidity and mortality, especially in resource-poor countries.<sup>1,3</sup> It is an alternative to caesarean section (CS) especially in our environment with a high aversion to CS where appropriate anaesthesia, efficient blood transfusion services, and efficacious and qualified personnel are not readily available for safe caesarean section.

In any circumstance when the mother or fetus may be compromised, Instrumental vaginal delivery is advised. Maternal indications for IVD include delayed second stage of labour, poor progress of labour due to maternal fatigue or exhaustion, situations when the second stage of labour needs to be shortened such as pre-eclampsia/eclampsia, cardiac disease in pregnancy, particularly those that are New York Heart Association (NYHA) class III/IV. Two primary fetal indications of IVD are fetal distress or non-reassuring fetal heart rate tracing in the second stage of labour. No indication is absolute and every situation deserves careful consideration.<sup>4</sup>

The rate of IVD varies from one country to another, and even in the same country, from one obstetric unit to another. The global incidence of IVD rates varies greatly between 1% and 15%<sup>5</sup>. In developed countries, the rates vary: from 10% to 15% in the United Kingdom to around 4.5% in the United States of America where the rate has halved in the last 20 years<sup>6</sup>. Lower rates of 1.4% and 2.8%, respectively, were observed for Istanbul and India.<sup>7,8</sup>

In poor nations, the incidence of IVDs is quite low, ranging from 1% to 3% in places like Niger, Mali, and Burkina Faso<sup>9,10</sup>. The IVD rate in Nigeria ranges from 0.69% to 3.7%.<sup>3,4,9,11,12</sup>

Also, the rate of IVD in Nigeria appears to be on the decline as recent studies from Jos and Lagos showed

an incidence of 0.4% and 0.71 % respectively which is lower than 1.95% and 4.9% reported previously from the same institutions<sup>13, 14</sup>. Sadly, the fact that IVD, an emergency obstetric operative intervention is underutilised in our setting is quite worrisome where our cesarean section rates are high and oftentimes not readily available

The World Health Organization and other United Nations organizations have identified IVD as one of the crucial elements of fundamental emergency obstetric treatment.<sup>15</sup> By providing the necessary training and equipment, scaling up its usage in resource-limited nations will probably dramatically lower maternal and perinatal morbidity and mortality rates.

From the foregoing background, we set out to review the utilisation of this basic component of Emergency obstetric care at the Irrua Specialist Teaching Hospital, a training institution. The findings of this study can inform healthcare policies, guidelines, and practices in low-resource settings like ours.

### Objectives

1. To examine trends in the utilisation of instrumental vaginal deliveries over a 5-year period at Irrua Specialist Teaching Hospital.
2. To identify indications for instrumental vaginal deliveries at Irrua Specialist Teaching Hospital.
3. To assess maternal and neonatal outcomes following instrumental vaginal deliveries in the rural context.
4. To explore healthcare workers' perspectives and experiences in performing instrumental deliveries.

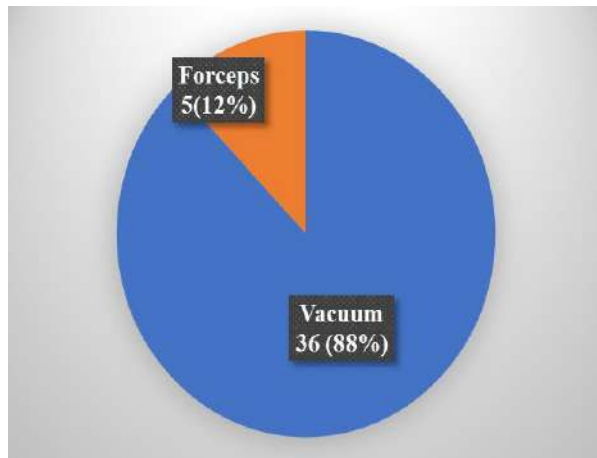
### Materials and Methods

This was a retrospective cross-sectional study conducted at the Department of Obstetrics and Gynaecology, Irrua Specialist Teaching Hospital from 1st January 2016 to 31st December 2020. All women who gave birth during the study period in the hospital formed the source population. However, only women who had instrumental vaginal delivery within the study period were included in the study. Data was collected from the labour ward register. Relevant information on age, parity, booking status,

indications and type of procedure performed the APGAR scores of the babies and complications in the parturient and baby were obtained using a structured proforma designed for this study. The primary outcome measure was prevalence and trend of instrumental deliveries. Secondary outcome measures were the prevalence of complications such as perineal tears, post-partum haemorrhage, and APGAR scores at one and five minutes.

**Results**

During the period under review, there were 4,703 deliveries recorded; out of which 41 patients had instrumental vaginal delivery giving a prevalence of 0.87%. Amongst the women who had IVD, there were 5 forceps deliveries(0.10%) and 36 vacuumextractions(0.77%); (figure 1).



**N=41**

Figure 1. Type of IVD and prevalence

The majority of Parturients were in the age group of 25-30 years (48.7%), with a mean age of (27.7± 5.1) years and more than half of them had a tertiary level of Education (26, 63.4%). Most of the cases were booked (33, 80.5%) and were women of low parity with primigravidas accounting for 23, (56.1%) cases and para 1 accounting for 11(26.8%). The mean gestational age at delivery was 39 ± 3.0 weeks and the majority of the IVD (39; 95.1%%) were performed on term neonates (Gestational age ≥37 weeks). The socio-demographic and Obstetrics characteristics of the patients are shown in Table 1.

Table 1. Distribution of Socio-demographic and obstetric variables

Sociodemographic & obstetric variables	Frequency	Percentage
<b>AGE (years)</b>		
15-19	2	4.9
20-24	8	19.5
25-30	20	48.8
31-34	8	19.5
35 and above	3	7.3
<b>Mean age ± SD. 27.7± 5.1 years</b>		
<b>LEVEL OF EDUCATION</b>		
None	1	2.4
Primary	2	4.9
Secondary	12	29.3
Tertiary	26	63.4
<b>BOOKING STATUS</b>		
Booked	33	80.5
Unbooked	8	19.5
<b>PARITY</b>		
0 Primigravida	23	56.1
1	11	26.8
2	3	7.3
3	4	9.8
<b>GESTATIONAL AGE GA in weeks</b>		
<37	2	4.9
≥37	39	95.1
<b>Mean GA = 39 Weeks and 3days</b>		

Prolonged second stage of labour was found to be the commonest indication for IVD (19; 46.3%), this was followed by maternal fatigue (16; 39.0%), presumed fetal distress in the second stage (4; 9.7%), and the least was in shortening the second stage of labour in cases of severe pre-eclampsia and Eclampsia (1; 2.4%).These are depicted in Figure 2

The trend of Instrumental deliveries over the years under review is shown in Figure 2, The highest number of forceps deliveries occurred in 2017 and 2019(2) respectively, while the lowest number(1) of vacuum extractions was observed in 2016. Conversely, the most vacuum extractions (19) occurred in 2019.

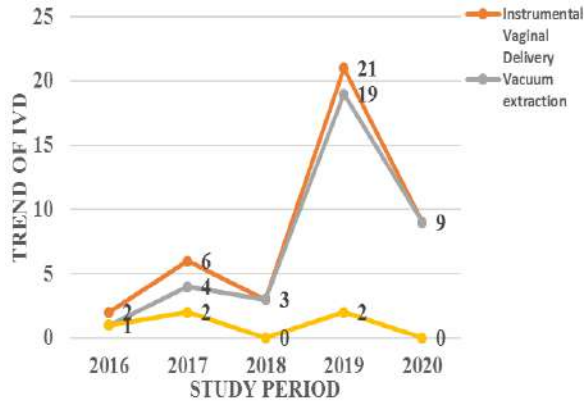


Figure 2. Yearly distribution of instrumental vaginal deliveries.

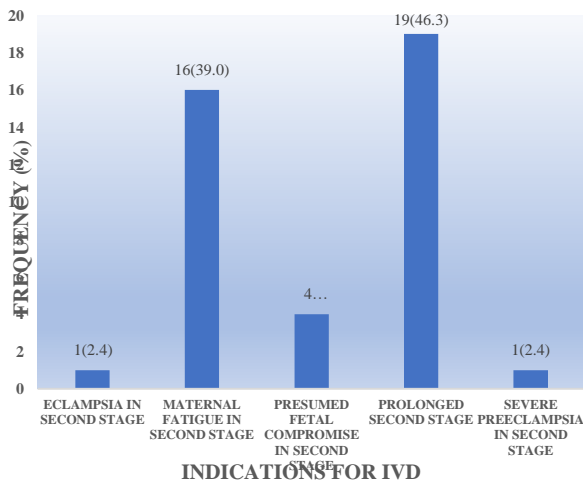


Figure 3: Indications for instrumental vaginal delivery (IVD)

Table 2 compares the birth outcome and that of instrumental vaginal deliveries. All newborns had normal birth weights. There was a case of fresh stillbirth observed (2.43%) which occurred with forceps delivery. In Table 3, seven (17.5%) babies born alive were assessed as being asphyxiated (Apgar scores <7) at 1 min of birth and (2; 5.0%) assessed as being asphyxiated at 5 min. Vacuum extraction was found to be not less likely associated with a low Apgar score at 5mins than forceps delivery as the difference between them was not statistically significant [*p* value = 0.18; OR =0.08 (0.00-1.69)]. There were no cases of scalp laceration following IVD but two cases each (4.8%) of cephalohematoma observed exclusively among subjects who had vacuum extraction. Five (12.2%)

neonates were admitted in the Special Care Baby Unit (SCBU) and discharged to their mothers after treatment.

Table 2. A comparison of birth outcome and the type of instrumental vaginal deliveries.

BIRTH OUTCOME	TYPE OF INSTRUMENTAL VAGINAL DELIVERY				<i>p</i> -value	OR (95%CI)
	VACUUM		FORCEPS			
	n	(%)	N	(%)	n	(%)
<b>APGAR SCORE AT 1ST MIN</b>						0.41
0	0		1	(100.0)	1	(100.0)
2	1	(100.0)	0		1	(100.0)
5	1	(100.0)	0		1	(100.0)
6	4	(100.0)	0		4	(100.0)
7	15	(88.2)	2	(11.8)	17	(100.0)
8	14	(93.3)	1	(6.7)	15	(100.0)
9	2	(100.0)	0		2	(100.0)
Mean±SD	7.19±		5.50±	3.69		
D (95% CI of mean)	1.22 (6.78-7.60)		(-0.38-11.38)			
<b>APGAR SCORE AT 5TH MIN</b>						0.16
0	0		1	(100.0)	1	(100.0)
5	1	(100.0)	0		1	(100.0)
7	2	(100.0)	0		2	(100.0)
8	7	(87.5)	1	(12.5)	8	(100.0)
9	27	(93.1)	2	(6.9)	29	(100.0)
Mean±SD	8.59±		6.50±	4.35		
(95% CI of mean)	0.83 (8.32-8.87)		(-0.44-13.44)			
<b>FRESH STILLBIRTH</b>						0.09
YES	0		1	(100.0)	1	(100.0)
NO	37	(92.5)	3	(7.5)	40	(100.0)
<b>BIRTH WEIGHT</b>						
<2.5kg	0		0		0	
2.5-3.9kg	37	(90.2%)	4	(9.8)	41	(100.0)
Mean±SD	3.23±		3.10±	0.41		
(95% CI of mean)	0.34 (3.11-3.35)		(2.43- 3.76)			

Fisher exact-test used

\*Significant at *p*<0.05; OR -Odd ratio; CI- Confidence interval; SD-Standard Deviation

Table 3. A comparison of neonatal complications and the type of instrumental vaginal deliveries.

NEONATAL COMPLICATIONS	TYPE OF INSTRUMENTAL VAGINAL DELIVERY				p-value	OR(95% CI)		
	VACUUM		FORCEPS				TOTAL	
	n (%)	n (%)	n (%)	n (%)			n (%)	n (%)
<b>APGAR SCORES LESS THAN 7 IN 1MIN</b>								
YES	6 (85.7)	1(14.3)	7 (100.0)		0.54	0.58(0.05-6.57)		
NO	31 (91.2)	3 (8.8)	34 (100.0)					
RR(95% CI)	0.94 (0.68-1.29)	1.61 (0.19-13.38)						
<b>APGAR SCORES LESS THAN 7 IN 5MIN</b>								
YES	1 (50.0)	1(50.0)	2 (100.0)		0.18	0.08(0.0-1.69)		
NO	36 (92.3)	3 (7.7)	39 (100.0)					
RR(95% CI)	0.54 (0.14-2.17)	6.50 (1.11-37.80)						
<b>CEPHALHAE MATOMA</b>								
YES	2 (100.0)	0	2 (100.0)		0.81	1.11(1.0-0-1.24)		
NO	35 (89.7)	4 (10.3)	39 (100.0)					
<b>SCALP LACERATION</b>								
NO	37 (90.2)	4 (9.8)	41 (100.0)					
<b>FEEDING DIFFICULTY (n=40)</b>								
YES	2 (100.0)	0	2 (100.0)		0.85	1.08(0.98-1.19)		
NO	35 (92.1)	3 (7.9)	38 (100.0)					
<b>SPECIAL CARE BABY UNIT ADMISSION (n=40)</b>								
YES	5 (100.0)	0	5 (100.0)		0.66	1.09(0.9-8-1.21)		
NO	3 (91.4)	3 (8.6)	35 (100.0)					

Fisher exact-test used

\*Significant at  $p < 0.05$ ; RR-Relative risk.

Table 4 compares maternal complications and the type of instrumental delivery. There were 3 (7.3%) subjects who had an extension of episiotomy exclusively due to vacuum extraction, 22 subjects had perineal lacerations with vacuum extraction contributing up to (21; 95%), there were similarly more cases of cervical laceration observed following delivery exclusively following vacuum extraction (5; 12.2%). Postpartum haemorrhage (>500 mL of blood loss) was recorded in a parturient post-vacuum

extraction. There were no cases of failed instrumentation or recourse to caesarean section delivery in the second stage of labour. Maternal complications were however not statistically significant for either vacuum extraction or forceps delivery.

Table 4: A Comparison of maternal complications and the type of instrumental vaginal deliveries.

MATERNAL COMPLICATIONS	TYPE OF INSTRUMENTAL VAGINAL DELIVERY				p-value	OR (95% CI)		
	VACUUM		FORCEPS				TOTAL	
	n (%)	n (%)	n (%)	n (%)			N (%)	N (%)
<b>EXTENSION OF EPISIOTOMY(n=29)</b>								
YES	3 (100.0)	0	3 (100.0)		0.71	1.13 (0.98-1.29)		
NO	23 (88.5)	3 (11.5)	26 (100.0)					
<b>PERINEAL LACERATIONS</b>								
YES	21 (95.5)	1 (4.5)	22 (100.0)		0.25	3.93 (0.37-41.48)		
NO	16 (84.2)	3 (15.8)	19 (100.0)					
RR(95%CI)	1.13 (0.91-1.40)	2.28 (0.03-2.54)						
<b>DEGREE OF PERINEAL LACERATIONS (n=22)</b>								
1ST DEGREE	15 (100.0)	0	15 (100.0)		0.31	1.1 (0.86-1.57)		
2ND DEGREE	6 (85.7)	1 (14.3)	7 (100.0)					
<b>CERVICAL LACERATION</b>								
YES	5 (100.0)	0	5 (100.0)		0.58	1.12 (1.00-1.26)		
NO	32 (88.9)	4 (11.1)	36 (100.0)					
<b>UTERINE RUPTURE</b>								
NO	37 (90.2)	4 (9.8)	41 (100.0)					
<b>PRIMARY POSTPARTUM HAEMORRHAGE</b>								
YES	1 (100.0)	0	1 (100.0)		0.90	1.11 (1.00-1.23)		
NO	36 (90.0)	4 (10.0)	40 (100.0)					
<b>FAILED INSTRUMENTAL DELIVERY</b>								
NO	37 (90.2)	4 (9.8)	41 (100.0)					
<b>SECOND STAGE DELIVERY BY CAESAREAN SECTION</b>								
NO	37 (90.2)	4 (9.8)	41 (100.0)					

Fisher exact-test used

\*Significant at  $p < 0.05$

Senior residents conducted the majority 33 (80.5%) of the procedures, and consultant obstetricians conducted 8 (19.5%) procedures (Figure 4).

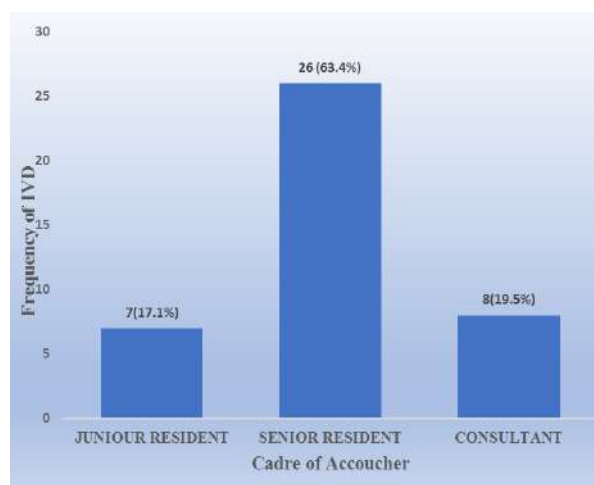


Figure 3. Cadre of accoucher and the number of IVD performed.

## Discussion

In this study, the rate of instrumental vaginal births was 0.87 of all deliveries, with vacuum and forceps accounting for 0.77 and 0.1% of deliveries, respectively. The rate of instrumental deliveries at Irrua Specialist Teaching Hospital is low and this reported rate was lower than 1.61% in Uyo,<sup>11</sup> 3.7% reported in Abakaliki,<sup>16</sup> 3.6% reported in Zaria. However, it was higher than the 0.69%, 0.4% and 0.77%<sup>9,13,14</sup> reported in Bauchi, Jos and Lagos respectively. The preponderance of vacuum extractions over forceps deliveries was similar to what was reported in other Nigerian and West African countries like Niger, Mali and Burkina Faso.<sup>4,9,11-14,18</sup> This might be due to the simplicity of the vacuum extractor's operation and the fact that fewer foetal-maternal problems have been reported since plastic and silicone cups have replaced metal cups.<sup>9,14</sup>

Contrary to popular belief, most reports from Nigeria show that the rate of instrumental deliveries is lower than that of industrialised nations, with rates of 4.5% in the US, more than 10% in the UK, and up to 15% in Canada.<sup>9,11</sup> Additionally, it is far lower than the RCOG's 8.5% recommendation.<sup>19</sup> Furthermore, the use of instrumental vaginal deliveries is progressively going out of style, as evidenced by the sharp decline in prevalence in Lagos from 4.9% in 2004 to 0.71%<sup>14</sup> over the past ten years, which is comparable to the trend in prevalence patterns seen in Jos where similar studies have been conducted.<sup>13</sup> This is quite

worrisome since patients' reluctance to caesarean deliveries due to sociocultural and religious beliefs (mainly seen in developing countries) can make instrumental deliveries a more affordable and minimally invasive alternative to delivery, particularly in a society with limited resources like Nigeria. The predilection for caesarean sections by modern obstetricians even in situations perfect for forceps or vacuum extraction is cited as one of the reasons for the low rate of instrumental births, either relating to medico-legal considerations or their lack of training.

This study showed a declining trend in the use of instrumental vaginal deliveries. This is similar to previous reports from other parts of the country. In contrast there was a surge of instrumental deliveries observed in 2019. This may result from a training organised by the Department of Obstetrics and Gynaecology ISTH, targeted at equipping residents with the requisite knowledge, experience and skills in performing IVD.

This study's findings about the majority of instrumental deliveries on booked women with low parity (Para 0 and 1) are similar to findings from Bauchi and Zaria, where the majority of these procedures were performed on primigravidae (52.2% and 78.6%, respectively), and also to findings from Port Harcourt and Benin who are the same geopolitical zone of the country where this study was conducted.

Women with low parity are more prone to experience dysfunctional labour and require more assistance during labour, which may account for the higher rate of instrumental vaginal births among them. This may also explain the fact that more of the younger age group were primigravidae. On the other hand, prior investigations on parturient parity did not find any connection between IVD use and parity.<sup>9,13</sup>

The reasons for assisted vaginal births in this study are the same as those described in earlier investigations.<sup>9,11,14</sup> The most frequent indicator was found to be the prolonged second stage of labour, followed by maternal exhaustion, which may be due to the fact that studies have shown that maternal morbidity increases after 3 hours and further increases after 4 hours of the second stage of labour.<sup>20</sup>

Vacuum and forceps delivery can be associated with significant complications both maternal and foetal. The most common maternal complication in this study was perineal tears which were followed by primary post-partum hemorrhage. Surprisingly, parturients who underwent vacuum delivery tended to have more of them.

This could be as a result of an episiotomy that extended or because an episiotomy was not administered prior to the procedure as prophylactic episiotomy is not routinely administered to parturients having a vacuum delivery as compared to forceps, the suction cups occupy less space in the perineum as compared to the forceps. Similar reports were obtained from other studies<sup>9,13,14</sup> but different from a study that showed that primary post-partum haemorrhage was the common complication.<sup>10</sup>

The most frequent newborn problem in almost half of the parturients was birth asphyxia. This is not surprising given the variety of purposes for which the procedures were performed. This finding is consistent with earlier studies, although it differs from one from India that identified cephalohematoma as the most frequent newborn complication.<sup>8</sup>

The fact that this study was a retrospective analysis of the delivery records and a lot of data was missing was a significant limitation.

Additionally, the small number of instrumental vaginal deliveries reduced the statistical analysis's power and the ability to compare the results of forceps deliveries and vacuum extractions.

This study may be utilized by researchers to carry out more extensive research that incorporates more factors and triangulation with qualitative data.

There is no justification for allowing the skill of utilizing ventouse and forceps to help delivery to go extinct given the relative safety of instrumental delivery as revealed in this study and its advantages. There is a need to investigate the causes that prevent its use in many obstetric units and attempt to change them, as well as to advocate its use and educate healthcare providers for expectant mothers about the use of instrumental births in our nation.

## Conclusion

This setting of this study has a very low rate of instrumental births, resulting in a high caesarean section rate, which may adversely affect resident doctors' IVD training. The most common indication was delayed second stage of labour due to malposition. The majority of the cases had no complications and the foetal outcome was good for most of the cases indicating that the procedure can be safe in an experienced hand. Despite its safety profile seen in this study as documented by very good fetal outcomes, the rate is also fast declining. Considering, that IVD is adjudged a key element of essential obstetric care by the WHO it behooves us that efforts should be geared towards training and retraining skilled birth attendants to improve the uptake of IVDs, and equipping our training Centre's would add a boost to basic obstetric skills. This is particularly important as IVD provides an option to caesarean section in carefully selected cases, thereby reducing our cesarean section rate which is already high with our limited health resources. Furthermore, our environment is bedeviled with an aversion to ccaesarean section.

This study has demonstrated that instrumental deliveries in this hospital are low but generally safe. Therefore, we advise buying mannequins to train resident doctors, implement routine instrumental vaginal delivery drills and upscale consultant expertise.

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## Haematological parameters of regular and first-time male blood donors in a medium-sized hospital in north central nigeria.

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### Abstract

*Background:* Haemoglobin concentration is the only parameter that is routinely done in order to determine donor fitness. Donors with non-symptomatic derangement in any of the other haematological parameters may therefore be recruited for blood donation. *Aims:* We determined the haematological parameters of male blood donors and the effect of regular blood donation on these parameters by comparing the parameters of regular and first-time donors. *Methods:* This was a hospital-based cross-sectional study involving 200 male donors aged 18-59 years. Purposive sampling method was employed to select 100 each of age-matched regular and first-time male blood donors. Only consenting donors who had been found fit to donate with haemoglobin concentration of  $\geq 12.5$ g/dl and who had been screened negative for HBsAg, HCV and HIV antibodies were recruited for this study. The full blood count (FBC) was determined by haematology analyser; Sysmex KX21 (Sysmex, Kobe, Japan) according to the manufacturer's instructions. *Results:* There was a significant difference in haemoglobin concentration, MCH and MCHC between the two groups ( $14.43 \pm 1.26$  versus  $13.92 \pm 1.10$ ;  $P=0.003$ ,  $27.997 \pm 2.64$  versus  $27.004 \pm 2.98$ ;  $P=0.013$  and  $33.448 \pm 2.72$  versus  $32.361 \pm 3.08$ ;  $P=0.009$  respectively). *Conclusions:* Regular donors had a lower mean value of haemoglobin concentration, MCH and MCHC when compared to first-time donors. We, therefore, recommend a yearly full blood count for regular blood donors. Further studies to determine an appropriate donation interval that will not jeopardize the health of our regular donors will also be necessary.

**Keywords:** First time, Regular blood donor, Haematological Parameters, Male

### Introduction

Blood is an essential body fluid that is necessary for nutrients and oxygen delivery to the cells and transport of waste products away from cells in human being and other mammals. It is a unique resource for which an artificial substitute is yet to be found, thus blood donation is crucial to meet the enormous demand in medical care. Blood transfusion is an essential part of modern healthcare delivery, which helps save millions of lives that could have been lost due to lack of blood for transfusion. However, donors are occasionally deferred for various reasons, a common reason being low

haemoglobin concentration.<sup>1</sup>

In Nigerian blood banks, blood donations are routinely tested for transfusion transmissible infections like Human Immunodeficiency Virus (HIV), hepatitis B and C, and syphilis. At the time of blood donation, the routinely measured haematological parameter is the haemoglobin concentration, which is indirectly measured by copper sulphate specific gravity method as a routine pre-donation assessment procedure. Despite its wide applicability, this is associated with a lot of erroneous results and does not give quantitative result of haemoglobin level in donors.<sup>2,3,4</sup> The effectiveness of transfusion therapy depends on the quality of blood and blood products such as the red cell, granulocyte or platelet concentrates, which depend on the values of all

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haematological parameters, including the levels of haemoglobin, haematocrit, leucocyte and platelet counts of the donors at the time of donation.<sup>5</sup>

The values of haematological parameters are affected by several factors, even in apparently healthy populations. These factors include age, gender, ethnic background, body build, social status, nutritional and environmental factors, especially altitude.<sup>6</sup> It has been demonstrated in several studies that some of the haematological parameters exhibit considerable variations at different periods of life. At birth, the haemoglobin (Hb) concentration, red blood cell (RBC) count and packed cell volume (PCV) are shown to be higher than at any other period of life.<sup>7</sup> The levels of these parameters then decrease during the next few months after birth, some more steeply than others, with the cells becoming hypochromic due to the development of physiological iron deficiency anaemia.<sup>8</sup> The Hb content of red cells then gradually rises to adult levels by the age of puberty.<sup>9</sup> Following the donation of one unit of whole blood (450mls), haematological parameters decrease immediately. Blood withdrawal causes a reduction of plasma volume which is almost completely restored 24–48 hours after donation. Recovery of haematocrit, ferritin, and haemoglobin concentrations takes more time as these parameters have been found to be reduced beyond 4 weeks after donation, which corresponds approximately to the period needed for total haemoglobin mass to return to baseline levels.<sup>10</sup>

In most blood banks in Nigeria, family replacement and commercial donors constitute the largest number of donors, with voluntary donors making up a minority.<sup>11,12</sup> Despite the WHO vision 2020 on blood policy regarding 100% voluntary non-remunerated blood donors,<sup>13</sup> our country is still far from reaching this target. Therefore, strict donor selection criteria should be implemented so that the recipients of blood transfusion can benefit maximally from such a procedure.

Since haemoglobin concentration determination is a routine test to determine donor fitness, it is, possible for a donor with non- symptomatic derangement in any of the other haematological parameters to be recruited for blood donation. The aim of this study was thus to determine the haematological parameters of male blood donors and the effect of regular blood donation on these parameters by comparing the parameters of regular and first -time donors.

## Materials and Methods

This research was a hospital-based cross-sectional study conducted at the blood bank unit of the Department of Haematology and Blood Transfusion, University of Ilorin Teaching Hospital, Ilorin, North Central geopolitical zone of Nigeria. The hospital located in the State capital, is at latitude 8° 30'N and longitude 4° 35' E'. The State comprises 16 Local government areas and 3 Senatorial districts. The State population, as of the 2006 National Population Census, has a population of 2.37million people with agriculture as the main source of economy. The teaching hospital serves as a referral centre for the people of the State and other neighbouring states of Ekiti, Osun, Niger and Kogi. This study was conducted over four months in the blood bank. Ethical clearance was obtained from the Ethics and Research Committee of the University of Ilorin. (Approval number: ERC/PAN/2016/07/1578) Written permission was also obtained from the Head of the Department of Haematology and Blood Transfusion. Informed consent was also obtained from the prospective blood donors after explaining the procedure involved in this research before being recruited.

A total of 200 consenting male donors between the ages of 18 and 59 years were recruited to participate in this study. A Purposive sampling method was employed to select 100 each of age-matched regular and first- time male blood donors into the two categories. The definition of regular donors in this study was those who donated at least 2 times in the previous year.

A brief biodata including age, tribe, level of education, occupation and social habits, like smoking, drinking alcohol, extra-marital affairs, and sharing of sharp objects, was inquired and documented for each donor, after which a thorough physical examination (checking for pallor, jaundice, blood pressure, pulse, weight and height) were done. Haemoglobin concentration was determined using a portable DiaSpect Haemoglobinometer (a product of DiaSpect Medical GmbH, Sailauf, Germany, EKF Diagnostics, GmbH, Barleben, Germany) according to the manufacturer's instruction to check for donor fitness. The haemoglobin concentration of 12.5g/dl and above was considered adequate and fit for blood donation. The consenting donors were also screened for Hepatitis B surface antigen using Enzyme-Linked Immunosorbent Assay (ELISA) and HCV and HIV antibodies using third-

generation ELISA kits. Only donors screened negative for HBsAg, HCV and HIV antibodies were recruited for this study. Three milliliters (3ml) of whole venous blood were collected immediately after donation in a vacutainer tube containing tripotassium ethylene diamine tetra acetic acid as an anticoagulant. The sample was gently mixed and sent immediately to haematology laboratory for full blood count (FBC) within two hours of sample collection. The full blood count was determined using a haematology auto analyzer, Sysmex KX 21N (Sysmex, Kobe, Japan), according to the manufacturer’s instructions.

Data analysis was done using Statistical Package for Social Sciences (SPSS) software package version20 (International Business Machine Inc Chicago, Illinois, USA). Data were expressed as mean and standard deviation. Independent sample t-test was used to compare the mean of the haematological parameters between the first-time and regular donors. P value ≤0.05 was considered significant.

**Results**

Two hundred consented male blood donors were recruited for this study. The donors comprised 100 first-time and 100 regular family replacement and voluntary blood donors. The Majority of the blood donors were family replacements 186 (93.0%) in this study. The mean age of the regular and first-time donors was 29.63± 6.90 years and 29.06 ±8.70 years respectively (*P*= 0.607). The majority of the respondents were artisans (59.0 %) and 41.0% were civil servants. Many were married and attained secondary school education. Greater numbers were Muslims and of Yoruba ethnic group, while very few of them were from Nupe and Hausa ethnic origins. (Table 1)

The mean values of haemoglobin concentration(g/dl) of first-time donors and regular donors were 14.43± 1.26 and 13.92± 1.10 respectively. One donor (0.5%) had polycythaemia with haemoglobin of 17.8g/dl. The mean values of haematocrit in the first-time donors were higher than those of the regular donors (43.89±3.34 vs 42.00± 3.11 p-value 0.809), although the difference was not statistically significant. There were significant differences in the mean values of Haemoglobin concentration, Mean Corpuscular Haemoglobin (MCH) and Mean Corpuscular Haemoglobin Concentration

(MCHC), which were higher among first time compared with regular donors (14.43± 1.26 versus13.92± 1.10; *p*=0.003, 27.997 ±2.64 versus 27.004± 2.98; *p*=0.013 and 33.448± 2.72 versus 32.361± 3.08; *p*=0.009 respectively). There was no statistically significant difference in the mean corpuscular volume in the two groups (83.965±6.2366 vs 83.640±6.4621, *p*=0.724). Table 2.

Table 1: Socio – Demographic Characteristics of First and Regular Blood Donors

	First time donors	Regular donors
<b>Age</b>		
18-27	38 (38.0)	37 (37.0)
28-37	42 (42.0)	39 (39.0)
38-47	16 (16.0)	19 (19.0)
> 48	4 (4.0)	5 (5.0)
Total	100 (100.0)	100 (100.0)
Mean Age±SD	29.63±6.90	29.06±8.70
<b>Marital Status</b>		
Married	68 (68.0)	66 (65.0)
Single	32 (32.0)	34 (34.0)
Total	100 (100.0)	100 (100.0)
<b>Education Qualification</b>		
Primary	12 (12.0)	15 (15.0)
Secondary	61 (61.0)	58 (58.0)
Tertiary	16 (16.0)	18 (18.0)
None	11 (11.0)	9 (9.0)
Total	100 (100.0)	100 (100.0)
<b>Religion</b>		
Islam	64 (64.0)	67 (67.0)
Christianity	36 (36.0)	33 (33.0)
Total	100 (100.0)	100 (100.0)
<b>Employment Status</b>		
Civil Servant	41 (41.0)	40 (40.0)
Artisan	59 (59.0)	60 (60.0)
Total	100 (100.0)	100 (100.0)
<b>Tribe</b>		
Yoruba	62 (62.0)	59 (59.0)
Nupe	18 (18.0)	24 (24.0)
Hausa	20 (20.0)	17 (17.0)
<b>Total</b>	<b>100 (100.0)</b>	<b>100 (100.0)</b>

Twenty- four (12%) of the total number of donors had low MCV, while five (2.5%) had high MCV. Eighty-two (41%) had low MCH, and 83 (41.5%) had low MCHC. The proportion of donors with low MCH was

significantly higher among regular donors than first-time donors (50% versus 32%; P value= 0.032). There were no significant differences between regular and first-time donors in the number with low MCV (13% versus 11%; P value = 0.830) and those with low MCHC (47% versus 36%; p value = 0.114). Table 2

Table 2: The mean Haematological Parameters among first and regular Blood Donors

Parameter (mean±SD)	First time donors	Regular donors	P- value
*RBC count (x10 <sup>12</sup> /l)	5.1788±0.49569	5.1386±0.58174	0.609
Haemoglobin conc. (g/dl)	14.43±1.26	13.92±1.10	0.003
‡HCT(%)	43.886±3.3403	42.000±3.1186	0.809
∞MCV(fl)	83.965±6.2366	83.640±6.4621	0.724
εMCH(pg)	27.997±2.64	27.004±2.98	0.013
ΩMCHC(g/dl)	33.448±2.72	32.361±3.08	0.009
π WBC count(x10 <sup>9</sup> /l)	5.346±1.5845	5.173±1.1989	0.395
Absolute neutrophil (x10 <sup>9</sup> /l)	2.1892±1.35089	2.1134±0.79502	0.638
<b>Absolute lymphocyte (x10<sup>9</sup>/l)</b>			<b>0.765</b>
<b>Platelet count</b>	190.64±54.631	193.65±50.762	0.694

\*RBC (Red Cell Count), ‡HCT (Haematocrit), ∞MCV (Mean Corpuscular Volume),

εMCH (Mean Corpuscular Haemoglobin), ΩMCHC (Mean Corpuscular Haemoglobin Concentration), π White Blood Cell (WBC)

The mean White Blood Cell count of first and regular donors was within normal range 5.346±1.58 versus 5.173±1.198 p= 0.395. Forty-four (22%) of the total number of donors had neutropaenia (absolute neutrophil count<1.5 x10<sup>9</sup>/l), and one donor (0.5%) had neutrophilia. The Platelet count was 190.64±54.631 versus 193.65±50.762 for the two categories of the subjects. Four (2%) of the total number of donors had thrombocytopenia (platelet count < 90 x 10<sup>9</sup>/l) and 7 (3.5%) had thrombocytosis (platelet count>300 x 10<sup>9</sup>/l). There were no significant differences between regular and first-time donors in the mean values of total leucocytes and platelet counts (p= 0.395, 0.694).

## Discussion

The effectiveness of transfusion therapy depends on the quality of blood and blood products such as the red cell, granulocyte or platelet concentrates, which in turn depend on the values of all haematological parameters, including the levels of haemoglobin, haematocrit, leucocyte and platelet counts of the donors at the time of donation. Before a blood transfusion is given, many steps are taken to ensure that quality blood and blood products are available for the recipient. The majority of the donors in this study were family replacement (93.0%) donors, which is similar to what was reported by Okocha *et al*<sup>12</sup> in Southeast Nigeria in which 99.0% of their blood donors were family replacement donors, but relatively higher than what was reported in Enugu in which 59.2% and 22.1% of their donors were family replacement and paid donors.<sup>11</sup> The higher number could also be because some of the donors may be paid but pretended to be family members of the blood recipients as we do not allow paid blood donors in our centre. The mean age of both groups was less than 30 years in this study, similar to what was reported in other studies in the country.<sup>6,11,12</sup> This could be because of the increasing population of youths in Nigeria and Africa. It was also reported that this age bracket constituted ~15% of the nation's population.<sup>14</sup> This was expected, as most people within the age group are strong and healthy. The young population structure in Nigeria provides a window of opportunity for youths to serve as change agents in blood donation drives. Furthermore, younger people, being relatively more educated, are more amenable to donor recruitment campaigns. Most subjects were family replacement (93.0%) donors with few being voluntary (7.0%) blood donors. This shows that Nigeria has a long way to go in achieving vision 2020 toward 100% voluntary blood donation.<sup>14</sup> There was a significant difference between the mean haemoglobin concentration of the first-time donors compared with the regular donors 14.43± 1.26 and 13.92± 1.10 p=0.013. This could be due to some levels of iron deficiency among regular blood donors who may not have replenished their iron stores before another donation. Although the haemoglobin concentration of both groups was above the WHO-recommended level for donor selection, there is still a need to encourage iron supplements and a balanced diet among regular blood donors. Although the mean values of haemoglobin concentration of both groups were normal for blood donation and similar to what was reported by Garba *et al*.<sup>15,16,17</sup> in North West

Nigeria and some other parts of Africa but, relatively lower than values among people in the western world in which their mean haemoglobin was as high as 15.50.<sup>8</sup> The reason for the lower haemoglobin level in our subjects in comparison to the western world could be due to lower socio-economic factors, poor nutrition, chronic malaria and helminthic infestations that are predominant in some developing countries which could all result in iron deficiency.<sup>15</sup>

The mean haematocrit values were  $43.89 \pm 3.34$  and  $42.00 \pm 3.11$  for the first time and regular blood donors. This is similar to what was reported in Enugu, Kaduna, Jos and among two regions in Kenya.<sup>6,15,16,17</sup> The mean values of Haemoglobin concentration, MCH and MCHC were significantly higher among first-time than regular donors (p-value 0.003, 0.013 and 0.009), and this is comparable to what was reported in Jos and Port Harcourt,<sup>18,19</sup> but at variance to the report from Thailand in which there was no significant difference in those parameters despite some level of iron deficiency among the regular donors.<sup>20</sup>

The mean WBC of first and regular donors were within the normal range of  $5.346 \pm 1.585$  versus  $5.173 \pm 1.199$   $p = 0.395$ . The WBC is similar to the findings of Nubila in Enugu, South East Nigeria and what was reported in North West Nigeria by Garba *et al.*<sup>6,15</sup> There was no statistically significant difference in the absolute neutrophil count between the two categories of blood donors. However, a significant proportion (22%) of the blood donors in this study had neutropaenia (absolute neutrophil count  $< 1.5 \times 10^9/l$ ), and one donor (0.5%) had neutrophilia. The platelet counts among the first-time and regular blood donors were within normal limits of  $190.64 \pm 54.631$  and  $193.65 \pm 50.762$ ; this finding though falling within the normal value for our population, is lower than what was reported in Jos,<sup>16</sup> Sudan,<sup>21</sup> Pakistan<sup>22</sup>. This signifies that there is no significant iron deficient state among the blood donors in this present study. In another study in the USA,<sup>23</sup> among blood donors in which the effect of iron balance on platelet counts was studied, it was discovered that 55% (619 of 1128) of the women and 70% (102 of 145) of the men were iron-depleted. Iron-depleted donors had higher platelet counts compared with donors who had normal ferritin levels (women: 286 vs.  $268 \times 10^3 /\mu L$ ;  $p < 0.0001$ ; men: 246 vs.  $222 \times 10^3 /\mu L$ ;  $p = 0.0454$ ) and only 4.4% of iron-depleted donors had thrombocytosis ( $> 400 \times 10^3 /\mu L$ ) compared with 2.0% of donors who had normal ferritin

levels ( $p = 0.017$ ). Iron replacement therefore decreased platelet counts in iron-depleted female donors, but not in donors who had normal or stable ferritin levels. The same trends were also observed in male donors.<sup>23</sup>

### Limitations of this study

The study was limited to male donors because a very small proportion of our donors are females. A future multicentre study targeting female donors will therefore complement our findings in this study.

### Conclusion

This study shows that the majority of blood donors in our centre are of family replacement donors and many of them were below 30 years of age. Low red cell indices and neutropaenia were the most common haematological abnormalities obtained among the male blood donors in this study. Regular donors had a lower mean value of haemoglobin concentration, MCH and MCHC and a significantly higher proportion of them had low MCH when compared to first-time donors. We, therefore, recommend a yearly full blood count for regular blood donors. Further studies to determine an appropriate donation interval that will not jeopardize the health of our regular donors will also be necessary.

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## Plastic surgery during COVID-19 lockdown in Nigeria: any need for postponement of elective surgeries?

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This paper was first presented at the 26<sup>th</sup> Annual General Meeting and Scientific Conference of the Nigerian Association of The Plastic, Reconstructive and Aesthetic Surgeons (NAPRAS) held in Abuja Nigeria between August 22<sup>nd</sup> to 24<sup>th</sup>, 2021.

### Abstract

*The COVID-19 Pandemic is the most recent and ongoing pandemic with the most devastating consequences economically, politically, academically and socially due to the high fluidity of human movement in the 21st century. COVID-19 means coronavirus disease 2019 first detected in Wuhan, China in November 2019. It causes a severe form of acute respiratory distress syndrome. The scare of the disease made most countries shut down practically all social, academic, economic and political activities including health services except emergencies and those related to COVID-19. However, the plastic surgery unit of the Irrua Specialist Teaching Hospital ( ISTH) operates on patients who came during the pandemic for surgical services after the COVID-19 polymerase chain reaction test has been done. All patients who had negative polymerase chain reaction tests and those who had negative tests following treatment for COVID-19 had their surgery. Methodology and method: This is a retrospective study of all the patients who had surgeries in the Plastic Surgery unit, Department of Surgery of IST, Irrua done between April to October 2020. ISTH has the Institute of Lassa Fever Research, a Centre of excellence for the diagnosis and treatment of Viral Hemorrhagic Fever. The Hospital is one of the first three (3) centres accredited by the Nigeria Centre for Disease Control (NCDC) for the diagnosis of COVID-19 in February 2020. The data were retrieved from the Operation Diary and the patient's case notes. RESULTS: A total of 232 patients were booked for surgery by the Plastic Surgery Unit during the period under consideration. All the patients were screened for COVID-19, but only 17(7.3%) patients had positive tests (14 were asymptomatic while the remaining were symptomatic) for the coronavirus. Surgeries were performed on 228 patients including 13 who were initially positive for the virus. These positive patients had their surgeries after appropriate treatment, except four patients who did not return for their surgeries. Most of the patients had elective surgeries (92.7%). The majority of the patients were in the first six decades of life, with those in the third, fourth- and fifth decades accounting for 60.4%. Conclusion: In the Plastic Surgery unit, only 6.25% were diagnosed with COVID-19 among the patients who had elective surgeries. This findings suggest that prompt and reliable diagnostic tests. However, surgeons, anesthesiologists and peri-operative nurses should adhere strictly to universal precautions. More so the end to the pandemic is not in sight.*

*Keywords: Plastic surgery, surgeries, COVID-19, pandemics, lockdown.*

### Introduction

COVID-19 is the coronavirus disease discovered in Wuhan City, China towards the end of 2019 (November) defined as an illness caused by a novel coronavirus now called severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). It is an airborne/droplet disease-causing acute respiratory

distress syndrome (ARDS) caused by other coronaviruses like Middle East Respiratory Syndrome (MERS) and severe acute respiratory syndrome (SARS). This was found to cause a more severe respiratory disease with attendant high mortality. On January 30, 2020, the WHO declared the COVID-19 outbreak a global health emergency and by March 11, 2020, it was declared a global pandemic. COVID-19 affect different people in different ways. Most infected people will develop mild to moderate illness and recover without

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hospitalisation. The most challenging part of the disease is the issue of the asymptomatic carriers. This made the control of the spread of the disease very cumbersome. Greater than 75% of infected persons will be asymptomatic until they completely recover from the virus while they actively shed it as carriers. This issue of the asymptomatic carriers led most nations to bound air travel and subsequently lockdown the whole economic, academic, religious and social activities, leading to restriction of movement, social and physical distancing, wearing of face masks by everyone in public places and the use of personal protecting equipment by the frontline health workers who at risk of contamination and infection. Most health institutions followed the guidelines that all elective procedures should be postponed and that non-essential health workers who can work from home should stay home. Hospitals were infected between the time of negative screening and the time of operation, with respect to both patients, anaesthesiologists and surgeons. To operate some elective and all emergencies, COVID-19 screening tests were done for all patients before surgery. The negative screening test result was required not later than 72 hours before elective surgery, while the test samples were taken before emergency surgeries, the results were not required for surgery. If the result is positive, the patient is moved to the isolation ward and commenced on treatment.

**Methodology and Methods**

This was a retrospective study of all patients who had surgery in the Plastic Surgery Unit of the Department of Surgery, Irrua Specialist Teaching Hospital (ISTH), Irrua Edo State Nigeria. ISTH is the Centre of excellence for the diagnosis and treatment of Viral Haemorrhagic Fever. The Institute of Viral Haemorrhagic Fever and Emergent Pathogens (IVEP) is also located within the premises of the Hospital. It is the only tertiary health institution in the Edo Central and North Senatorial area of the Edo State. It was one of the first 3 centres accredited for the diagnosis of COVID-19 in Nigeria. The institution reduced its services to only emergence in compliance with the COVID-19 guidelines of the Nigeria Centre for Disease Control (NCDC). This led to the shutdown of all services except the essential and emergency services in the nation. The data were obtained from the operation records between April 2020 to March 2021, during the period of the national

lockdown due to COVID-19. The data were extracted and subsequently analyzed.

**Results**

A total of 232 patients were booked for surgery by the Plastic Surgery Unit during the period under review. All the patients were screened for COVID-19, of which only 17(7.3%) patients had positive tests for the coronavirus. Among the positive, 14 were asymptomatic while 3 were symptomatic. All the booked patients had their surgeries as appropriate except four patients of the positive cases, who did not return following their stay in the isolation ward. All the symptomatic cases were isolated and treated in the isolation ward, thereafter had their surgeries. The number of procedures on a monthly basis is represented in Fig. 1.

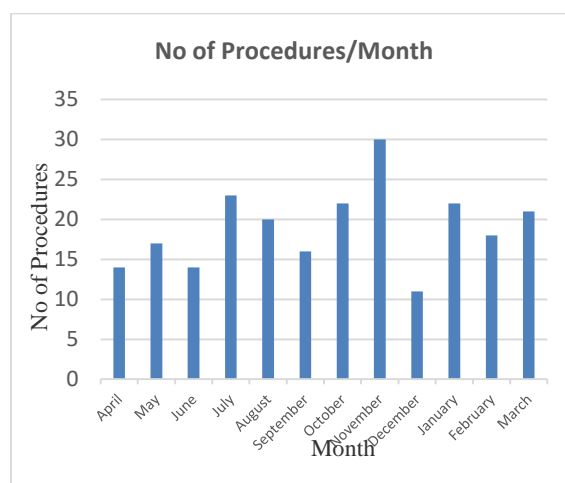


Fig. 1: The no of surgical procedures in the Plastic Surgery Unit, Irrua Specialist Teaching Hospital from April 2020 to March 2021.

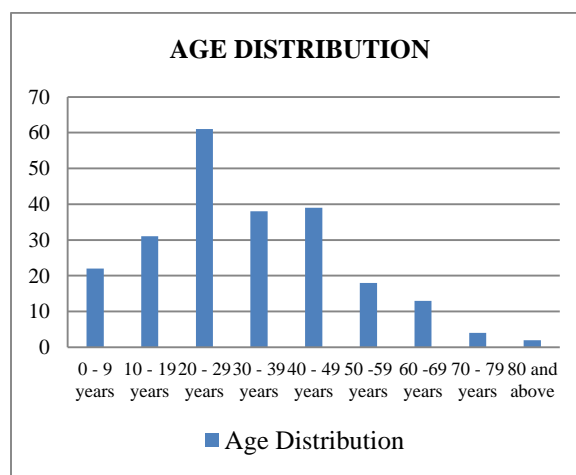


Fig. 2: The age distribution

The patients were 137 males and 91 females with male to female ratio of 1.5: 1. The majority of the patients (138) are young adults in the third, fourth and fifth decades of life (Fig.2). There were only 6 patients above seventh decade of life accounting for 2.6%.

Emergency cases were 24 (10.5%), while the rest had elective surgeries. The elective minors were 170 (75%) while the elective major cases were 34(15%). (Figure 3).

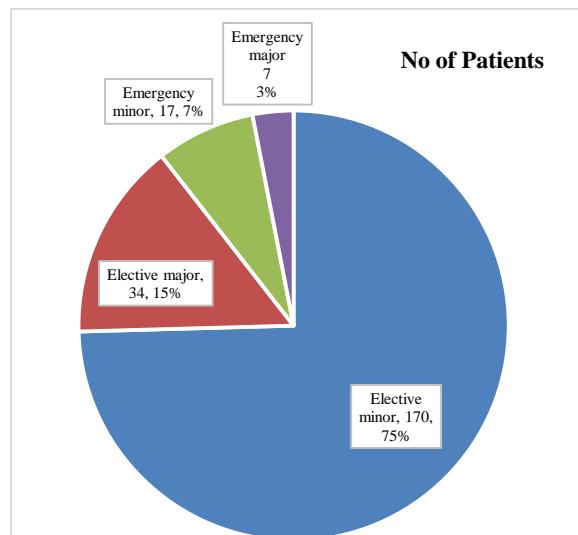


Fig. 4: Types of surgeries performed in the Plastic Surgery Unit, Irrua Specialist Teaching Hospital from April 2020 to March 2021.

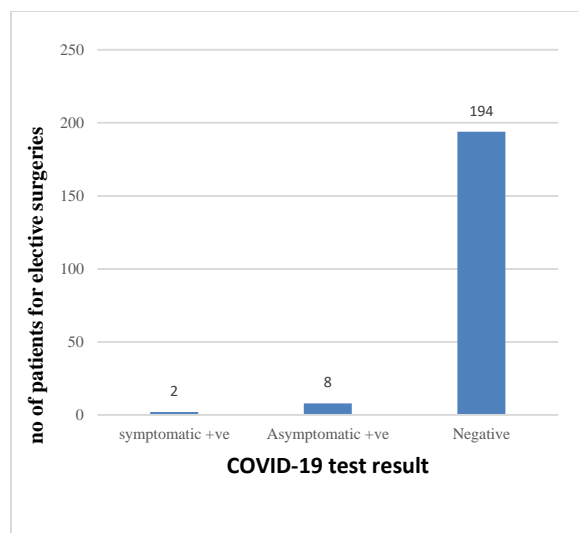


Fig.3: Pre-operative COVID-19 polymerase chain reaction results in patients for elective surgeries.

The 204 patients who had elective surgeries, had COVID-19 Screening tests done 24 -48 hours before

surgery. 194 (94.3%) of the patients for elective surgeries, their results came out negative while 10 were positive. 8 were asymptomatic infected patients while 2 were symptomatic Fig. 4 above.

The symptomatic patients had mild to moderate symptoms which included low-grade fever, generalized weakness, joint pain, anorexia, and nausea.

## Discussion

The COVID-19 is the most recent pandemic caused by the severe acute respiratory syndrome coronavirus 2<sup>1</sup>.The rate of spread was alarming so that it has become a pandemic in the space of three months of its discovery<sup>2</sup>. The infection of high-profile personalities like Presidents, Prime Ministers and Governors also added to the hype and the scare associated with the disease. It is still an ongoing pandemic, which has resulted in severe economic, political, health, academic and social problems in all nations whether directly or indirectly. Directly, due to the lockdown of economic, health and social activities, the restrictions on air travel and movement have had a severe negative economic impact on the people. Indirectly, the exchange of goods and services was hindered due to the ban on international trade. These goods and services invariably became scarce and more expensive or outrightly unavailable<sup>3</sup>.

Despite all the hype and the scare of COVID-19, the Plastic Surgery Unit of the Department of Surgery continued to offer services to patients who decided to seek care during the lockdown. This was also necessitated by the possibility of prolongation of the duration of the pandemic due to the concept of the asymptomatic carriers<sup>4-6</sup>. The Unit decided to follow the guideline of the hospital, that all patients going for any procedure must have a COVID-19 PCR screening test earliest 72 hours before any elective case and just before the surgery in any emergency case.

The Plastic Surgery Unit performed 228 surgeries for 12 months of the total lockdown in Nigeria. There were more males than females with a male-to-female ratio of 1.5:1. Most of our patients were below 50years of age, accounting for 83.8 %. The peak age is in the third decade of life. This may not necessarily



mean that the disease burden is higher in this age group but they were more daring to seek care during the lockdown period. The older adults and the elderly may have been less daring because of the information about the severity of the pandemic in the elderly and those with co-morbid status. They were trying to isolate themselves from possible exposure to the virus.

Most of these patients had COVID-19 test results negative which could have been denied surgery and therefore their conditions could have become complicated by the time the restrictions were relaxed. “A stitch in time saves nine”. Adhering to universal precautions will allow patients to access care early reducing the disease burden. This will go a long way to prevent complications, morbidity and sometimes mortality. The elective cases (204) were in the majority, and these are the people whose surgeries were supposed to be postponed indefinitely<sup>7-9</sup>. The 10 patients who had positive COVID-19 tests were either asymptomatic or with mild or moderate symptoms. They were either transferred or admitted directly into the isolation ward where they were treated and confirmed to be viral negative before they were discharged from the ward.

The rate of infection among the patient who had plastic surgery procedures during this period was so low (5.6%), that it did not seem reasonable to have cancelled their cases as a result of the pandemic. Those who were positive for the disease were mainly asymptomatic and appropriate diagnosis and treatment without stigmatization gave them confidence to access their surgeries became negative for the coronavirus in less than three weeks and were discharged home.

Opening the Unit, for these patients to access some services also allowed the asymptomatic and pre-symptomatic carriers to be identified and treated. These patients are the main concern, that necessitated social and physical distancing, and eventual lockdown<sup>8</sup>. These services will also help stem the spread of the disease, instead of completely quarantining the whole nation<sup>10</sup>. This total quarantine leads to late presentation which -needs admission into the intensive care unit. The hype and the scare prevented many people from presenting early to access care because of the disinformation and

misinformation that almost equate diagnosis to a death sentence. In contrast, only 3% of the infected individuals will require intensive care.<sup>11-12</sup> Though, there is a 40% mortality rate in those who had intensive care with system support.

## Conclusion

The COVID-19 pandemic is a reality. However, the guidelines for the different communities should be developed or modified based on the spread and severity of the disease in their community. There is a need to domesticate any guideline henceforth in managing any epidemic or pandemic. Most hospitals should provide every resource needed to provide the health workers protection like face masks, hand sanitisers and personal protective equipment, then allow close to normal services at all levels. All patients that require close contact procedures should have COVID-19 screening. The staff should also have COVID-19 screening at intervals so as to ensure early diagnosis and prompt treatment. Elective surgeries should not be delayed or postponed during the pandemic if the COVID-19 test result is negative. Children and young adults should be able to access any hospital services except when the staffs are overwhelmed with emergencies or severe COVID-19 cases.

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## Relationship between serum Cobalamin levels and Neuropsychiatric Syndromes in individuals at Ahmadu Bello University Teaching Hospital Zaria, Nigeria

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### Abstract

**Background:** Cobalamin deficiency causes defective methylation of myelin resulting in progressive neuropathy. This affects the spinal cord's peripheral sensory nerves and posterior and lateral columns. Inadequate methylation of myelin affects its quality and sufficiency with resultant interference of neuronal signal transmission. **Objectives:** To determine the relationship between Cobalamin deficiency and neuropsychiatric syndromes in patients attending neurology and psychiatric units of Ahmadu Bello University Teaching Hospital (ABUTH), Zaria. **Methods:** We conducted a cross-sectional study involving 68 patients with neuropsychiatric symptoms and signs. A semi-structured interviewer-administered questionnaire was used to collect information from the study participants. Tables were used to show the frequencies and proportions of the neuropsychiatric syndromes. Serum cobalamin levels were estimated using Human Transcobalamin 2 (TCN2) ELISA Kit, WKEA MED SUPPLIES CORP Changchun 130012 China. **Results:** 68 participants were enrolled in this study, with males being 45 (66.2%). The mean ( $\pm$ Standard Deviation) age and the median with interquartile range (IQR) of cobalamin level of the study participants were  $34.37 \pm 13.70$  years and 140 (30) pmol/L respectively. Some neuropsychiatric syndromes of statistical significance were icteric 17 (25.0%), abnormal light touch sensation 13 (19.1%), abnormal vibration sense 23 (33.8%), abnormal joint position sense 24 (35.3%) and hyperpigmentation of palms and soles 13 (19.1%). **Conclusion:** This study showed a high cobalamin deficiency among the patients attending neuropsychiatric units. It also showed a statistically significant relationship between serum cobalamin and clinical signs, signifying proficiency in eliciting clinical signs is paramount in detecting people with suspected cobalamin deficiency. Therefore, vitamin B<sub>12</sub> deficiency is a frequently ignored cause of neuropathy and psychiatric disorders.

**Keywords:** Vitamin B<sub>12</sub> deficiency, Cobalamin deficiency, Neurology unit, Neuropsychiatric syndromes, Psychiatric unit.

### Introduction

Neuropsychiatric syndromes associated with cobalamin (Vitamin B<sub>12</sub>) deficiency include dementia, depression, mania, psychosis, impaired memory, disorientation, irritability, hallucinations, personality changes and obsessive-compulsive disorder. Foods that contain Vitamin B<sub>12</sub> are those of animal origin like meat, liver, seafood and dairy products.<sup>1</sup> The neurologic manifestation of cobalamin deficiency is less understood, however, central nervous system demyelination may play a role.<sup>2</sup> Cobalamin deficiency characteristically causes

defective methylation of myelin and other substrates resulting in progressive neuropathy affecting the peripheral sensory nerves, and posterior and lateral columns of the spinal cord.<sup>3</sup> Inadequate methylation of myelin affects its quality and sufficiency with resultant interference of neuronal signal transmission. Therefore, cobalamin deficiency is essentially a demyelination disorder.<sup>3</sup> S-adenosyl methionine (SAM) which is useful in polyamine synthesis and transmethylation reactions.<sup>4</sup> S-adenosyl methionine is required for the production of phosphatidyl choline which is an essential part of myelin- a fatty material that insulates many nerves. Therefore, low levels of SAM as found in cobalamin deficiency may compromise neurological repair mechanisms, relevant to encephalopathy and myelopathy and

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synthesis of the neurotransmitters, which may result in mental status changes.<sup>5</sup> Another explanation of neuronal damage is that cobalamin deficiency attracts activated macrophages to the poorly myelinated nerve with the subsequent elaboration of inflammatory cytokines such as Tumour necrosis factor alpha (TNF- $\alpha$ ) and Interleukin-6 (IL-6) which aggravate myelin damage.<sup>6</sup> Removal of damaged myelin by macrophages leads to characteristic vacuoles in all classes of nervous tissue, manifesting with motor, sensory and autonomic features hence subacute combined degeneration of the nerves.<sup>6</sup>

Prolonged Vitamin B<sub>12</sub> deficiency with its attendant effects on the nervous system may lead to neuropsychiatric syndromes. Therefore, there is a need for those concerned to increase Vitamin B<sub>12</sub> intake through improved earnings and awareness. This study, therefore, aimed at studying the relationship between serum cobalamin and neuropsychiatric syndromes in patients attending neurology and psychiatric units of Ahmadu Bello University Teaching Hospital Zaria, Nigeria.

## Materials and Methods

**Study settings:** This study was carried out at the departments of neurology and internal medicine of Ahmadu Bello University Teaching Hospital Zaria, Nigeria.

**Study design:** This was a cross-sectional study among 68 patients attending neuropsychiatric clinics of ABUTH, Zaria. A semi-structured questionnaire was used to collect information on clinical symptoms and signs, and some laboratory tests were carried out on the study participants.

**Study population:** This study was carried out on subjects with Neurological and/or psychiatric problems aged between 18 to 80 years.

**Sampling technique:** The participants were conveniently recruited as they presented to the units using a simple random sampling technique.

**Study instrument:** Semi-structured interviewer-administered questionnaires were used to collate information on socio-demographic variables (Table 1), clinical symptoms and signs. Venipuncture was

carried out on the subjects to obtain samples for serum cobalamin levels. Serum cobalamin was spectrophotometrically measured at a wavelength of 450nm using Human Transcobalamin 2 (TCN2) ELISA Kit, WKEA MED SUPPLIES CORP Changchun 130012 China. Cobalamin deficiency was defined as a serum cobalamin level of <150pmol/L with clinical features and/or haematological anomalies related to cobalamin deficiency.<sup>7</sup>

**Data collection methods:** Each questionnaire was administered by an interviewer who was trained for the purpose after pre-testing. Five millilitres of venous blood were drawn from each participant for the determination of serum cobalamin levels. To ensure biosafety, universal precaution was observed by using latex gloves, spirit swabs for disinfecting the skin before blood collection, and safety boxes for sharps disposal.

**Data management:** The questionnaires were examined for completeness and accuracy by the principal investigator. The information on the questionnaires and the laboratory investigations were subsequently entered into Microsoft Excel version 20.0 for Windows and then imported into and analysed using SPSS version 20.0. Tables were used to show frequencies and proportions of serum cobalamin levels and neuropsychiatric syndromes (Table 2).

**Statistical analysis:** The data was analysed using IBM SPSS (version 20.0). Univariate analysis was used for frequencies and proportions of socio-demographic variables and serum cobalamin levels. The chi-square test was used to determine the relationship between serum cobalamin level and neuropsychiatric syndromes. The level of statistical significance was set at  $p < 0.05$ .

## Ethical approval

The study protocol was submitted to the Health Research Ethics Committee (HREC) of Ahmadu Bello University Teaching Hospital Zaria, and the research was approved. The approval number for this research is ABUTH/HREC/TRG/36. A written informed consent was obtained from the literate subjects while non-literate subjects thumb-printed the consent form.

**Results**

68 participants were enrolled in this study, with males being 45 (66.2%). The mean ( $\pm$ Standard Deviation) age and the median (IQR) of the cobalamin level of the study participants were 34.37 $\pm$ 13.70 years and 140 (30) pmol/L respectively. Some clinical signs that had statistically significant associations with cobalamin levels were; icteric 17 (25.0%, p=0.004), abnormal light touch sensation 13 (19.1%, p=0.022), abnormal vibration sense 23 (33.8%, p=0.037), abnormal joint position sense 24 (35.3%, p=0.006) and hyperpigmentation of palms and soles 13 (19.1%, P=0.022) Table 3.

Table 1: Socio-Demographic Characteristics of First and Regular Blood Donors

Variables	Patient group Frequency (%)	Control group frequency (%)
<b>Gender</b>		
Male	24 (35.3%)	45 (66.2%)
Female	44 (64.7%)	23 (33.8%)
<b>Age</b>		
<20 years	4 (5.9%)	1 (1.5%)
20-29 years	29 (42.6%)	21 (30.9%)
30-39 years	18 (26.5%)	28 (41.2%)
40-49 years	7 (10.2%)	15 (22.1%)
50-59 years	5 (7.4%)	3 (4.3%)
$\geq$ 60 years	5 (7.4%)	0 (0%)
<b>Level of education</b>		
Formal	61 (89.7%)	68 (100%)
Non-formal	7 (10.3%)	0 (0%)
<b>Marital status</b>		
Married	31 (45.6%)	44 (64.7%)
Not married	37 (54.4%)	24 (35.3%)
<b>Occupation</b>		
Employed	39 (57.4%)	49 (72.1%)
Unemployed	29 (42.6%)	19 (27.9%)
<b>Family size</b>		
<4	3 (4.3%)	4 (5.9%)
5-8	20 (29.4%)	43 (63.2%)
>8	45 (66.2%)	21 (30.9%)

Table 2: Clinical signs of all the study participants

Presenting clinical signs	Frequency (%)
<b>Appearance</b>	
Well-groomed	58 (85.3)
Unkempt	10 (14.7)
<b>Speech coherence</b>	
Coherent	65 (95.6)
Not coherent	3 (4.4)
<b>Pallor</b>	
Yes	26 (38.2)
No	42 (61.8)
<b>Jaundice</b>	
Yes	17 (25.0)
No	51 (75.0)
<b>Pedal oedema</b>	
Present	1 (1.5)
Absent	67 (98.5)
<b>Kernig's sign</b>	
Absent	68 (100)
<b>Romberg sign</b>	
Absent	68 (100)
<b>Light touch</b>	
Normal	55 (80.9)
Abnormal	13 (19.1)
<b>Vibration (256Hz) sense</b>	
Normal	45 (66.2)
Abnormal	23 (33.8)
<b>Joint position sense</b>	
Normal	44 (64.7)
Abnormal	24 (35.3)
<b>Coordination</b>	
Normal	68 (100)
<b>Drift</b>	
Normal	68 (100)
<b>Hyperpigmentation of palms and soles</b>	
Present	13 (19.1)
Absent	55 (80.9)
<b>Gait</b>	
Normal	67 (98.5)
Abnormal	1 ( 1.5)

Table 3: Relationship between serum cobalamin levels and clinical symptoms

Clinical symptoms	Normal Cbl level	Low Cbl level	x <sup>2</sup>	p-value
<b>Weakness</b>				
Yes	3	33	0.708	0.850
No	19	13		
<b>Visual disturbances</b>				
Present	2	4	0.353	0.553
Absent	20	42		
<b>Involuntary movement</b>				
Present	3	6	0.270	0.603
Absent	19	40		
<b>Tremors</b>				
Present	2	3	0.874	0.350
Absent	20	43		
<b>Cognitive state</b>				
Normal	16	36	0.060	0.806
Abnormal	6	10		
<b>Skin sensation</b>				
Normal	17	30	0.016	0.900
Abnormal	5	16		
<b>Speech disturbances</b>				
Absent	16	36	0.060	0.806
Present	6	10		
<b>Dysphagia</b>				
Present	0	4	0.076	0.150
Absent	22	42		
<b>Fits</b>				
Present	3	12	0.580	0.446
Absent	19	34		
<b>Unhappy most time</b>				
Yes	7	12	0.058	0.809
No	15	34		
<b>Disliked by everyone</b>				
Yes	6	11	0.002	0.960
No	16	5		
<b>Life worth living</b>				
Yes	21	41	0.065	0.799
No	1	5		
<b>Is it worth seeing a Doctor</b>				
Yes	21	40	0.253	0.316
NO	1	6		

Normal cobalamin level in this study:  $\geq 150\text{pmol/L}$

Table 4: Relationship between serum cobalamin levels and clinical signs

Presenting clinical signs	Normal Cbl level	Low Cbl level	x <sup>2</sup>	p-value
<b>Appearance</b>				
Well-groomed	20	38	0.184	0.668
Unkempt	2	8		
<b>Speech coherence</b>				
Coherent	21	44	0.565	0.452
Not coherent	1	2		
<b>Pallor</b>				
Had pallor	10	6	0.348	0.555
No pallor	12	30		
<b>Jaundice</b>				
Icteric	1	6	0.187	0.004
Anicteric	21	30		
<b>Kernig's sign</b>				
Absent	22	6	NA	NA
<b>Romberg sign</b>				
Absent	22	46	NA	NA
<b>Light touch</b>				
Normal	21	4	0.245	0.022
Abnormal	1	12		
<b>Vibration (256Hz) sense</b>				
Normal	19	26	0.340	0.037
Abnormal	3	20		
<b>Joint position sense</b>				
Normal	20	24	0.668	0.006
Abnormal	2	22		
<b>Coordination</b>				
Normal	22	46	NA	NA
<b>Drift</b>				
Absent	22	46	NA	NA
<b>Hyperpigmentation of palms and soles</b>				
Present	1	12	0.245	<b>0.022</b>
Absent	21	34		
<b>Gait</b>				
Normal	22	45	0.048	0.316
Abnormal	0	1		

Cbl: Cobalamin (pmol/L)

## Discussion

This study showed a high cobalamin deficiency among the patients attending neuropsychiatric units. Neurologic manifestations may be the earliest and often the only manifestation of cobalamin deficiency.<sup>8</sup> However, cobalamin deficiency can go undetected for several years. During this time the neuropsychiatric manifestations may become irreversible.<sup>9</sup> The symptoms presented by the patients with the neuropsychiatric syndrome in this study were weakness, abnormality in skin sensation (paraesthesia), feeling of unhappiness most of the time, feeling of being disliked by everyone, abnormal cognitive state and speech disturbances (Table 2). This is similar to the findings by Wadia *et al*<sup>10</sup> who also reported cognitive abnormality, weakness, abnormal skin sensation and fits in individuals with vitamin B<sub>12</sub> deficiency. In a study similar to this by Kumar, he described abnormal skin sensation (myelopathy), optic nerve involvement (visual disturbances) and personality change were among the symptoms of cobalamin deficiency.<sup>11</sup> Another study conducted on paediatric patients aged 0-18 years by Serin and Arslan found that involuntary movement fits (convulsion), abnormal skin sensation (tingling) and blurring of vision were among the few presenting symptoms.<sup>12</sup> This is similar to this study where some of our study participants presented with these symptoms.

The clinical signs of pallor found in the neuropsychiatric patients in this study is similar to the finding by Schuitemaker and Hoogland.<sup>13</sup> They reported pallor and fatigue as the earliest clinical features of cobalamin deficiency. Other signs like abnormality in joint position sense, abnormal vibration sense and abnormality in light touch sensation were commonly observed in this study. This observation was similarly reported by Sethi *et al*<sup>14</sup>, and the earliest and commonest presentations of peripheral neuropathy due to cobalamin deficiency are joint position sense abnormality and impaired vibration sense. Another two independent studies conducted by Andrès *et al*<sup>9</sup> and Kumar<sup>11</sup> reported similar findings of clinical signs in individuals with cobalamin deficiency. Additionally, a case report of a 66-year-old vegetarian by Ralapanawa *et al*<sup>15</sup>

revealed similar findings except positive Romberg's sign, which is absent in this study.

This study showed no significant relationship between the clinical symptoms and cobalamin deficiency (Table 3). However, a significant relationship exists with some clinical signs elicited (Table 4). Therefore, cobalamin deficiency is better clinically identified from a thorough clinical examination during which signs like jaundice, abnormal joint position sense, abnormal light touch sensation, abnormal vibration sense and hyper pigmentation may be elicited.

## Conclusion

This study showed a high cobalamin deficiency among the patients attending neuropsychiatric units. It also showed a statistically significant relationship between serum cobalamin and clinical signs, signifying proficiency in eliciting clinical signs is paramount in detecting people with suspected cobalamin deficiency. Therefore, vitamin B<sub>12</sub> deficiency is a frequently ignored cause of neuropathy and psychiatric disorders.

## Recommendations

1. Baseline Vitamin B<sub>12</sub> assays should be instituted among neurology and psychiatry patients and possible interventions given.
2. Health education on adequate intake of animal proteins as source cobalamin should be incorporated into the existing public awareness programs by the government, the dietetic unit of ABUTH, Zaria especially during the clinic days and other non-governmental organizations.
3. Introduction of cost-effective, low-technology agricultural interventions to boost food production to sustain vitamin B<sub>12</sub> levels in the community, e.g. encourage the women to rear animals in their backyards or start a community garden.
4. The government should develop a policy formulation framework to increase access to health care in view of their contribution to the nutrition and economy of this country.

## Limitations

1. The study being cross-sectional and Hospital-based only gave a ‘snap-shot’ of the problems in the community, hence may not be a true representative of the population.
2. Being a cross-sectional study, it may not adequately establish a cause-effect relationship between Vitamin B<sub>12</sub> deficiency and neuropsychiatric syndromes.
3. Bone marrow examination would have added value to the study if not because of the invasive nature of the procedure and the cost.

## Acknowledgements

I wish to appreciate the support of my seniors and colleagues in the Department of Haematology and Blood Transfusion. My sincere gratitude also goes to my supervisors and nursing staff of the Departments of Psychiatric and Internal Medicine, ABUTH Zaria, for being patient with me throughout the duration of this research. I wish also to thank Professor BOP Musa and Mrs. Okonkwo of the Immunology Department, and Drs Abdullahi and Abdurashed Y of the Department of Chemical Pathology for their assistance in running the samples. My appreciation also goes to Dr Bashir Suleiman and Dr Ahmad Umar of the Community Medicine Department for assisting me in data analysis.

**Conflict of interest:** The authors declared no conflict of interest.

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## ABO and Rhesus –D blood group distribution among voluntary blood donors in north-central Nigeria.

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### Abstract

*Background: Understanding ABO and Rh blood group distribution is crucial for the functional and successful handling of blood bank inventory and effective management of safe blood transfusion services. The distribution of ABO and Rh phenotypes tends to vary among different regions and races. Objectives: This study was carried out to provide relevant data on the distribution of ABO and Rh-D blood group phenotypes in the North-central region of Nigeria. Methods: This descriptive study included a total of 905 students and staff of 5 Tertiary Institutions in Kogi and Kwara States, North Central Nigeria. The ABO and the Rhesus blood groups were determined using the tile technique method. Forward blood grouping was done using standard antisera A, antisera B, and antisera D. The statistical data were presented in number (frequency) and percentage. Results: Group O phenotype was the most frequent blood group phenotype with over two-thirds (67.76%) of the population studied. This was followed by B and A with 16.98% and 13.55% respectively. The AB blood group was the least observed phenotype with a frequency of 1.71%. The Rh-D antigen was detected in 479 (74.61%) of the voluntary blood donors while the Rh-D negative phenotype was found in 163 (25.39%) of the population. Conclusion: Our study's most common blood group was the O blood group followed by the B, A, and AB blood groups. Most voluntary blood donors were Rh-D positive, constituting 93.2% of the population studied.*

*Keywords: ABO blood group, Rh-D, frequency distribution*

### Introduction

The ABO blood group typing is essential in ensuring safety in blood transfusion practices. Of all the blood group antigens, the ABO blood group antigens are the most immunogenic and remain one of the prime importance in transfusion medicine <sup>1</sup>. To operate blood bank services effectively, well-organised management of the blood bank inventories is essential. Thus, a regular uninterrupted supply of blood will be guaranteed and waste will be reduced significantly. To achieve this, the knowledge of the

distribution of ABO and Rh blood groups is crucial for the effective management of blood bank inventory and safe blood transfusion services, be it the facility of a small local transfusion service or a regional or national transfusion service <sup>2</sup>. Information on ABO blood group distribution is also important for genetic knowledge, genetic analysis and medical verdict as well as for the general well-being of the populace <sup>3</sup>. Some specific links have been established between certain ABO phenotypes and increased vulnerability to some types of diseases. Stomach ulcers have been found to be commoner among those with the blood group O phenotype while gastric cancer is commoner among those with the blood group A phenotype <sup>4</sup>.

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There is variation in the distribution of ABO and Rh blood group phenotypes among different regions and races worldwide. Blood group O was the predominant blood group among the Americans and the Chinese while blood group A was the most frequent in Japan <sup>5,6</sup>. Studies done in some parts of Nigeria and Uganda also showed that blood group O is the most common phenotype, followed by blood group A and then B. Blood group AB was the least common blood group <sup>7,8</sup>.

This study was conducted to provide relevant data on the distribution of ABO and Rh-D blood group phenotypes in the North-central region of Nigeria. This data is essential to guide blood bank service providers on the availability of blood-by-blood type.

## Materials and Methods

This descriptive study included a total of 905 students and staff of 5 Tertiary Institutions in Kogi and Kwara States, North Central Nigeria. The study was conducted between August 2016 and January 2018. For this study, the inclusion criteria included blood donors between the ages of 18–65 years and a haemoglobin concentration of 13.0 g/dL and above for males and 12.0 g/dL for females as recommended by WHO. Only 644 of the voluntary donors eventually completed the study as some of them were rejected based on low haemoglobin levels, making them unfit for blood donation. All participants gave consent to participate in this study.

The Ethical Committee of the University of Ilorin Teaching Hospital, Ilorin, approved the study protocol. Approval to conduct the study was also obtained from the heads of the other various tertiary Institutions

A structured self-administered questionnaire was used to collect relevant information on the socio-demographic data of the blood donors.

A brief physical examination was done for each prospective donor. Three millilitres of venous blood were obtained from the prospective blood donors via venipuncture using an aseptic technique. The collected samples were then dispensed into labeled plain vacutainer bottles. The blood samples were then transported to the blood bank with a cold box and the

cold chain temperature was maintained at 2–10°C. After arrival at the blood bank, samples were stored in a refrigerator (2–6°C).

The ABO and the Rhesus blood group phenotypes of each of the participants were determined by the tile technique method. Forward blood grouping was done using commercially available standard antisera A, antisera B, and antisera D. The antisera validation was done using appropriate positive and negative controls.

One drop of blood from each sample was mixed with a drop of appropriate anti-sera and rocked gently. Reverse grouping was used to confirm doubtful results <sup>9</sup>.

## Statistical Analysis

The frequency of ABO and Rh-D blood groups were calculated and expressed in percentages.

## Results

Table 1 shows the distribution of various ABO phenotypes among the voluntary blood donor studied.

**Table 1: Distribution of ABO blood group phenotypes among voluntary blood donors**

ABO Blood Group	Frequency (n)	Percentage (%)
A	87	13.5
B	109	17
AB	11	1.7
O	437	67.8
<b>TOTAL</b>	<b>644</b>	<b>100</b>

Group O was the most frequent blood group phenotype with over two-thirds (67.76%) of the population studied. This was followed by blood groups B and A with percentages of 16.98% and 13.55% respectively. The AB blood group was the least encountered phenotype with a frequency of 1.71%.

Table 2 shows the frequency distribution of the Rhesus-D phenotype among the voluntary blood donors.

**Table 2: Rhesus D blood group distribution among the voluntary blood donors**

ABO blood Group	Rhesus D positive	Rhesus D negative
A	83(12.9%)	4(0.6%)
B	106(16.5%)	3(0.5%)
AB	11(1.7%)	0(0%)
O	400(62.1%)	37(5.7%)
Total	600(93.2%)	44(6.8)

Rh-D antigen was detected in 600 (93.30%) of the voluntary blood donors while Rh-D negative phenotype was found in 44 (6.80%) blood donors.

**Table 3: Frequency distribution of ABO blood group among the genders.**

	A	B	AB	O
Male	58	62	9	266
Female	29	47	2	171
Total	87	109	11	437

## Discussion

Our study included 644 voluntary non-remunerated blood donors. The majority of the blood donors were males 396 (61.2%), while the females were 248(38.8%) with male to female ratio of 1.6: 1. Most of them 410 (63.7%) were within the age range of 18–55years (mean age in years).

In our present study, the most common blood group phenotype was O followed by B, and A, while the least frequent blood group was AB. Our findings are consistent with a similar study done among voluntary blood donors in a tertiary institution blood drive by Martina *et al* in South-Eastern, Nigeria<sup>10</sup>. Also, similar reports were obtained by Kulkami *et al*, Damulak *et al* in Northern Nigeria and Adienbo *et al* in southern Nigeria, respectively<sup>11,12,13</sup>.

The findings of our report were consistent with other similar studies done elsewhere in Africa as reported by Loua *et al* in Guinea, Apecu *et al* in Uganda and Jahanpour *et al* in Tanzania<sup>14,15,16</sup>. A similar

distribution was observed among the Bangladesh population<sup>17</sup>.

Blood Group O phenotype appears to be the dominant blood group found in Nigeria while AB seems to be the least as observed in the studies reported so far<sup>10,11,12</sup>. However, in contrast to our study, blood group A was reported to be next to blood group O in studies done among blood donors by Nwauche *et al*<sup>18</sup> and Enosolease *et al*<sup>19</sup> both in South-South, Nigeria. The distribution in frequencies of the ABO blood group distribution in our study revealed O (67.76%), B (16.98%), A (13.55%) and AB (1.71%). This is similar to the findings of the study done by Adienbo *et al* in South-South, Nigeria<sup>13</sup>. However, in contrast to our present study, a study done by Premanik *et al* in Nepal found the commonest blood group to be A followed by O, B and then AB while studies done by Rajshree *et al*., Sigh *et al*. and Rahman *et al*. in India, Jharkhand and Pakistan respectively revealed blood group B to be the commonest blood group followed by O, A and AB<sup>20,21,2, 22</sup>.

These differences in the frequency distribution of ABO blood groups might be related to genetic variations of the study participants. Our study shows that the distribution of the Rh D positive blood group was 93.2% while the Rh D negative blood group was 6.8%. This is similar to the findings reported by Enosolease *et al*<sup>19</sup> in Benin City and Adeyemo *et al*<sup>23</sup> in Lagos, Nigeria with the frequency of Rh-D negative phenotype of 6% and 5.46% respectively. Thus, Nigeria's predominant Rhesus D phenotype is Rh D positive phenotype<sup>19,23</sup>. Similar studies done by Legese B *et al*<sup>24</sup> in Ethiopia among voluntary blood donors also showed that the Rh-D positive blood group was the most predominant Rh-D blood group phenotype with 92.7% and the rest (8.5%) was Rh-D negative<sup>24</sup>. However, in contrast to our study, a reasonably higher frequency of Rh D negative blood group phenotype was reported by Golassa *et al* in Ethiopia and Mollison *et al* in the USA with values of 19.37% and 15% respectively<sup>25,26</sup>.

## Conclusion

In our study, the blood group O phenotype was the most common followed by the B, A, and AB blood

groups. Most (93.2%) of the voluntary blood donors were Rhesus D positive. ABO and Rh blood group frequency distribution appears to vary among different regions and races worldwide.

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## Spontaneous gastric perforation in neonates: case series and review of literature.

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### Abstract

*Spontaneous gastric perforation is a rare cause of pneumoperitoneum in neonates. It is an acute emergency in neonates requiring urgent laparotomy and repair of the perforation. Many theories have been discussed with respect to its aetiology but none has clearly defined the cause. This paper attempts to give justification for the prematurity theory which is associated with poorly developed gastric musculature. We report two preterm neonates who presented with progressively distending abdomen from massive pneumoperitoneum. Both of them had laparotomy with repair of the gastric perforation. Spontaneous gastric perforation is associated with high mortality in preterm neonates.*

*Keywords: Spontaneous, gastric perforation, prematurity, neonates.*

### Introduction

Spontaneous gastric perforation (SGP) in neonates is a perforation or tear on the wall of the stomach of the neonate causing escape of air, commonly swallowed air into the peritoneal cavity, thus causing pneumoperitoneum in the neonates. Pneumoperitoneum in neonates is however commonly caused by bowel perforation. Spontaneous gastric perforation is a rare occurrence in the newborn. Not so many cases have been reported in the literature.<sup>1,2,3</sup> SGP as a cause of pneumoperitoneum can frequently be missed for more common causes of neonatal pneumoperitoneum like necrotizing enterocolitis. Diagnosis in many cases is intra-operative. In SGP, there is usually massive air in the peritoneal cavity coming from the stomach compared to that seen with bowel perforations. SGP usually occurs within the first five

days of life<sup>4</sup>. Different mechanisms have been proposed for the cause of the perforation and it is believed to be commoner in blacks and males.<sup>5</sup>

The distended abdomen from the pneumoperitoneum can be a source of severe respiratory distress for the neonate thus requiring urgent decompression of the abdomen and repair of the perforation.

The two cases reviewed in this article had their diagnosis made intra-operatively. Causes of neonatal pneumoperitoneum include commonly necrotizing enterocolitis and long-segment Hirschsprung's disease.

### Case One

A 8-day-old male preterm with low birth weight delivered at Estimated Gestational Age of 34 weeks via spontaneous vaginal delivery with birth weight of 2.1kg. APGAR score was 4 in one minute and 8 in five minutes. He had some resuscitation with ambu-bagging.

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He is the 1st of a set of twins. He presented with a 4-day history of progressive abdominal distension and difficulty with breathing. There was no history of bilious vomiting, delayed passage of meconium, haematemesis or haematochezia. He was commenced on breast milk and was tolerating it.

Examination findings revealed a preterm low birth weight male neonate, in respiratory distress, pale, a febrile, anicteric, acyanosed was well hydrated. Pulse rate was 162 beats per minute, respiratory rate was 68 cycles per minute, temperature was 36.8 degrees centigrade, oxygen saturation was 86% in room air and 96-100% on oxygen. The nasogastric tube passed was draining coffee ground effluent.

The child was dyspneic and tachypneic with subcostal and intercostal recession, with vesicular breath sound. The abdomen was markedly distended, moved with respiration, with visible anterior abdominal wall veins and erythema. There was a 3cm umbilical defect, percussion was hyper-tympanic with hypoactive bowel sound. The diaper was filled with soft stool. The patient was resuscitated and broad-spectrum antibiotics were commenced. Babygram (Fig 1) showed massive pneumoperitoneum with compression of abdominal visceral medially.



Figure 1: Babygram of Patient 1

Findings included a gush of air, multiple(4) perforations about 0.3cm each on the anterior surface of the stomach, normally rotated small and large bowel with no peritoneal spillage. He had laparotomy and repair of gastric perforations one in 2 layers.

Postoperatively, antibiotics and proton pump inhibitors were continued.

Oral feeding was commenced on the sixth post-operative day and was passing stool normally until discharge.

## Case Two

A 3-day-old female preterm neonate was delivered via emergency caesarean section for abruption placenta at 37 weeks gestation. Her birth weight was 2.5 kg. APGAR score was 5 in one minute and 8 in 10 minutes. She was resuscitated. She passed meconium on the second day of life and was making adequate urine.

She was commenced on oxygen via nasal prongs, intravenous fluid and antibiotics.

Examination findings were that of a preterm female neonate, not pale, dyspneic with a respiratory rate of 66 cycles per minute, heart rate was 146 beats per minute and oxygen saturation on oxygen was 97% and 87-89% in room air. The chest was clear.

The abdomen was grossly distended, moved minimally with respiration, and soft and non-tender. A diagnosis of Necrotizing enterocolitis was initially entertained.

The neonate had a babygram (Fig 2) done which showed massive pneumoperitoneum.



Figure 2: Babygram of Patient 2

The neonate had exploratory laparotomy and the findings included a gush of air and a 4cm laceration on the greater curvature of the stomach. This was repaired in layers and a nasogastric tube was left in place.

The neonate made progressive clinical improvement, the nasogastric tube was removed on the 6th day post-op, was commenced on oral intake and was discharged on the 13th day after the surgery.

## Discussion

Spontaneous gastric perforation is a cause of pneumoperitoneum in neonates. However, SGP is not commonly considered a topmost differential cause. Other causes of pneumoperitoneum are usually considered first and hence most diagnoses of SGP are made intraoperatively. This was seen in the two cases presented here. SGP is thus majorly a diagnosis of exclusion.

The pathogenesis of gastric perforation is greatly debated. Congenital absence or deficiency of musculature of the gastric wall has been suggested as a possible cause<sup>1,2</sup> but this explanation is questionable.

Many theories attempt to describe the cause of SGP, however, none has been clear on the exact aetiology. Prematurity with associated poorly developed gastric wall muscles may be a leading SGP cause. Perforation can occur in poorly developed gastric muscles if there is a compounding presence of gastric distension. Cases of neonatal gastric distension can be seen in neonates who had neonatal resuscitation with ambu-bagging following poor APGAR scores and neonatal asphyxia at delivery. The distended stomach could cause ischaemia of the already poorly developed gastric wall from prematurity thus leading to perforation of that portion of the stomach. This could account for the two cases considered here. Prematurity, asphyxia neonatorum, birth stress, aggressive respiratory resuscitation at birth, anatomic pathologies causing gastric outlet obstruction, and a few associated congenital anomalies have been reported to be the most important factors causing SGP in the literature.<sup>4,6,7,8</sup>

The two neonates presented here were preterm and had poor APGAR scores and neonatal asphyxia. Resuscitation of the neonates can lead to abdominal distension from continued ambu-bagging. This could account for the perforation seen in the two preterm neonates.

In older children, some possible aetiologies include congenital defects of the gastric wall, mechanical disruption, stress ulceration secondary to neurogenic disorders and ischaemia of the gastric wall secondary to vascular shunting. SGP is however rare outside the neonatal period. Most neonatal gastric perforations occur on the anterior side of the greater curvature.

## Conclusion

SGP commonly occur in preterm neonates and this can be a result of poorly developed gastric wall muscles. An increase in the intragastric pressure from gastric distension can lead to gastric wall ischemia, weakening the wall further leading to perforation.

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## Mild serotonin syndrome following isolated ingestion of fluoxetine overdose: a case report.

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### Abstract

*Self-poisoning with antidepressants is a relatively common method of completed or attempted suicide among patients with depressive disorders. Among these antidepressants, SSRIs for example fluoxetine, have been shown to have a relatively safe profile compared to other classes, especially the tricyclic antidepressants. The report illustrates the relative safety of fluoxetine overdose in a 22-year-old patient receiving treatment for a depressive disorder. She presented with mild symptoms of a brief confusional state, tremors, blurred vision, and clonus. All symptoms resolved within a few days of treatment with cyproheptadine 4mg 8 hourly. Serotonin syndrome cases from fluoxetine overdoses typically have a mild to moderate presentation, suggesting that fluoxetine should be considered strongly in the treatment of depression in patients who are suicidal. Although cyproheptadine was effective in managing this case, further randomized studies are needed to prove its efficacy in serotonin syndrome.*

**Keywords-** SSRI, fluoxetine, suicide, depression, serotonin syndrome.

### Introduction

Depressive disorders are frequently occurring psychiatric conditions, affecting approximately 19% of the world population throughout their lifetime. Nigeria, the prevalence of these disorders reaches as high as 49.8%<sup>1</sup>. According to estimates, approximately a quarter of individuals diagnosed with major depression attempt suicide at some point in their lives, and 15% of those individuals unfortunately die from suicide. Antidepressants have proven to be highly effective in treating depression and hence, it is paradoxical that to ensure patient adherence, the healthcare practitioner must provide a potentially harmful medication, which grants the patient easy access to a method of self-harm<sup>2</sup>. Self-

poisoning is a popular suicide method, particularly among women, and antidepressants are commonly employed in cases of self-poisoning, contributing to approximately 20% of all poisoning suicides in the UK and 20–30% of non-fatal overdoses<sup>3</sup>. This can be attributed to the high incidence of depression, the most common psychiatric disorder among individuals who die by suicide. Additionally, the choice of suicidal method is often influenced by accessibility, and individuals with depression frequently resort to self-poisoning using their prescribed antidepressants. The relative toxicity of these drugs plays a crucial role in determining the outcome of an overdose<sup>3</sup>.

Major groups of antidepressants are selective serotonin reuptake inhibitors (SSRIs), serotonin and norepinephrine reuptake inhibitors (SNRIs), tricyclic antidepressants (TCAs), monoamine oxidase inhibitors (MAOIs) and atypical antidepressants. Tricyclic antidepressants (TCAs) are typically more

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harmful when taken in excess, with significant toxicity often appearing within the initial 6 hours after an overdose<sup>3,4</sup>. SSRIs enhance serotonergic neurotransmission, providing specific actions and superior safety compared to tricyclic antidepressants. They have fewer adverse effects, outperform tricyclic antidepressants for cardiovascular disease, and are more tolerable in overdose cases<sup>5</sup>. Fluoxetine is a selective serotonin reuptake inhibitor (SSRI), and in the body, it is changed into the active metabolite norfluoxetine. Six to eight hours after administration, it reaches its maximal plasma concentration<sup>6</sup>. Fluoxetine exhibits minimal binding to muscarinic, dopaminergic, histaminic, serotonergic, or noradrenergic receptors. This unique specificity implies that fluoxetine may possess a distinct side-effect profile compared to existing antidepressants<sup>7</sup> and thus may generally be considered to have the least toxicity profile. Fluoxetine is associated with a higher incidence of nausea, nervousness, and insomnia tricyclic antidepressants. In addition, fluoxetine is less likely to cause anticholinergic side effects<sup>8</sup>. In this report, we discuss the case of a 22-year-old woman who presented with a non-fatal overdose of fluoxetine and exhibited mild transient symptoms in keeping with serotonin syndrome which was managed supportively till she recovered.

## Case Presentation

We present a 22-year-old female nursing student who was referred from a peripheral hospital to the Mental Health and Behavioral Medicine Team on Call of the Irrua Specialist Teaching Hospital, Irrua on account of a day history of attempted suicide by ingesting 27 capsules of Fluoxetine 20mg (540mg). She complained of severe headaches, jerking limb movement, and seeing people that others could not see in clear consciousness.

Two days prior to the presentation, following a threat of a breakup with her partner, she ran to her dormitory and picked up a knife and a box of her medications, threatening to kill herself and anyone who dared to stop her. Being held from intervention, the roommate watched her as she swallowed 27 capsules of Fluoxetine 20mg. Thirty (30) minutes after the overdose; she began to complain of severe headaches. Headache was said to be generalised, dull,

heavy, and burning. There was however no history of vomiting or neck stiffness. She was rushed to the school clinic where IV Diazepam and IV fluids were given and was thereafter discharged.

The following day, she began experiencing jerking movements. This was insidious in onset starting with the tremor-like movement of the fingers and gradually worsening involving vigorous jerking of the upper limbs with occasional muscle rigidity. This was reported to be intermittent without any associated loss of consciousness. At about the same time, she was noticed to be shouting, sounding confused and visibly restless saying she could see the face of her late father. She also complained of blurred vision, however, there was no history of fever, insomnia, excessive sweating, or frequent stooling.

She is a known patient of the department, being managed for recurrent severe depressive disorder with psychotic symptoms. She was initially on Tab Escitalopram 10mg daily and Risperdal 0.5mg nocte. Escitalopram was later changed to Tab Fluoxetine 20mg daily due to non adherence for a period of 6 months. Risperidone was discontinued because she reported being drowsy and that auditory hallucinations had subsided. There was no history of smoking, alcohol intake, or illicit drug use.

On mental state examination, she had an altered mental state which was fluctuating. She was irritable and uncooperative with increased psychomotor activity. The speech was of high tone and volume, which was occasionally irrelevant. There were visual hallucinations. Examination for cognitive function could not be conducted as she was agitated and uncooperative.

On physical examination, she was afebrile (36.7 C), and not dehydrated. SpO<sub>2</sub> was 95% with a respiratory rate of 22 cycles per minute. Radial pulse was 88 cycles per minute, full volume and regular with a blood pressure of 120/80 mmHg. She had no diaphoresis, no tachycardia and on neurological examination, she had intermittent clonus on both upper limbs, but power was normal on all limbs. Babinski's sign was negative. Her pupils were of normal size and reactive to light. Other systemic findings were normal.

The full blood count and the electrolyte, urea, and creatinine were normal. The urine toxicology screening was negative for psychoactive substances.

A diagnosis of Suicide attempt with Fluoxetine toxicity (mild serotonin syndrome) was made. She was then commenced on intravenous fluid, a tablet of Cyproheptadine 4mg 8hourly, a tablet of Risperdal 1mg, a tablet of Lorazepam 1mg (to calm agitation) and the patient was nursed close to the nursing station with a suicide caution chart. She was thereafter transferred to the female medical ward for further assessment and treatment. The following day, the presenting symptoms had significantly subsided the third day, the intermittent tremors had reduced in frequency, but she continued to have blurred vision, and a consult was sent to the ophthalmology team.

They reviewed and reported no abnormalities. Blurred vision eventually cleared, Cyproheptadine was discontinued and she was discharged on day 9 without complaints. Follow-up visits have remained uneventful.

## Discussion

We present a case of serotonin syndrome with mild symptoms. Serotonin toxicity or *serotonin syndrome* is a potentially life-threatening drug-induced condition caused by excessive amounts of serotonin in the synapses of the brain<sup>9</sup>. The over-stimulation of 5-HT receptors in the nervous system occurs due to the activity, accumulation, or interaction of one or more serotonergic substances. While there are 7 different 5-HT receptors, the major contributors to serotonin toxicity are typically 5-HT<sub>2A</sub> and 5-HT<sub>2B</sub><sup>10</sup>. Neuromuscular abnormalities, autonomic instability, and altered mental status make up the classic triad of serotonin poisoning. The symptoms can range from mild, such as tremors and diarrhoea, to severe, including hyperthermia and coma, which can be life-threatening<sup>10</sup>.

Using Hunter's criteria, we diagnosed our patient with a mild version of serotonin syndrome<sup>11</sup>. She presented with two of the classical triad and these consisted of intermittent tremors, clonus, altered mental state characterised by confusion, irritability, restlessness, and visual hallucinations.

Seizures and rhabdomyolysis have been reported with or in/ cases of fluoxetine toxicity<sup>6</sup>. Our patient did not have seizures and clinical symptoms suggestive of rhabdomyolysis. She had a normal electrolyte, urea and creatinine, although, creatine kinase (CK) levels were not assessed to objectively exclude rhabdomyolysis. This patient who had ingested 540mg of fluoxetine, which could be considered a supratherapeutic dose (normal therapeutic dose= 10-80mg), was seen to have experienced a relatively benign course. She exhibited minimal and mild symptoms even after presenting 24 hours following the incident with the only prior treatment being intravenous fluids and diazepam. This is in keeping with earlier studies that described that the most common effects of fluoxetine overdose were tachycardia, drowsiness, tremor, nausea, and vomiting, and concluded that such overdoses typically are "minimally toxic" in doses up to 1,500 mg<sup>12</sup>. It has been reported that fluoxetine has the least incidence of causing seizures compared to other SSRIs (1% vs. 2% for sertraline, paroxetine, and citalopram and 4% for fluvoxamine)<sup>6</sup>.

On the other side of the antidepressant spectrum are TCAs, which have a narrow therapeutic index and, when ingested at similar doses, cause cardiovascular, anticholinergic, and neurologic manifestations, with respiratory depression and tachydysrhythmias being two of the most lethal effects. They are potentially fatal at doses of 10-20mg/kg<sup>13</sup>. Thus, our patient who recovered with no complications within a few days following isolated ingestion of 540mg of fluoxetine further buttresses the known safety of fluoxetine in reasonably high doses. A similar study by Feierabend and colleagues reported a benign course following a 700mg fluoxetine overdose in a four-year-old child<sup>14</sup>. Noteworthy is the fact that fluoxetine when taken in combination with other substances has a much more likely fatal outcome than when ingested alone in large doses<sup>15</sup>.

Her symptoms were resolved within a few days of receiving Tab cyproheptadine 4mg 8 hourly. Cyproheptadine has been reported to resolve symptoms of serotonin syndrome in mild to moderate cases as a potent 5-HT<sub>2A</sub> antagonist. Although cyproheptadine is an antihistamine, it also has anti-serotonin activity as it particularly blocks 5-HT<sub>1A</sub>

and 5-HT<sub>2A</sub> receptors which are implicated in the symptoms of serotonin syndrome<sup>10, 16</sup>. However, the benefit of cyproheptadine in the management of serotonin syndrome has mainly been reported in various case reports, further studies are needed to confirm its efficacy in this life-threatening condition.<sup>17,18,19</sup>

## Conclusion

Cases of serotonin syndrome from fluoxetine overdose typically follow a benign course and are usually in the mild to moderate spectrum as seen in this case report. This may suggest that fluoxetine should be a top consideration in the choice of antidepressants when managing depressive disorders in patients who tend to overdose on their medications with the intent of deliberate self-harm and/or suicide. Though Cyproheptadine was found to be quite effective in managing this case, it may require more extensive studies beyond case reports to prove its efficacy in serotonin syndrome.

CONFLICT OF INTEREST- The authors declare no conflict of interest.

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## Emergency myomectomy for massive acute haemoperitoneum from avulsion of subserous uterine myoma following a fall: a case report

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### Abstract

*Uterine fibroids (myomas) are benign tumours commonly seen in women of reproductive age. The cause is generally unknown but it is associated with ovarian steroids. Uterine fibroids are usually asymptomatic but when they do, they usually heavy menstrual bleeding and pelvic pain. Diagnosis is usually made from clinical assessment, ultrasound scanning and histopathological assay of surgical specimens. The treatment can be either medical or surgical. Massive acute haemoperitoneum from the avulsion of subserous uterine myoma is rare. We had a 32-year-old nulliparous woman with acute abdomen, massive haemoperitoneum and hypovolaemic shock from the avulsion of a subserous uterine myoma of a 30-week size uterus following a fall on the abdomen. Her pulse was not palpable on presentation, blood pressure was 80/40 mmHg and she was pale with a packed cell volume of 16%. She was conscious but restless. Emergency ultrasound revealed massive haemoperitoneum and multiple uterine fibroids. She was stabilized and had emergency myomectomies for an unusual uterine fibroids presentation hence the case report. Thirty - three fibroid masses were enucleated. The estimated total blood loss was 4 litres. She was transfused with seven units of blood. She did well post-operation with a packed cell volume of 36% and was discharged home in good condition. The patient is being carefully followed up for possible spontaneous pregnancy as post-surgery HSG was normal with good dye spillage bilaterally. Emergency myomectomy is a life-saving procedure. However, elective myomectomy is advised for huge uterine fibroids to obviate the risk of traumatic complications.*

**Keywords:** Huge subserous uterine myoma, trauma, avulsion, massive haemoperitoneum, emergency myomectomy, outcomes

### Introduction

Uterine fibroids are the most common benign tumours of the female genital tract. While they can develop at various sites within the body, they most frequently affect the uterine myometrium, arising from the neoplastic transformation of single smooth muscle cells. They usually appear as well-circumscribed firm tumours with a characteristic white-whorled appearance. Uterine fibroids are almost always not cancerous<sup>1-3</sup>.

The true incidence of fibroids is uncertain as many women with uterine fibroids are asymptomatic hence prevalence rate is based on rates, in asymptomatic

individuals and following pathological assessment of hysterectomy. Nonetheless incidence of fibroids, we know that these common tumours are clinically apparent in 20-30% of women during reproductive life and may be present in as many as 70% of uteri removed at the time of hysterectomy<sup>1</sup>.

There are significant racial differences in the incidence of fibroids, with Afro-Caribbean women having a 2-9 fold greater risk of developing fibroids. In addition, they tend to present at younger ages compared with Caucasian women, have multiple fibroids, have higher uterine weight, and are more prone to anaemia and severe pelvic pain<sup>2,3</sup>. These racial characteristics are more likely due to genetic predisposition. Reproductive factors also influence the risk of fibroids with a reduction in incidence with increasing parity.

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The cause of uterine fibroids is unknown but it is associated with ovarian steroids. It is also linked to chromosomal aberration, especially chromosomes 7, 12 and 14<sup>4</sup>.

The size of fibroids varies greatly and uterine enlargement is equated to the pregnant uterus. The vast majority are found in the uterus corpus and may be subserosal, intramural or submucous. This benign growth may also occur in the cervix, uterine ligaments and ovary. A parasitic type can also occur.

Clinical presentations of fibroids vary from mild to severe, causing distress for individuals. The common presentation is menstrual problems especially heavy menstrual bleeding and lower abdominal pain. Other symptoms are lower abdominal swelling and infertility. However, fibroid is not a known direct cause of infertility. Fibroids are asymptomatic<sup>5-7</sup>.

Different treatment modalities range from medical using hormones like gonadotrophin-releasing hormone, progesterone receptor modulators and Merina intrauterine devices. Surgeries such as myomectomy, hysterectomy and uterine artery embolization are usually carried out<sup>6,7</sup>.

Myomectomy is the surgical removal of uterine myomas, also known as fibroids. Myomectomy is an alternative to a hysterectomy, the ultimate cure for uterine fibroids. Complications especially myomectomy has early and late. Early complications include bleeding, pulmonary embolism and anaemia. Late complication includes Asherman's syndrome, chronic pelvic pain, infertility and recurrence.

We present a rare case report of a nulliparous woman with acute massive haemoperitoneum and hypovolaemic shock from the avulsion of a huge subserous uterine myoma in a 33-week-sized uterus following a fall on the abdomen.

### Case presentation

A case of a 32-year-old Para 0+0 but married who was brought through an accident and emergency unit of the hospital after a fall on her abdomen while avoiding a motorcycle hit in town. She was hawking minerals. She was unable to get up until she was assisted by some good Samaritans who brought her to the hospital an hour following the fall.

There was no prior history of any ailment other than a diagnosis of uterine fibroids three years before presentation. There was a history of heavy menstrual bleeding but she never had a blood transfusion. She was also not able to conceive after 5 years of marriage. She confessed to being on native medication for the treatment of fibroids before the fall with no significant result.

The examination revealed a young woman drowsy, restless but communicating, with no bruises or any injury on the body, marked pale but not febrile to touch and no pedal oedema. Her pulse was not palpable but her blood pressure was 80/40mmHg. The abdomen was full, moved with respiration and there was generalised tenderness with guarding and signs of fluid within the peritoneal cavity. The uterus was 30/52 in size and nodular. The liver, spleen and kidneys could not be assessed due to marked tenderness. There was no vaginal bleeding. An assessment of acute abdomen and hypovolaemic shock secondary to visceral rupture and suspected haemoperitoneum was made. She was resuscitated with 3 litres of normal saline, blood was collected for emergency packed cell volume which was 16%, and 4 units of blood were grouped and cross-matched. An emergency scan revealed massive haemoperitoneum and multiple uterine myomas with the largest 10cm x 8cm in size. Surgeons reviewed and made similar assessments. She was booked for exploratory laparotomy after stabilization with normal saline and 2 units of blood transfused.

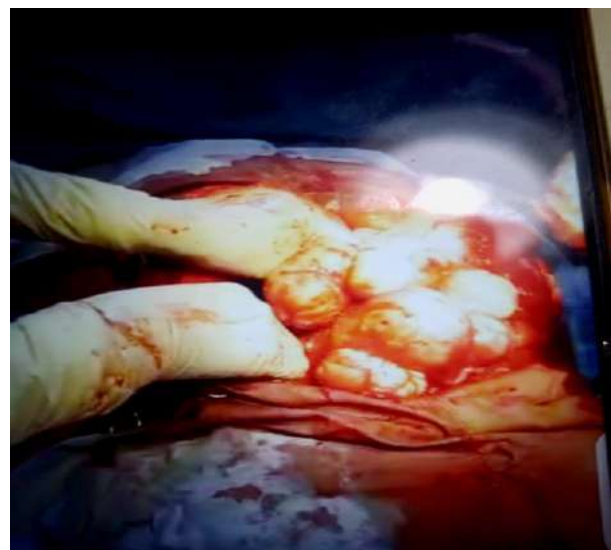


Figure 1A



The intraoperative findings were that of massive hemoperitoneum of 2.5 litres, normal spleen, pancreas and liver surfaces, bowel loops were intact but there was avulsion of one of the subserous uterine myomas from which there was oozing of blood from its base measuring 8cm x 9cm. There were 33 fibroid masses with the largest 10cm x 9cm and the smallest 0.5cm x 1cm with varying degrees of degenerative changes (hyaline, calcified and cystic). The ovary and tube were grossly normal bilaterally. The estimated total blood loss was 4 litres. The surgical images of the fibroids are shown in Figure 1.



Figure 1B

Fig.1(A) surgical picture of the subserous uterine myomas and (B) surgical specimen of the 33 uterine myomas removed from the index case in formalin bowl for histopathological assay.

Following the application of the tourniquet, the fibroid masses were enucleated, the uterus was reconstituted, and adequate haemostasis was secured. The patient had a total of 7 units of blood transfused pre-, intra- and post-operation. The anterior abdominal wall is routinely closed layer by layer. A drain was also put in place to monitor intra-abdominal collection which was removed 5<sup>th</sup> day post-operation. She had prophylactic antibiotics and analgesics. The post-transfusion packed cell volume was 36%. The patient was discharged home 10 days post-operation and the follow-up has been normal. Her post-operation HSG revealed patency of her fallopian tubes and she is being followed up carefully as she desires to get pregnant.

## Discussion

Uterine fibroids are the most common benign tumours of the female genital tract. While they can develop at various sites within the body, they most frequently affect the uterus arising from the neoplastic transformation of single smooth muscle cells<sup>1-7</sup>.

The incidence of fibroids is uncertain as many women with uterine fibroids are asymptomatic. The prevalence rates are based on rates of diagnosis in symptomatic individuals and following pathological assessment of hysterectomy specimen; 20-30% of women during reproductive life may develop fibroids and may be present in as many as 70% of the uterus removed at the time of hysterectomy<sup>1</sup>. The racial differences in the incidence of fibroids with Afro-Caribbean women having a 2 - to 9-fold greater risk of developing fibroids. In addition, they tend to present at a younger age compared with Caucasian women<sup>2,3</sup>. This agreed with the index case as she is black and younger and nulliparous.

Fibroids are paler than the surrounding myometrium and there is usually a very sharp line of demarcation between the tumour and the normal uterine muscle. This usual appearance of fibroid tumour differs in this index case as dissolution and loss of demarcation probably due to long-standing ingestion of native concoction making the enucleation difficult.

The size of the fibroids varies greatly and uterine enlargement is equated to the pregnant uterus. The index case uterus was 30 weeks in size, irregular in shape and multiple. The vast majority are found in the uterus corpus and may be subserosal, intramural or submucous. The index case has all the above sites. One of the subserosal, about 9cm x 8cm got avulsed at its base due to a fall and blunt abdominal trauma causing a massive hemoperitoneum of 2.5 litres leading to the patient presenting in hypovolaemic shock in the hospital. This is an unusual presentation of uterine myoma hence the case report. Though the history of heavy menstrual bleeding was present prior to her presentation, intra-cavitary fibroids are associated with unscheduled bleeding and menorrhagia. The bleeding may be as a result of the presence of surface vessels on the fibroid and the resultant surface area of the uterine cavity. Endometrial abnormality functions may be a contributing factor. Others include pressure symptoms and dragging

sensations. Fibroid is not a direct cause of infertility but slightly associated is pregnancy losses. However, the index case was not able to get pregnant after five years of marriage.

The diagnosis of uterine fibroids is clinical with a central, mobile pelvic mass. The index case has an enlarged uterus, nodular and tender. It may be difficult to distinguish an enlarged uterus from that of an ovarian mass so further imaging is mandatory. This woman had an emergency scan of the abdomen that revealed a bulky uterus with multiple fibroids and a massive hemoperitoneum.

This benign growth may also occur in the cervix, ligaments and ovary. A parasitic type can also occur. The parasitic type was not present in this case. Malignancy in a fibroid is extremely uncommon. Leiomyosarcoma is a disease largely occurring in the seventh decade of life whereas fibroids tend to occur in women 20-30 years younger. As fibroids have not been identified in pre-pubertal girls and usually shrink at the time of menopause, it has been assumed that these lesions are dependent on the presence of sex steroids, oestrogens and progesterone.

This lady was stabilised and had an exploratory laparotomy with the surgical team in attendance. The source of the bleeding was identified and haemostasis was secured. Emergency myomectomies were performed to remove the multiple myomas, 33 of them were removed and the uterus was reconstituted as she desired to preserve the uterus for possible pregnancy. Other forms of treatment for symptomatic uterine fibroids include hysterectomy, medical treatment using hormones and uterine artery embolization.

## Conclusion

The index woman had an emergency myomectomy for an unusual uterine fibroids presentation hence the case report. She had blunt abdominal trauma following a fall, which was complicated by avulsion of a huge subserous uterine myoma, massive haemoperitoneum and hypovolemic shock. She was stabilized and had exploratory laparotomy and emergency myomectomy with adequate control of haemostasis. Her post-transfusion packed cell volume was 36%. She did well after the surgery and was discharged home in good condition. The follow-up has been normal. The patient is being carefully followed up for possible spontaneous pregnancy as post-surgery HSG was normal with good spillage bilaterally. The outcome of the index case has shown clearly that emergency myomectomy is a life-saving procedure. Albeit, elective myomectomy is advised for huge uterine fibroids to obviate the risk of traumatic complications.

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