



Maternal and Perinatal Outcomes of Teenage Pregnancies in Four Hospitals in Khartoum State (Oct 2022-Dec 2022)

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DECLARATION

I, the undersigned, declare that the research is my original work and has not been presented for a degree in any University.

Name: _____

Signature: _____

Date of Submission: _____

This research has been submitted for examination with our approval as University supervisors.

DEDICATION

In the praise of Allah, the lord of universe we dedicate our dissertation work to our families, A special feeling of gratitude to our loving parents whose words of encouragement and push for tenacity ring our ears. Our siblings have never left our side and always supported us. We also dedicate this dissertation to all our friends who have supported us throughout.

ACKNOWLEDGMENT

Primarily, we are more than happy and grateful to attribute the successful completion of this dissertation to our supervisor, Dr. Kamil Mirghani.

We would like to also sincerely thank the staff of the Department of Community Medicine at Ibn Sina University for granting us all the tools needed in order for us to acquire our data and make this dissertation that we are so proud of.

Finally we cannot give ourselves all the credit for making this research come to life without the withstanding support of our amazing family and friends for always uplifting us and encouraging us through this wonderful journey.

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LIST OF ABBREVIATIONS

NICU	Neonatal intensive care unit
PROM	Premature rupture of membranes
UTI	Urinary Tract Infection
IUGR	Intrauterine growth restriction
IUFD	Intrauterine fetal demise

ABSTRACT

➤ *Objectives:*

To investigate the outcomes of teenage pregnancies regarding the aspects of maternal and neonatal health. To determine the neonatal health factors affected. To determine the maternal physical health factors affected. To determine the maternal mental health factors affected. To investigate the relationship between the maternal social status and teenage pregnancies. To determine the frequency of teenage pregnancy and its associated maternal and perinatal outcomes.

➤ *Methods:*

This study was done as a descriptive, retrospective cross-sectional study. A questionnaire was designed and conducted in four hospitals in the state of Khartoum. The hospitals we conducted our research in are Bahri Teaching Hospital, Banjadeed Teaching Hospital, Dayat Maternal Hospital and Ibrahim Malik Teaching Hospital. Participants were interviewed according to their age which needed to be between the ages of 13 to 19. 160 participants took part in this research.

➤ *Results:*

With 84.4% of the participants, the majority did not have an abortion or a miscarriage. However, 15.6% did. 84% of the participants that have experienced an abortion/miscarriage have only experienced it once while the rest (16%) have experienced multiple. The newborns were full-term in 67.5% of the cases. However, in 32.5% of the cases, the infants were born before the 37-week point and did not mature to their full potential. 70.6% of the babies had a normal average weight, while 28.1% of babies were underweight and 1.25% were overweight. 81.8% of newborns had no difficulties and were in perfect health. However, 18.1% of the infants required additional care and were admitted to the NICU. While 27.5% of the participants underwent a cesarean section, 72.5% experienced a typical vaginal birth. 94.3% of newborns did not have IUGR, whereas 5.7% of them did. 92.5% of babies did not experience IUFD while 7.5% sadly underwent IUFD. Neonatal jaundice only affected 5% of newborns born to adolescent mothers, while the other 95% were unaffected. Only 5% of babies suffered sepsis while the remaining 95% did not. 5% of babies suffered from birth asphyxia while the remaining 95% did not. Only 5% of the patients were reported to have experienced a premature rupture of the member, compared to 95% of the patients who did not. 85% of the patients had not suffered from anemia and 15% of the participants had. 22.5% of the participants were found to have induced hypertension, while 77.5% of the participants were found to have neither. 55.6% of the participants had not suffered from UTIs while 44.3% did. participants who had not experienced eclampsia made up 92.5% of the participants population, while those who had experienced it made up 7.5%. 9.4% of the participants actually had preeclampsia, compared to 90.6% of the participants who had not. Only 6.3% of the participants suffered from postpartum hemorrhage.

➤ *Conclusion:*

Teenage pregnancies are associated with both adverse fetal and maternal outcomes. Teenagers are more liable to complications due to their underdeveloped stature. Complications may rise due to having a narrow pelvis. However, complications like anemia, UTIs, induced hypertension are as common as any other age group.

➤ *Recommendation:*

Spreading awareness about the complications of teenage pregnancies so they would stop marrying at such a young age making them vulnerable to avoidable complications.

Keywords:- Teenage Pregnancy, Perinatal, Maternal.

CHAPTER ONE INTRODUCTION

A. Introduction:

➤ Background:

The World Health Organisation (WHO) defines ‘adolescents’ as individuals aged 10-19 years. The national family planning policy of Sudan states that by the age of 19, one out of three girls is already married or in union. The causes of adolescent pregnancy can be attributed to social, cultural, political and health systems gaps. Thus, making teenage pregnancy a major challenge affecting girls’ and young women’s health and their social, economic and political empowerment. Indeed, Sudan is among the 10 countries with the highest prevalence of child marriage, a condition often leading to early pregnancy. [1]

Pregnancy and childbirth in teenage women pose special risks for both the mother and newborn baby. Such pregnancies are associated with increased risks for adverse pregnancy outcomes such as preterm birth, low birth weight and death in the neonatal or postnatal periods. It is firmly believed that pregnant teens and their unborn babies have unique medical risks. One of which is not getting the right prenatal care. [2]

Prenatal care is critical, as it looks for issues concerning both the mother and the baby. Not only that but it also monitor’s the baby’s growth and quickly deals with any complications that may arise. Further risk is so called, Pregnancy Induced Hypertension. Pregnant teens have a higher risk of developing high blood pressure than most pregnant women who are in their 20s or above. They also have a higher risk of Preeclampsia, which is a significantly dangerous medical condition that combines high blood pressure with excess protein in urine, swelling of the hands and face as well as organ damage. They are also at an increased risk of preterm premature rupture of the membrane (PPROM), increased risk of anemia and sexually transmitted diseases.

These medical risks lead to the mother taking medications to control such symptoms, which might then affect and disrupt the unborn baby’s development leading to further complications. [3]

Apart from the medical perspective, pregnant adolescent girls also suffer from guilt, inability to continue education, and disgrace from society. Pregnancies in adolescence result in no biological, mental, or social maturation process and adversely affect maternal and fetal outcomes due to biological immaturity, insufficient antenatal care, malnutrition, bad habits, stress, depression and anxiety. [4]

➤ Statement of the Problem:

Teenage pregnancy is when a woman under the age of 20 gets pregnant. It usually refers to teens between the ages of 15-19 but it can also include girls as young as 10 years old. It’s also called teen pregnancy or adolescent pregnancy.

Adolescent pregnancy remains a major contributor to maternal and child mortality. Complications relating to pregnancy and childbirth are the leading cause of death for girls aged 15-19 globally. Pregnant girls and adolescents also face other health risks and complications due to their immature bodies. Babies born to younger mothers are also at greater risk.

Adolescent pregnancy can also have negative social and economic effects on girls, their families and communities. Girls who become pregnant before the age of 18 are also more likely to experience violence within a marriage or partnership.

In Sudan, the given topic is highly neglected; therefore, in this retrospective study, we seek to assess and evaluate the outcomes of teenage pregnancies in four hospitals in Khartoum, Sudan.

➤ Justification:

Due to the various health issues affecting both the young mothers and babies; spreading awareness about such topics and taking the necessary preventative methods is firmly needed. This study was conducted to investigate the complications that may arise due teenage pregnancies.

➤ Research Questions:

- What are the outcomes of teenage pregnancies regarding the maternal and perinatal perspectives?

B. Objectives:

➤ General Objective:

To investigate the outcomes of teenage pregnancies regarding the aspects of maternal and neonatal health.

➤ *Specific Objectives:*

- To determine the neonatal health factors affected.
- To determine the maternal physical health factors affected.
- To determine the maternal mental health factors affected.
- To investigate the relationship between the maternal social status and teenage pregnancies.
- To determine the frequency of teenage pregnancy and its associated maternal and perinatal outcomes.

CHAPTER TWO LITERATURE REVIEW

A prospective study, conducted by Gazala Yasmin et.al in India, in 2014, aimed to find the incidence and to evaluate the maternal and fetal outcome of teenage pregnancies. They collected data on all teenage pregnant females admitted to a tertiary care center. Required details were collected on a proforma by taking history and following up the patients from admission to delivery. Teenage pregnancy comprised 5.10% of the total Obstetric admissions. In this study 53.12% teenage pregnancies were associated with complications. The major maternal complications were Preterm labour 27.45%, Hypertensive Disorders of Pregnancy 20.17%, Premature Rupture of Membranes 18.21%, Abortion 14.57%, Anemia (8.12%). Low Birth Weight 16.86%, preterm births 16% and stillbirths 5% were major adverse fetal outcomes. [5]

A prospective study, published by Amber Tufail et.al in Pakistan, in 2008, aimed to determine the frequency of teenage pregnancy and its associated maternal and perinatal outcome in a community based hospital. The women were divided into two groups; Group-A consisted of 75 young females aged less than 19 years, while Group-B consisted of 75 women aged 20-30 years, which was used as a control. A comparison was done between the two groups regarding maternal and perinatal outcomes. Observations were recorded using a predesigned research proforma.

Statistical analysis was performed using SPSS package for windows version 12.0. Results were compared using Chi-square test by keeping the p-value of <0.05 as significant. The frequency of births amongst teenagers (Group-A) was 11.09%. Women belonging to Group-A had a lower gestational age at delivery than Group-B (36.81 ± 3.21 vs. 37.32 ± 1.80 weeks) and a higher preterm delivery rate (17.3% vs. 5.3%, p-value 0.02). The incidence of anaemia (46.6% vs. 20%), urinary tract infection (40% vs. 20%, p-value 0.008), pre-eclampsia (16% vs. 1.6%, p-value 0.001) and intrauterine growth retardation (5.3% vs. 0%, p-value 0.043) was more in Group-A as compared to Group-B. Caesarean section was the major route of delivery in Group-A (34.6% vs. 10.6%). More neonates in Group-A were low for birth weight (32% vs. 12%, p-value 0.003), and were prone to more morbidities in early neonatal life (20% vs. 4%, p-value 0.003) necessitating admission to the neonatal care unit. [6]

A retrospective study, conducted by Suparp Thaitae et.al in Thailand, in 2011, aimed to determine whether, when controlling for confounding factors, there was still an association of adolescence with adverse outcomes. Charts of all women aged 19 and younger having singleton live births in 2004, 2005, and 2006 were retrieved. For the adult group, 1,389 charts of mothers between the ages of 20 and 34 delivering singleton babies were selected using proportionate systematic random sampling. After statistically controlling for known confounding factors, teenage pregnancy was associated with increased risks of anaemia, very preterm deliveries, very low birth weight babies, newborn admission to Intensive Care Unit, and postpartum complications. The rates of cesarean delivery, operative delivery, and oxytocin augmentation were less frequent in younger mothers. [7]

A retrospective study, published by Eugene Justine Kongnyuy et.al in Cameroon, in 2008, aimed to determine adverse fetal outcomes associated with adolescent pregnancies in Cameroon. A cross-sectional study to compare the outcomes of 268 singleton, adolescent pregnancies with 832 controls, delivered in four referral hospitals in Yaounde (Cameroon), between November 2004 and April 2005. The adverse fetal outcomes related to adolescent pregnancies were low birth weight (<2,500 g), premature babies (<37 weeks) and early neonatal death. The rates of stillbirth and intrauterine growth retardation were not significantly higher among adolescents. Adverse maternal outcomes associated with adolescent pregnancies were eclampsia, preeclampsia, perineal tear and episiotomy. Cesarean delivery, instrumental delivery and premature rupture of membranes were not significantly associated with adolescent pregnancy. Maternal factors associated with adverse fetal outcome in adolescents were maternal age, number of prenatal visits <4, and the state of being unemployed. [8]

A prospective study, conducted by Ahmed M. Abbas et.al in Egypt, in 2017, aimed to highlight the grave complications among teenage mothers in Assiut Woman's Health Hospital compared with the adult mothers. This study was a case control study, conducted at the Labor Ward of Assiut Woman's Health Hospital from 1st of January 2016 to 30th of June 2016. It included teenage pregnant women (13-19 completed years at delivery) as case and adult mothers (20-29 years) formed the control group. The primary outcome of the study is the rate of pregnancy complications among teenage mothers. Obstetric complications were higher among the teenage mothers. The teenage mothers had a higher proportion of normal vaginal delivery. The adult mothers reported a higher rate of elective cesarean section and operative vaginal delivery. The infants of teenage mothers tended to have a lower birth weight and Apgar score than the adult ones. [9]

CHAPTER THREE METHODOLOGY

➤ *Study Design:*

The study performed was a descriptive, retrospective cross-sectional study.

➤ *Study Area:*

The study was based within the limits of Khartoum, Sudan. It took place in Banjadeed teaching hospital, Aldayat maternal hospital, Bahri teaching hospital and Ibrahim Malik Teaching hospital.

➤ *Variables:*

• *Dependent Variables:*

The dependent variable in this study were the complications during and after pregnancy.

• *Modifier Variables:*

Modifier variables were the degree of knowledge of the participants towards the risks of teenage pregnancies.

• *Independent Variables:*

Independent variables included socio-demographic characteristics such as level of education, monthly income, marital status, parenthood status, occupational status, relatives in the health sector and health insurance status.

➤ *Target Group:*

The study population will include teenagers aged 13 to 19, living within the limits of the Khartoum locality.

➤ *Inclusion Criteria:*

All patients admitted to Banjadeed, Aldayat, Bahri teaching hospital and Ibrahim Malik teaching hospital for teenage pregnancies from October 2022 to December 2022.

➤ *Exclusion Criteria:*

Patients who refuse to participate in this study, or patients not within the age group.

➤ *Sampling Size:*

The Sample technique was a Total Coverage sampling size for all the patients with complete files, so the number of patients were (160) patients.

➤ *Data Collection:*

• Primary data: Pretested & pre-validated questionnaire, developed by review of published literature.

• Secondary data: Internet sources, listed studies from the literature review, medical journals.

• *Method of Data Collection:*

Data was collected from each respondent using a questionnaire via an interview.

➤ *Survey Instruments:*

The survey instrument used in this study was a questionnaire comprising the following:

- Section 1: Personal parameters (age, occupational status, marital and parenthood status, level of education, and residence)
- Section 2: Gynecological questions, consisting of 4 questions regarding the number of pregnancies conceived by the patient, the number of kids, and the number of miscarriages (if there is any).
- Section 3: Perinatal questions, comprising 11 questions regarding the conditions of the neonate and if any complications were faced.
- Section 4: Maternal questions. This section comprises 10 “yes or no” questions regarding the mothers perspective towards the pregnancy.

➤ *Data Analysis:*

All data collected was computerized using an Excel Master sheet, Statistical analyses were performed with SPSS software (SPSS: An IBM Company, version 22.0, IBM Corporation, Armonk, NY, USA).

➤ *Study Limitations:*

The sample size is small and this limits generalizability and representation of attitudes between the groups of participants. However, as this is an exploratory research on a particular sensitive topic with a very specific research population it was agreed that focus group discussions (FGDs) and semi structured interviews were the most appropriate method to obtain sufficient data to inform the project design.

➤ *Ethical Considerations:*

Verbal consent was sought from each participant in the study prior to collection of data. All data collected shall be used for academic purposes only. Patient's privacy and confidentiality was to be maintained by ensuring that no patient names or contact was to be included in the study.

CHAPTER FOUR DATA ANALYSIS & RESULTS

Following collection of data by the questionnaire, analysis was performed by SPSS version 23.0.0.0 for Macintosh OS X as per the specific objectives of the study. Descriptive statistics such as percentages and frequencies were implemented in presenting data. The results of the analysis are depicted as charts and tables.

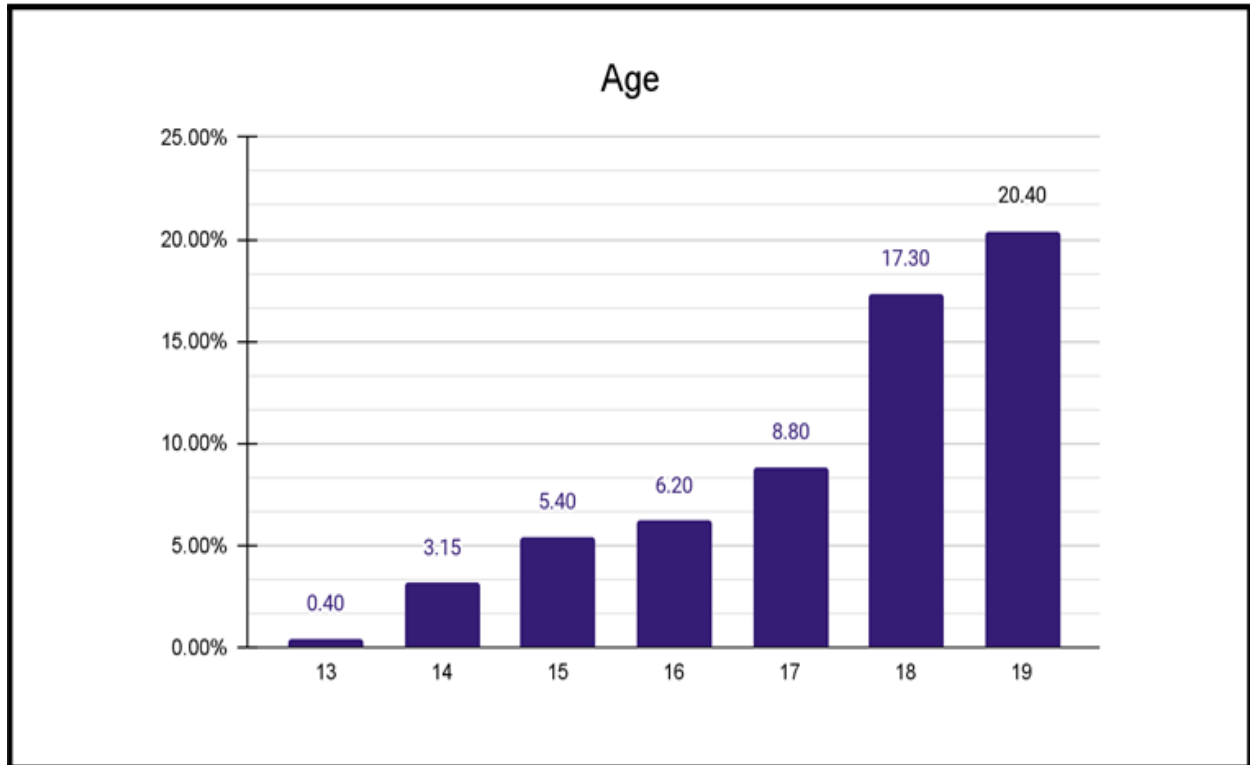


Fig 1 The Chart above Shows the Ages of the Respondents.

- Respondents are all between the Ages of 13-19 with the Majority being 18 and 19 Years Old.

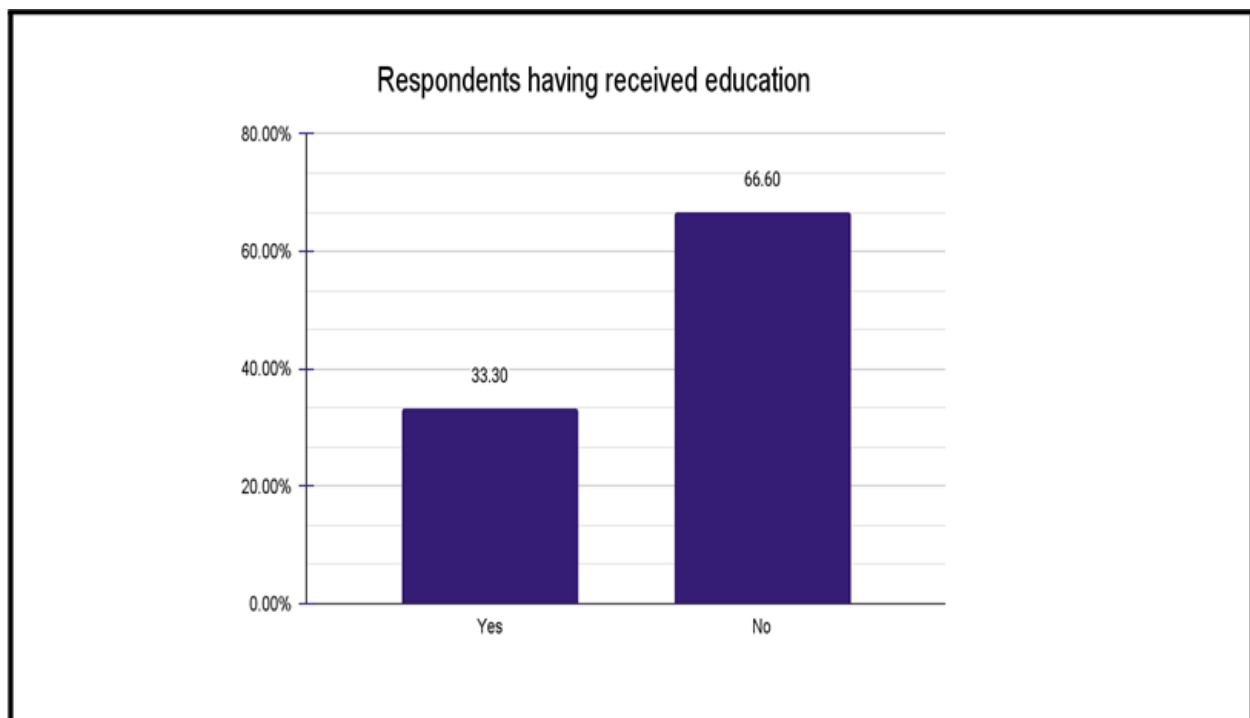


Fig 2 The Chart above Shows the Percentage of Respondents having Received an Education during their Pregnancies.

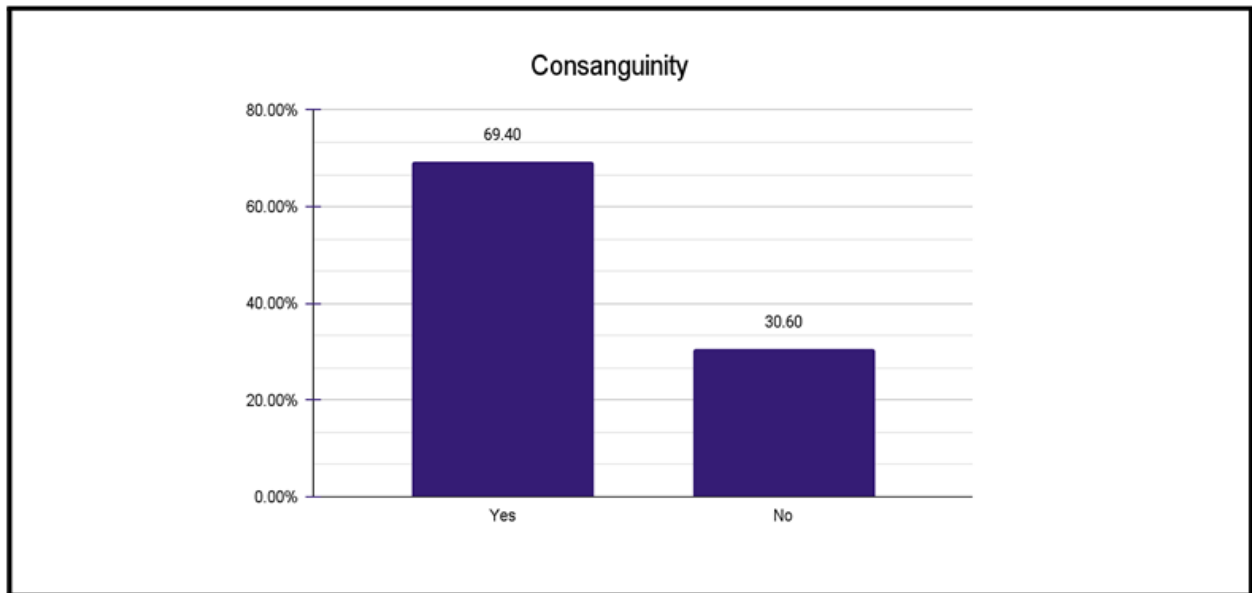


Fig 3 The Chart above Shows the Consanguinity between the Respondents and their Spouses.

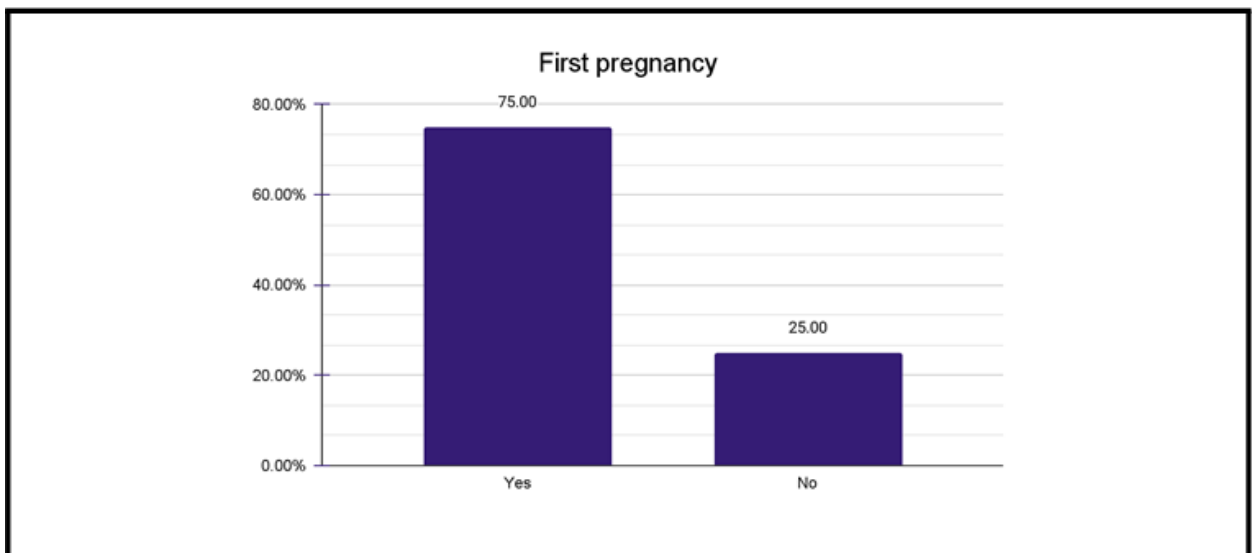


Fig 4 The Chart above Shows if this is the Respondents First Pregnancy

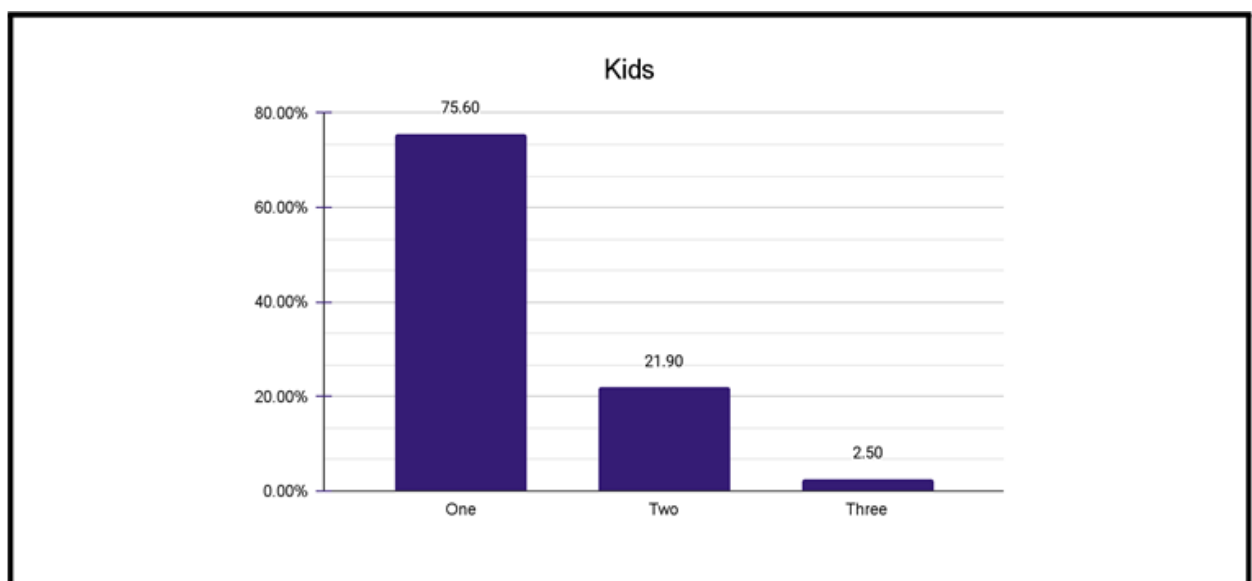


Fig 5 The Chart above Shows the Number of Kids the Respondents have

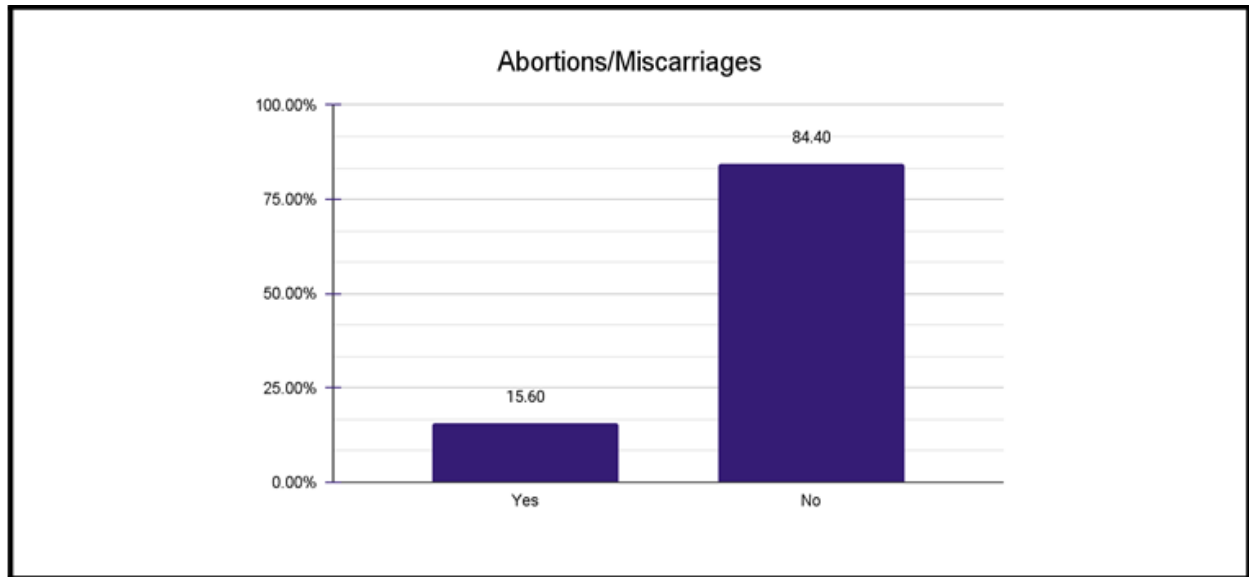


Fig 6 The Chart above Shows Whether the Respondents had Abortions/Miscarriages or Not.

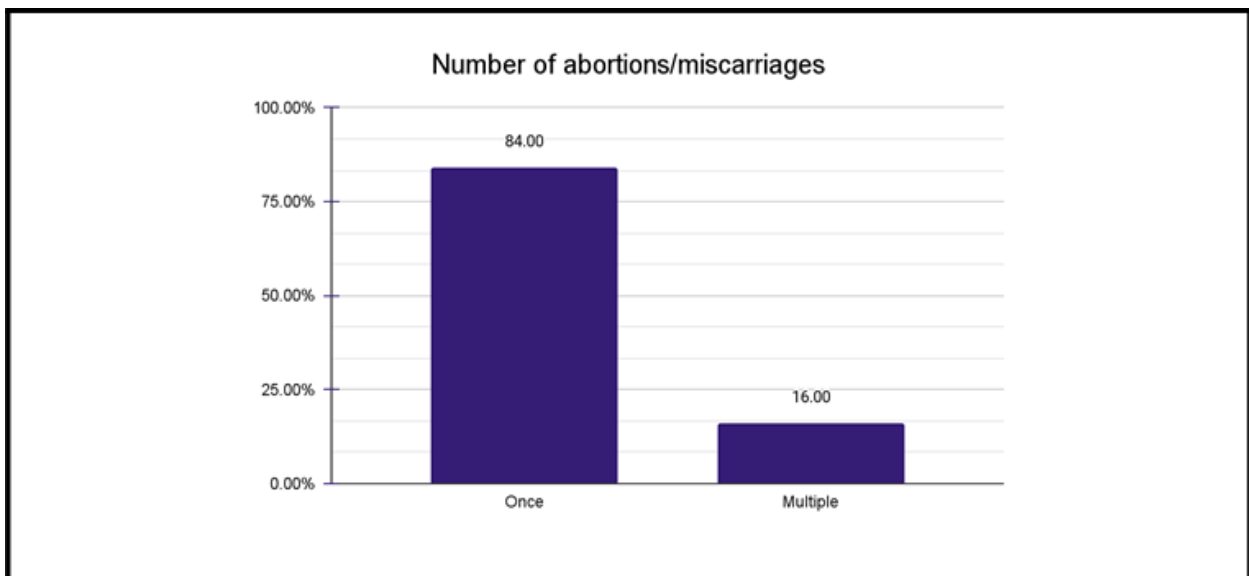


Fig 7 The Chart above Shows the Number of Abortions/Miscarriages Undergone by the Respondents, if there is any.

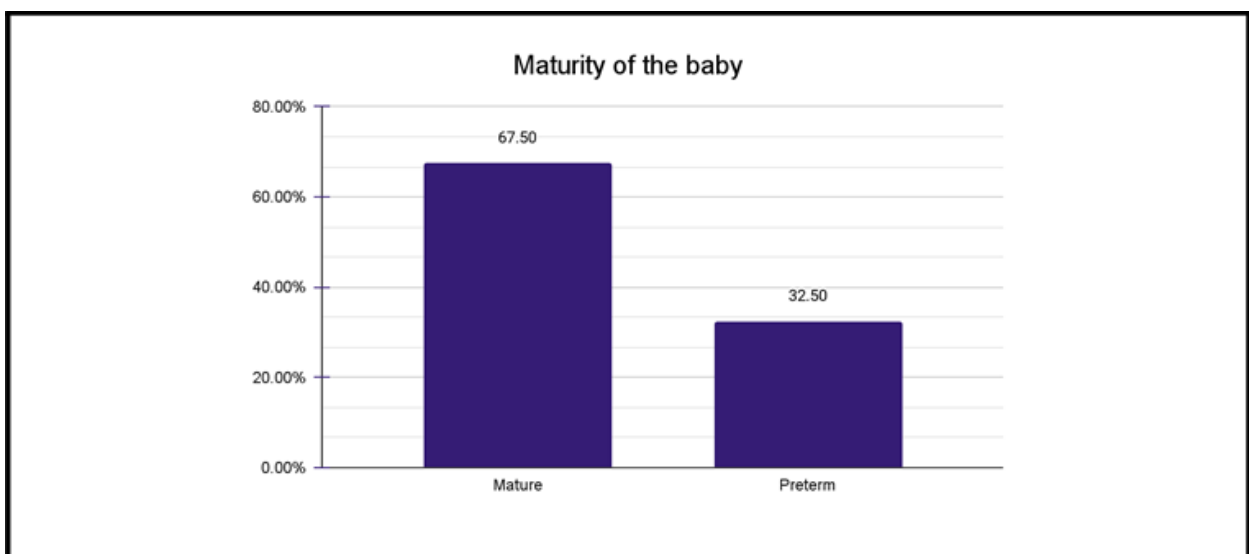


Fig 8 The Chart above Shows the Maturity of the Baby.

The Newborn Babies are Considered Preterm when they are Born before the 37 Week Mark.

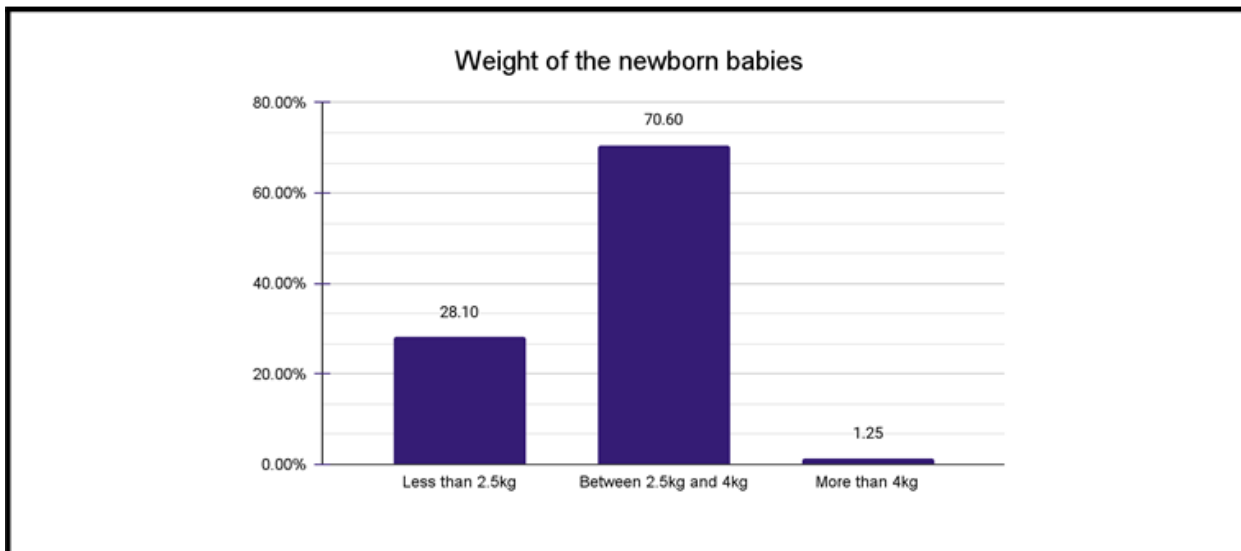


Fig 9 The Chart above Shows the Weight of the Newborn Babies Post Delivery
The normal newborn baby weight is between 2.5kg and 4kg.

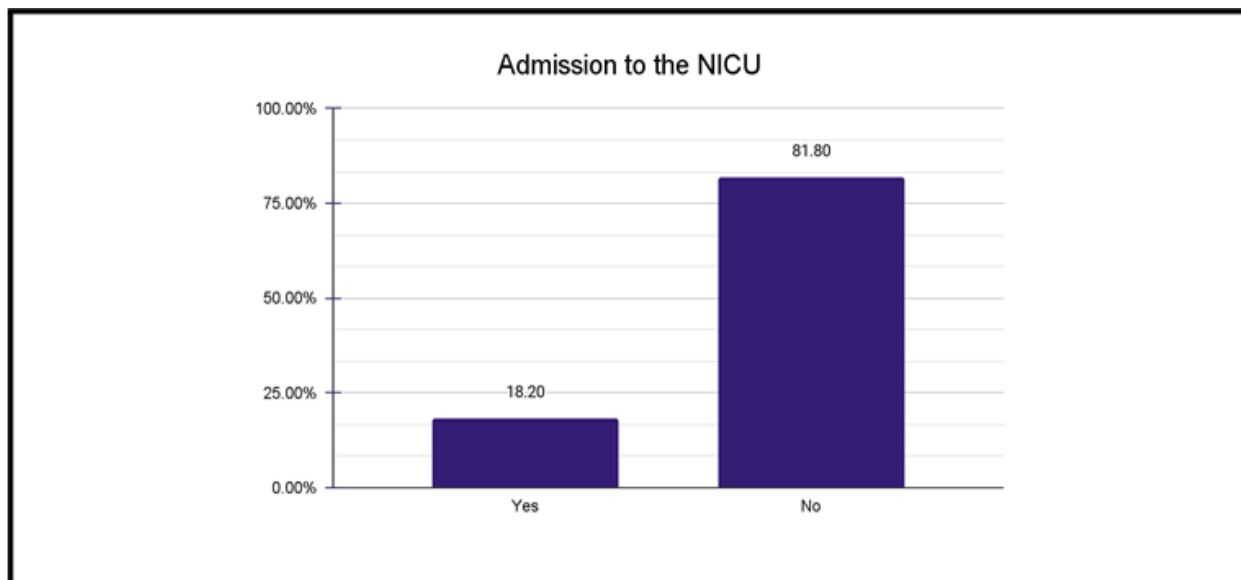


Fig 10 The Chart above Shows the Admission of the Newborn Babies to the NICU.

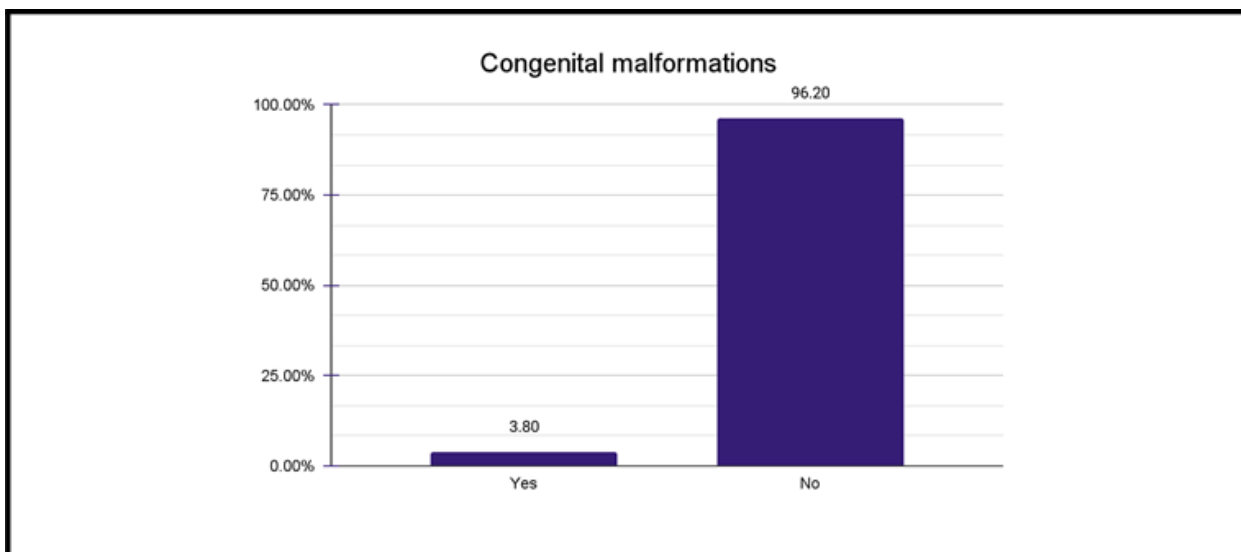


Fig 11 The Chart above Shows if the Newborn Babies were Born with Congenital Malformations

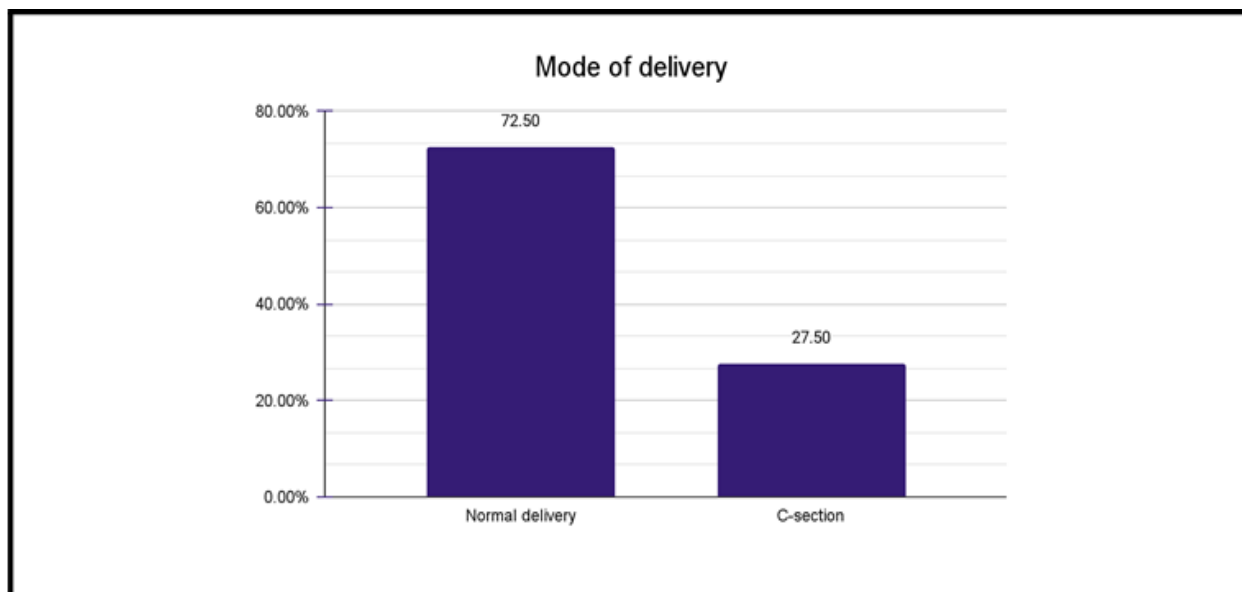


Fig 12 The Chart above Shows the Mode of Delivery

Table 1 The Table above Shows the Reasons why Patients had to Undergo a c-Section

Reason	Percent
Narrow pelvis	67.4%
Breech babies	7%
Eclampsia	7%
Preeclampsia	4.7%
Polyhydramnios	9.3%
Placenta previa	2.3%
Post term babies	2.3%

These Percentages Represent the Occurrence of Each Complication in the 44 Cases of Cesarean Section Deliveries.

Table 2 The Table above Shows the Neonatal Complications Faced

Complication	Frequency	Percent
IUGR	9	5.6%
IUFD	12	7.5%
Neonatal jaundice	8	5%
Sepsis	8	5%
Birth asphyxia	14	8.8%

Table 3 The Table above Shows the Maternal Complications Faced

Complication	Frequency	Percent
PROM	8	5%
Anemia	24	15%
Induced hypertension	36	22.5%
UTIs	71	44.4%
Eclampsia	12	7.5%
Preeclampsia	15	9.4%
Postpartum hemorrhage	10	6.3%

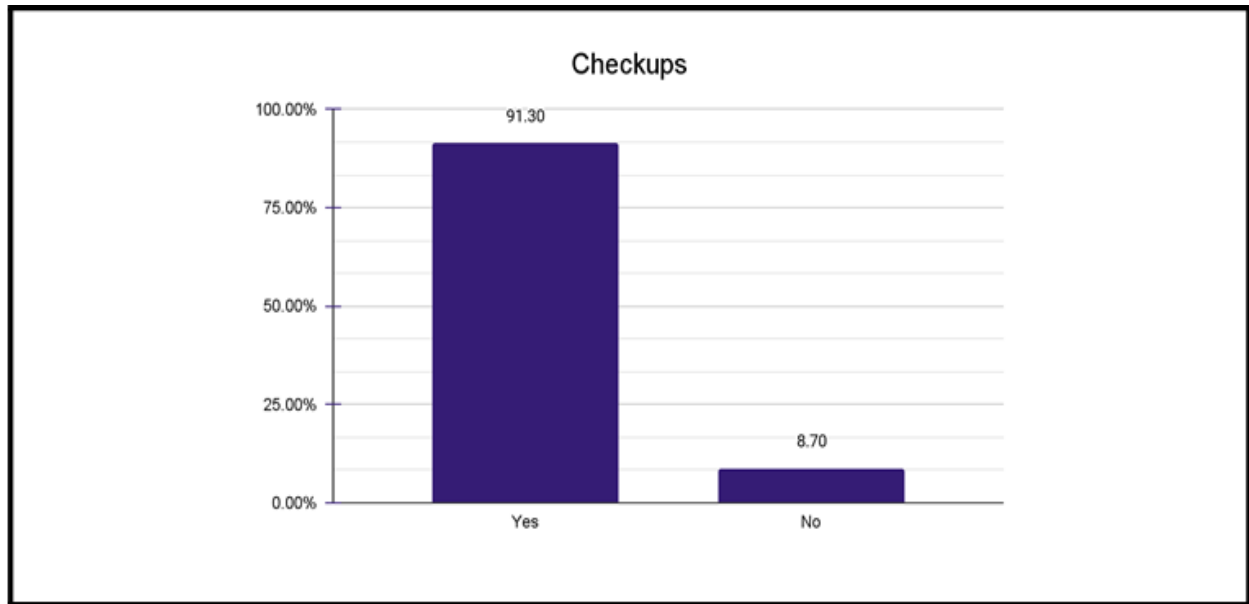


Fig 13 The Chart above Shows if Respondents had Checkups During their Pregnancy

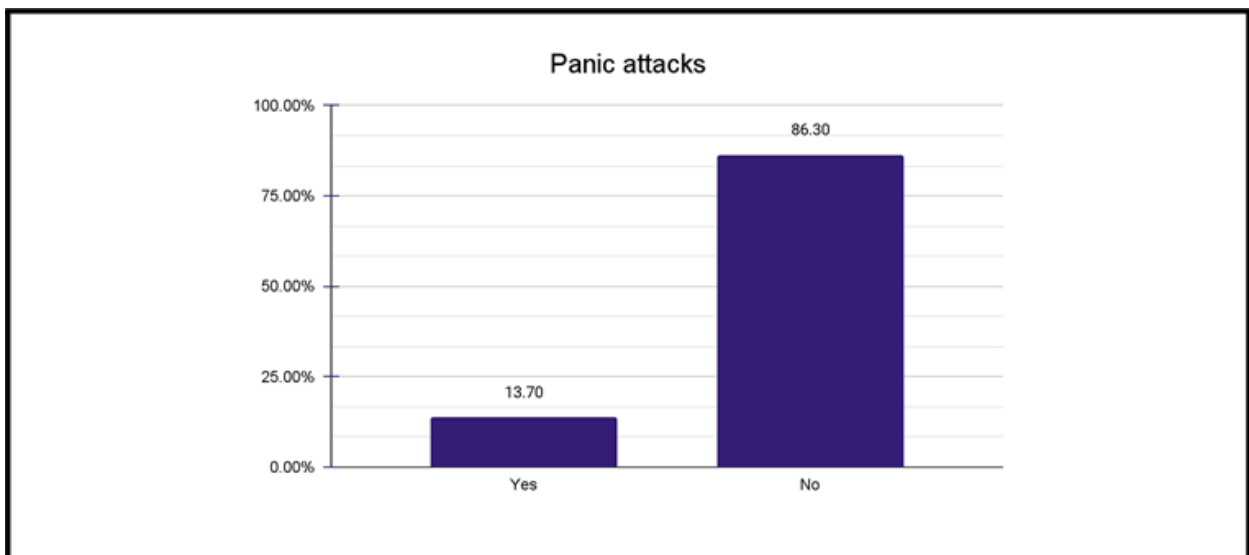


Fig 14 The Chart above Shows if Respondents had Panic Attacks of any Sort

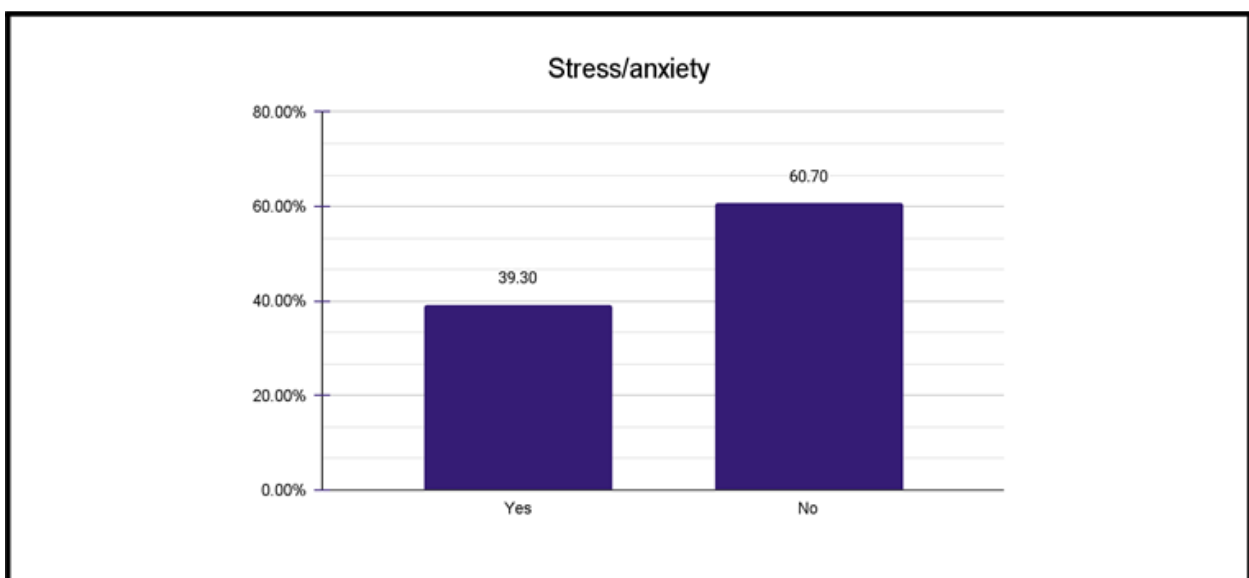


Fig 15 The Chart above Shows if Respondents Felt Anxious or Stressed

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

➤ *Discussion:*

It is a widely believed conception that teenagers are at a higher risk of complications during the period of pregnancy and childbirth. We found an increase in adverse fetal outcomes as well as adverse maternal outcomes among adolescent mothers, however that is not always the case.

During pregnancy, no matter what the age is, there is always a chance of a complication.

The risk factors associated with teenage pregnancies vary according to biological factors, lifestyles, social and economic conditions. When it comes to teenage pregnancies, the complications that come to rise are most commonly low neonatal birth weight, preterm deliveries and prematurity. Other complications that arise to the mothers include hypertension, anemia, preeclampsia and urinary tract infection.

During the period of the study, 160 participants took part in filling out the given questionnaire, which included a series of questions regarding general information and complications that the mother faced. Furthermore, questions about any underlying complications regarding the newborn.

The study included women between the age of 13-19 who recently gave birth and their newborns were delivered in any of the four hospitals mentioned during the period of study. Excluded from the study were all women above the age of 20.

In past research papers it has been reported that adolescents are exposed to adverse neonatal outcomes such as fetal death, neonatal death, low birth weight, IUGR and prematurity. [6]

Our investigation however showed that pregnant adolescents had an average weight of 2.5kg-4kg being the majority and only 28.1% of the newborns being underweight (LBW) and for that of premature babies 32.5% were in fact babies who have not reached their full maturity leaving the majority at 67.5%. Moreover, cases of IUGR and stillbirth were not different from the adult women. As for the maternal complications, urinary tract infection was an issue that stood out. 71 out of the 160 participants did in fact suffer from UTIs. Another major complication was preeclampsia, however the minority experienced it with only 9.4% in score. This may be explained by the fact that our study was not powered to detect rare outcomes, and in addition some risk factors such as smoking were absent in our adolescent population.

Many authors agreed that early start of childbearing greatly reduces the educational and employment opportunities of women.[10] And that was clearly shown in the results obtained as only 33.3% of the participants were still attending school.

As a matter of fact, the majority of the mothers had regular check ups and follow ups during the period of their pregnancy.

As for the mental aspect, our investigation showed minimal mental difficulties as most of the participants showed stable mental status. For the reason being that in Sudan, culturally, it is common for women to get married and bear children at a very young age more so to their relatives. Even so, only 13.3% of the mothers were in fact experiencing panic attacks.

Furthermore, feeling anxious and stressed were more common among the patients scoring 39.9%.

➤ *Conclusion:*

It is given that females who become pregnant as a teenager will naturally face increased medical health risks and as the pregnancy is taken to term, the newborn is also expected to face adverse outcomes. This is most likely due to their underdeveloped stature. The findings of this study suggested that teenage pregnancy, with independent known confounding factors, had similar complications compared to adult pregnancy from past research; UTIs, anemia, hypertension and preeclampsia are all common complications that face both categories. Although teenage mothers had incidences of anemia, preterm babies and low birth weight babies, the difference between teenage pregnancies and adult pregnancies was not statistically significant.

➤ *Recommendations:*

Prenatal health care providers should pay special attention to this sensitive population, especially among teenagers 19 years old and younger. Further intervention studies are needed to minimize the adverse outcomes among pregnant teenagers. Furthermore, outreach intervention studies should be developed to motivate this population to enroll in prenatal services in their first trimester.

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ANNEXES❖ *Study Questionnaire:*A. *Maternal and Perinatal Outcomes of Teenage Pregnancies Questionnaire*➤ *Personal Questions:*

- *How Old are you?*

- *Are you Currently in School?*

a) Yes b) No

- *Are you and your Spouse Related?*

a) Yes b) No

- *Where do you Currently Reside?*

➤ *Gynaecological Questions:*

- *Is this your First Pregnancy?*

a) Yes b) No

- *How many Kids do you have?*

a) 1-2 b) 3-4 c) More

- *Have you ever had an Abortion/Misscarriage?*

a) Yes b) No

- *If yes, how many?*

➤ *Perinatal Questions:*

- *Was the Baby Prematurely Delivered?*

a) Yes b) No

- *How much did the Baby Weigh?*

a) Less than 2.5kg b) Between 2.5kg and 4kg c) More than 4kg

- *Was the Baby Admitted to the Neonatal Intensive care Units?*

a) Yes b) No

- *Did the Baby have any Congenital Malformations?*

a) Yes b) No

- *What was the Mode of Delivery?*

a) Caesarean section b) Normal vaginal delivery

- *If the Delivery was a Caesarean Section, why?*
- *Did the Baby Suffer from Intrauterine Growth Restriction (IUGR)?*
a) Yes b) No
- *Did the Baby Suffer from Intrauterine Fetal Demise (IUFD)?*
a) Yes b) No
- *Did the Baby Suffer from Neonatal Jaundice?*
a) Yes b) No
- *Did the Baby Suffer from Sepsis?*
a) Yes b)No
- *Did the Baby Experience Birth Asphyxia?*
a) Yes b)No

➤ *Maternal Questions:*

- *Did you Suffer from Premature Rupture of Membranes (PROM)?*
a) Yes b) No
- *Did you Suffer from Anaemia?*
a) Yes b) No
- *Did you Suffer from Induced Hypertension?*
a) Yes b) No
- *Did you Suffer from Urinary Tract Infection?*
a) Yes b) No
- *Did you Suffer from Eclampsia?*
a) Yes b) No
- *Did you Suffer from Preeclampsia?*
a) Yes b) No
- *Did you Suffer from Postpartum Haemorrhage?*
a) Yes b) No
- *Have you had any Check-ups During your Pregnancy?*
a) Yes b) No

- *Have you had any Panic Attacks of any Sort?*

a) Yes b) No

- *Have you ever Felt Anxious or Stressed?*

a) Yes b) No