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Original Article

An Evaluation of Postnatal Patients for Puerperal Pyrexia

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ABSTRACT

Background: Puerperal pyrexia remains an important cause of maternal morbidity and mortality, particularly in developing countries. Early identification of its risk factors and etiologies is essential for timely intervention and improved maternal outcomes.Objectives: To evaluate the etiological factors, predisposing risk factors, maternal morbidity, mortality, and preventive measures associated with puerperal pyrexia among postnatal women in a tertiary care centre.
Methods: This observational study was conducted over 18 months (August 2022 to February 2024) in the Department of Obstetrics and Gynaecology, Bharati Vidyapeeth (Deemed to be University) Medical College and Hospital, Sangli. A total of 164 postnatal women with puerperal pyrexia were enrolled using convenience sampling. Demographic characteristics, obstetric variables, risk factors, etiologies, and maternal outcomes were recorded and analysed using Epi Info version 7.2.6.0. Statistical analysis included descriptive statistics, Chi-square test, and Student's t-test, with $p<0.05$ considered statistically significant.
Results: The prevalence of puerperal pyrexia was 16.4%. Most women were aged 20–29 years (50.0%) and were multiparous (46.95%). Lower segment caesarean section was the predominant mode of delivery (57.93%). Mastitis was the most common cause of puerperal pyrexia (25.61%), followed by urinary tract infection (12.80%) and septic thrombophlebitis (12.80%). Anaemia was present in 43.9%, gestational diabetes mellitus in 21.34%, pregnancy-induced hypertension in 39.63%, and immunocompromised status in 18.9% of women. Significant associations with maternal complications were observed for maternal age, PROM/PPROM, place and mode of delivery, gestational diabetes, and immunocompromised status. Sepsis occurred in 3.66% of patients, while the mortality rate was 1.22%.
Conclusion: Puerperal pyrexia continues to be a significant contributor to postpartum morbidity. Caesarean delivery, PROM/PPROM, gestational diabetes, immunocompromised status, and maternal age were important determinants of adverse outcomes. Early diagnosis, strict aseptic obstetric practices, optimal antenatal care, and prompt management of postpartum infections are essential to reduce maternal complications and mortality.

Keywords: *Puerperal pyrexia; Postpartum fever; Puerperal sepsis; Maternal morbidity; Risk factors; Caesarean section; MastitisC.*

INTRODUCTION

Postpartum Pyrexia(PP) is defined as a temperature above 38 °C for 24-hour period or recurring between end of 1st first and 10th day after childbirth. United States Joint Commission on Maternal Welfare further specifies it as a temperature surpassing 38.0 °C on any 2 of 1st 10 days postpartum, excluding 1st 24 hours. [1]Temporary fever within 1st24 hours postpartum is disregarded due to its spontaneous resolution, due to lack of clear postpartum cause .[2]

Postpartum pyrexia affects around 5–7% of births globally [3]rates differ across regions, with significant impact on maternal health, especially in Sub-Saharan Africa where about 66% of maternal deaths occur. Estimates of PP prevalence in Africa showed disparity, ranging from 64% in one Nigerian study to 2.9% in a Ugandan study in 2018 [4,5]But prevalence data currently exist for India. Some studies indicated puerperal sepsis as main cause of postpartum pyrexia, accounting for around 4.2% and 14.3% of all maternal deaths, respectively.

Infection, or puerperal sepsis, is the main cause of postpartum fever, as recognized by the World Health Organization [6]Increasing rates of puerperal sepsis are attributed to nosocomial infections and increasing antibiotic resistance, posing significant challenges to healthcare systems globally . Previous research proved preventable nature of puerperal sepsis, which is a major contributor to maternal morbidity and mortality in both low and high-income countries . ICausative microorganisms like poly microbial strains with group A b-hemolytic streptococcus, underscore severity of few cases of puerperal sepsis, as seen in an Australian study [7]

Factors contributing to PP include urinary tract infections (UTIs), surgical wound infections, septic thrombophlebitis, malaria, and mastitis [8]Physiological changes during pregnancy, along with birth-related trauma or cesarean procedures, also enhance the susceptibility to postpartum infections [3]. Anemia, prolonged labor, and prolonged premature rupture of membranes (PPROM) and routine unsterilized vaginal examinations during labor, increase risk of sepsis and pyrexia in the postpartum period [9,10]

In spite of its significance in maternal health, no studies in India directly assessed the burden of PP on maternal morbidity and mortality. Hence, this study was aimed to know risk factors, and etiologies of postpartum pyrexia in our tertiary care setting, facilitating informed actions for its prevention and management.

INCLUSION CRITERIA: All postnatal women with puerperal pyrexia who got delivered or referred from outside to this tertiary care center were selected irrespective of their parity, mode of delivery, and with live or dead fetus.

EXCLUSION CRITERIA:
The patients were diagnosed with pre-existing infections in the antenatal period.
Patients on steroids
Patients who are not willing to enroll in the study.
Patients who used antibiotics in last 3 days.
Exclusion criteria were assessed mainly through oral history, medical records, and physical and obstetric examination to rule out the conditions mentioned above.
The data of all 164 women was complete. All patients provided consent for the study.

Methodology:
Testing for UTI:
All the women were advised to wash hands and to collect urine samplepato. This sample was sent to the laboratory within two hours. The sample was divided into two parts. One part of urine sample was tested for the presence of nitrite, albumin, sugar and pus cells along with colony count. Another part was tested for culture and sensitivity. Treatment was given to all patients having bacteriuria with oral amoxiclav 625mg bd for 7days. Urine culture was repeated 7 days after the completion of treatment. Patients with persistent bacteriuria were treated with Inj. Gentamicin 80mg bd X 5days.
All patients were followed up till one month after delivery and discharge.

Parameters assessed:
1. Demographic data: Age
2. Parity
3. Condition of membranes
4. Mode of delivery
5. Place of delivery
6. Aetiology
7. Duration of labour
8. Onset of labour
9. Presence of anemia
10. Presence of gestational diabetes
11. Presence of pregnancy induced hypertension
12. Presence of hydramnios
13. Presence of immunocompromised status
14. Complications

STATISTICAL ANALYSIS: The data collected was processed in MS Excel 365 and analysis was done using statistical software called EPI INFO free version. 7.2.6.0.P value <0.05, was considered as statistically significant. Frequencies, percentages were also used. Mean and SD were used. Chi square test was used to assess categorical parameters. Quantitative measures were compared using T test.

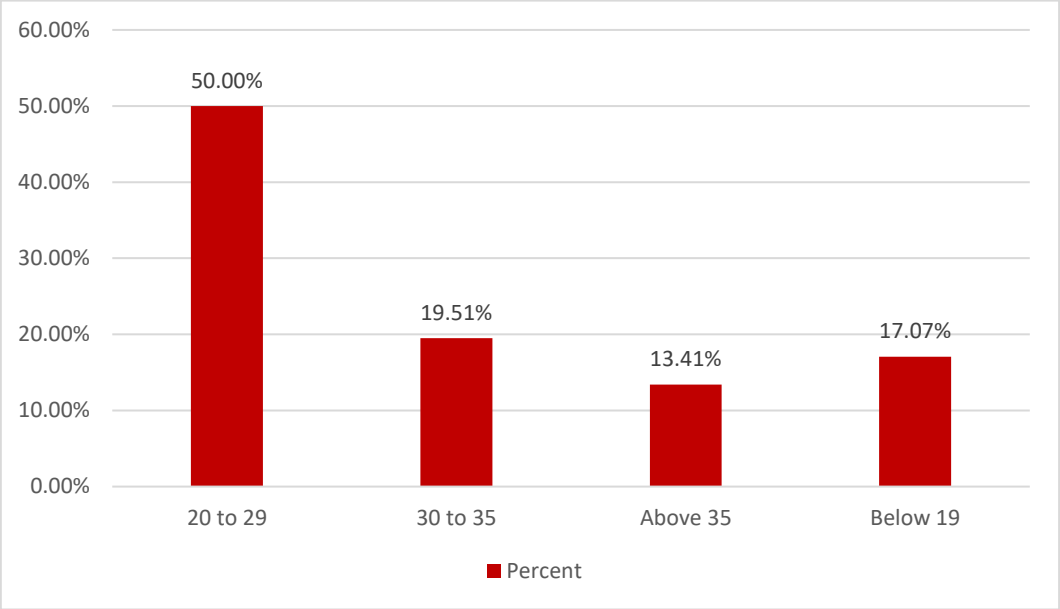
Ethical considerations: Permission from the Institutional ethical committee attached to BV(DU)MC&H, Sangli, was taken before conducting the study.

Informed consent was taken from all patients.

RESULTS

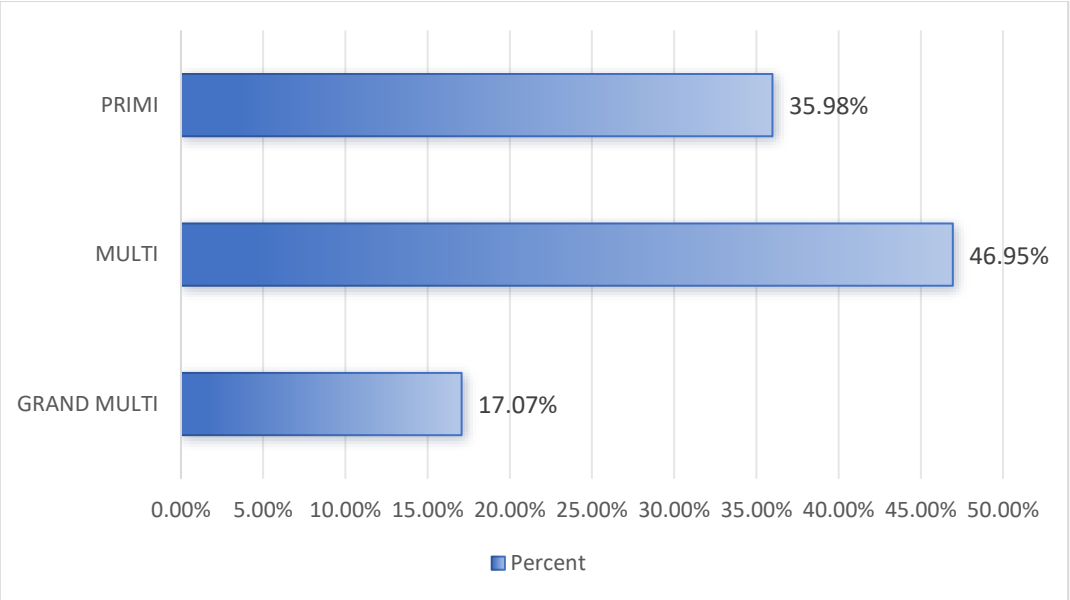
AGE:
50% of the patients were aged 20 to 29 years, 19.51% were aged 30 to 35 years.

AGE	Frequency	Percent
20 to 29	82	50.00%
30 to 35	32	19.51%
Above 35	22	13.41%
Below 19	28	17.07%
Total	164	100.00%



PARITY:
46.95% of the patients were multiparous women.

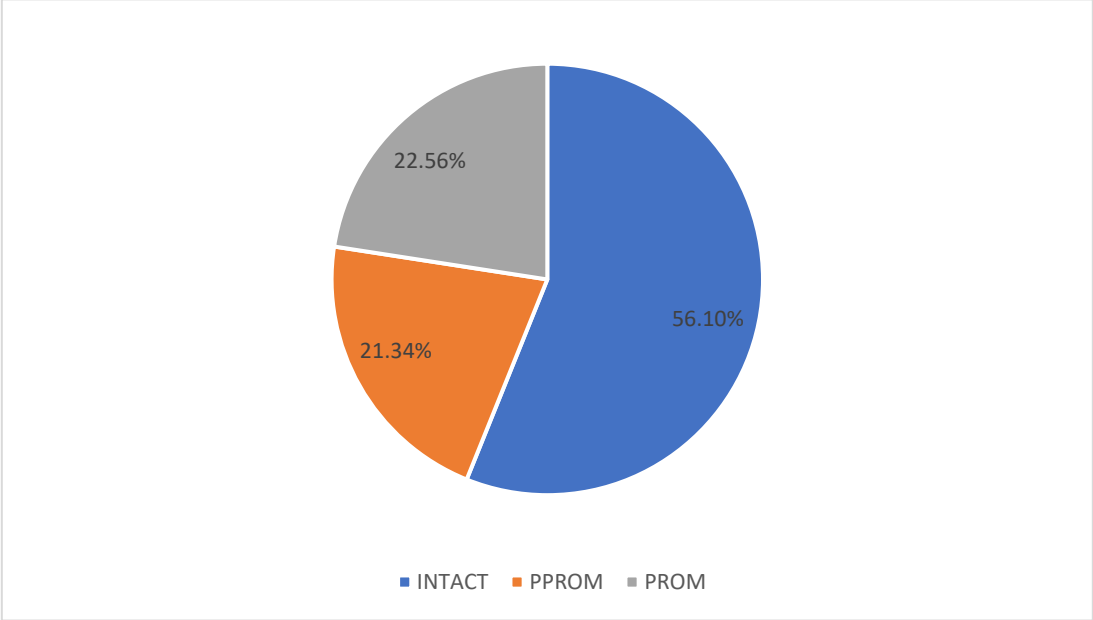
PARITY	Frequency	Percent
GRAND MULTI	28	17.07%
MULTI	77	46.95%
PRIMI	59	35.98%
Total	164	100.00%



CONDITION OF MEMBRANES:

56.10% of the patients had intact membranes. PPROM was seen in 21.34% of women.

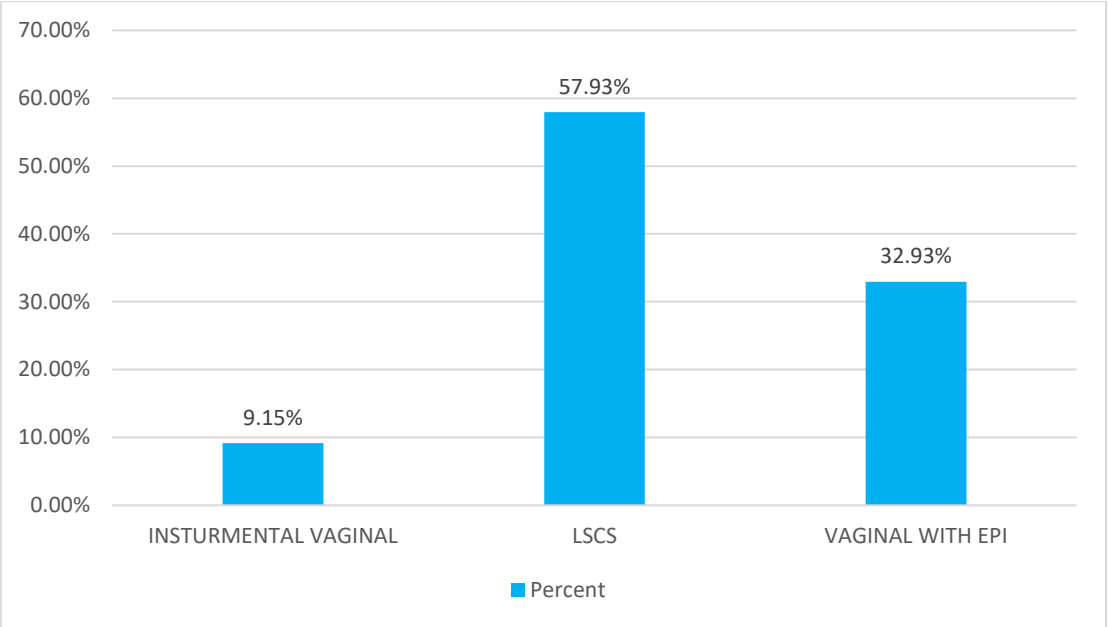
MEMBRANES	Frequency	Percent
INTACT	92	56.10%
PPROM	35	21.34%
PROM	37	22.56%
Total	164	100.00%



MODE OF DELIVERY:

57.93% of the patients underwent LSCS, 9.15% underwent instrumental vaginal delivery.

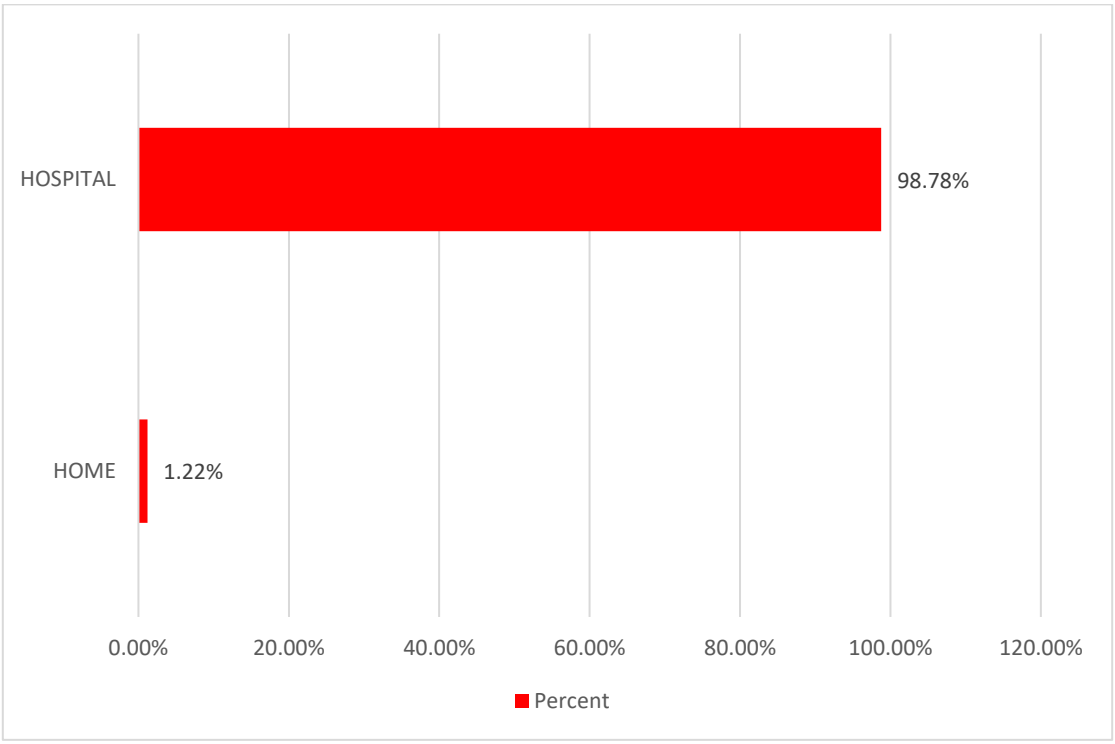
MODE OF DELIVERY	Frequency	Percent
INSTURMENTAL VAGINAL	15	9.15%
LSCS	95	57.93%
VAGINAL WITH EPI	54	32.93%
Total	164	100.00%



PLACE OF DELIVERY:

98.78% of the patients underwent delivery at hospital.

PLACE OF DELIVERY	Frequency	Percent
HOME	2	1.22%
HOSPITAL	162	98.78%
Total	164	100.00%

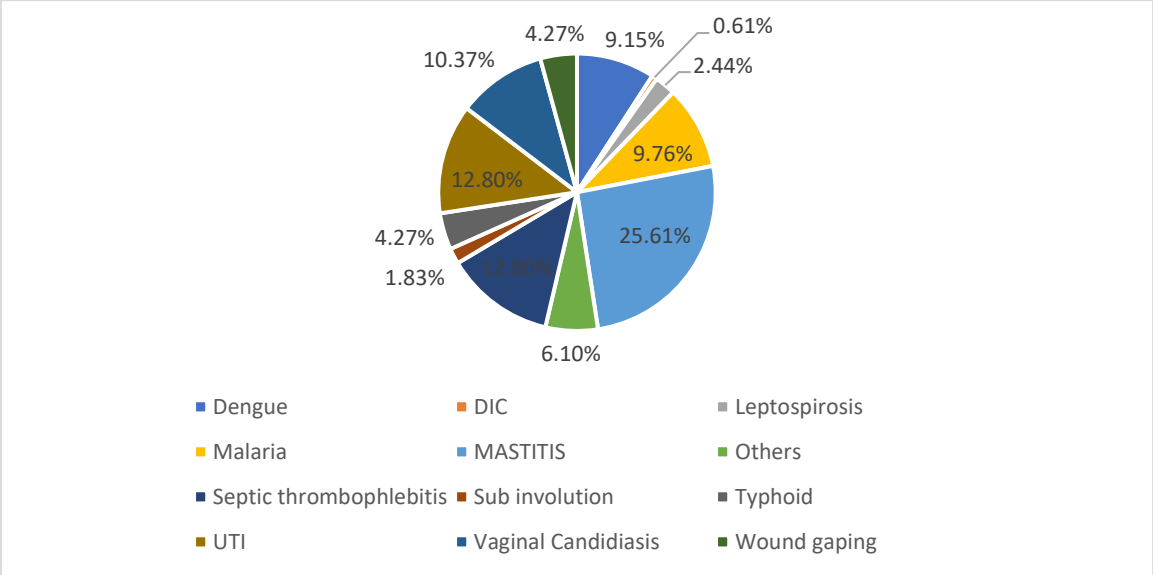


AETIOLOGY:

25.61% of the patients had MASTITIS,12.80% of the patients had UTI, 12.8% of patients had septic thrombophlebitis. The following causes are the foci of infection.

AETIOLOGY	Frequency	Percent
Dengue	15	9.15%
DIC	1	0.61%
Leptospirosis	4	2.44%

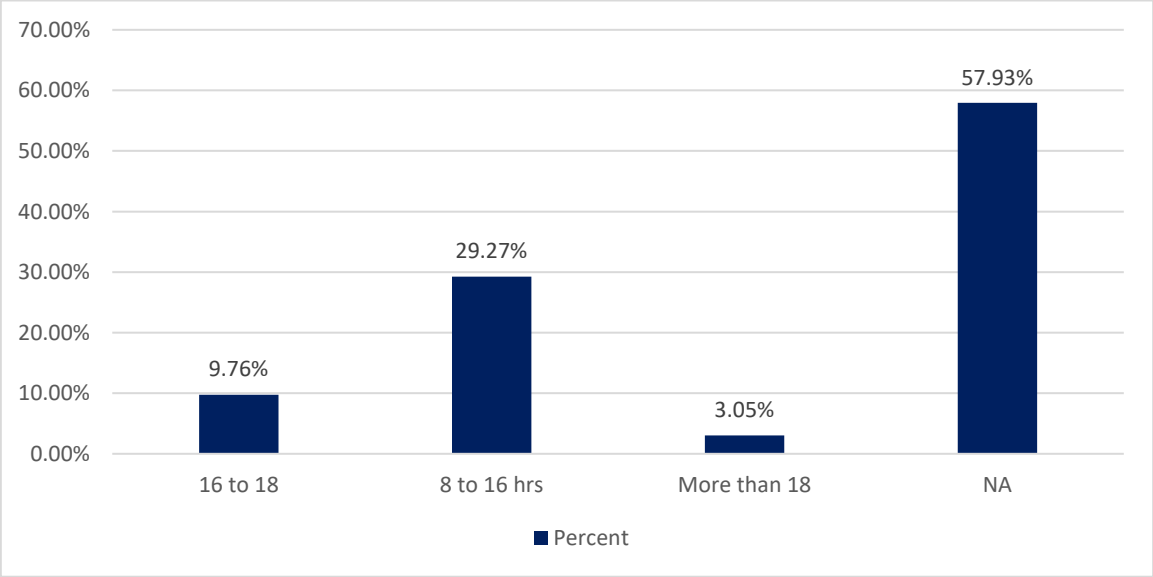
Malaria	16	9.76%
MASTITIS	42	25.61%
Others	10	6.10%
Septic thrombophlebitis	21	12.80%
Sub involution	3	1.83%
Typhoid	7	4.27%
UTI	21	12.80%
Vaginal Candidiasis	17	10.37%
Wound gaping	7	4.27%
Total	164	100.00%



DURATION OF LABOUR:

29.27% had 8 to 16hrsof labour, 3.05% underwent labour for more than 18 hrs.

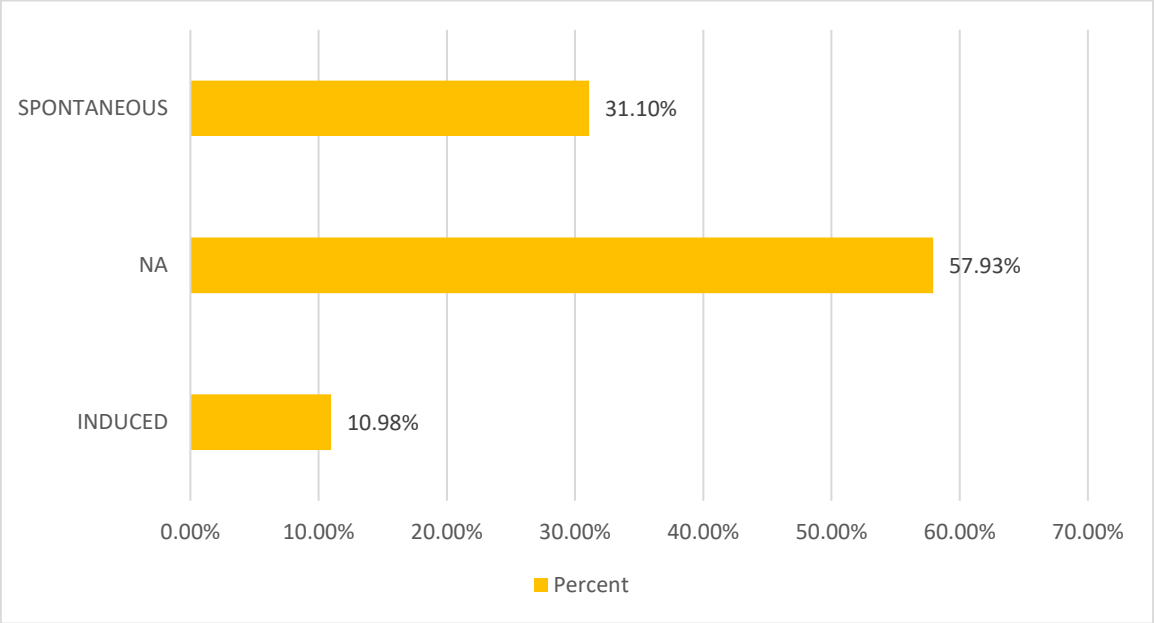
DURATION OF LABOUR	Frequency	Percent
16 to 18	16	9.76%
8 to 16 hrs	48	29.27%
More than 18	5	3.05%
Not applicable(LSCS)	95	57.93%
Total	164	100.00%



ONSET OF LABOUR:

31.10% of the patients had spontaneous onset of labour.

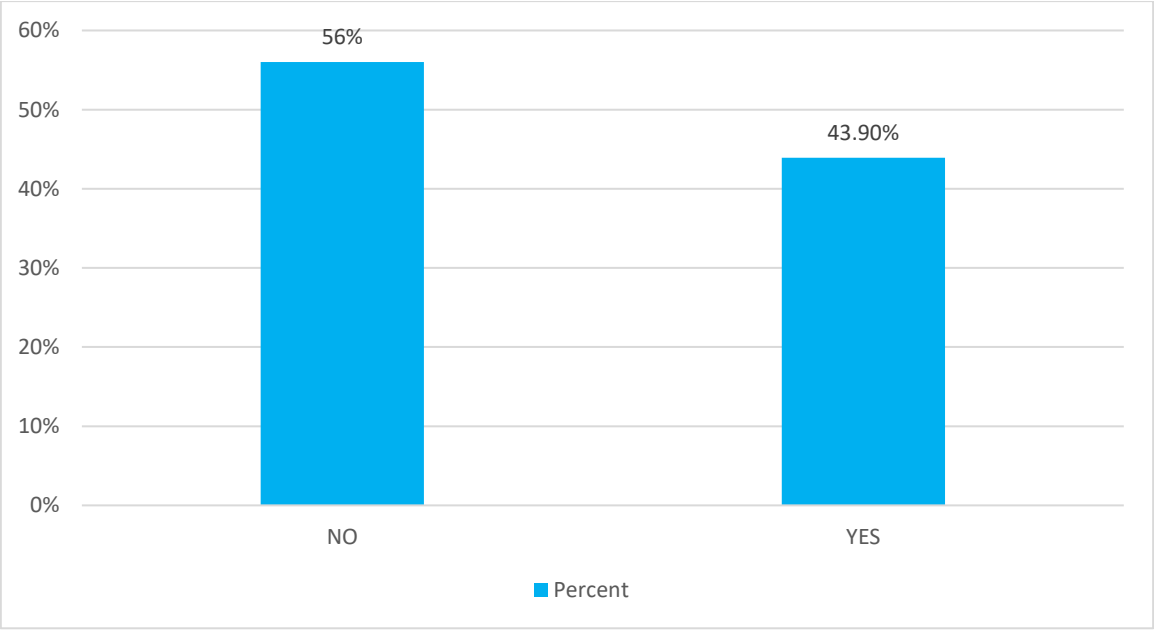
ONSET	Frequency	Percent
INDUCED	18	10.98%
NA- not applicable- planned LSCS	95	57.93%
SPONTANEOUS	51	31.10%
Total	164	100.00%



ANEMIA:

56% of women had anemia.

ANEMIA	Frequency	Percent
NO	92	56%
YES	72	43.90%
Total	164	100.00%

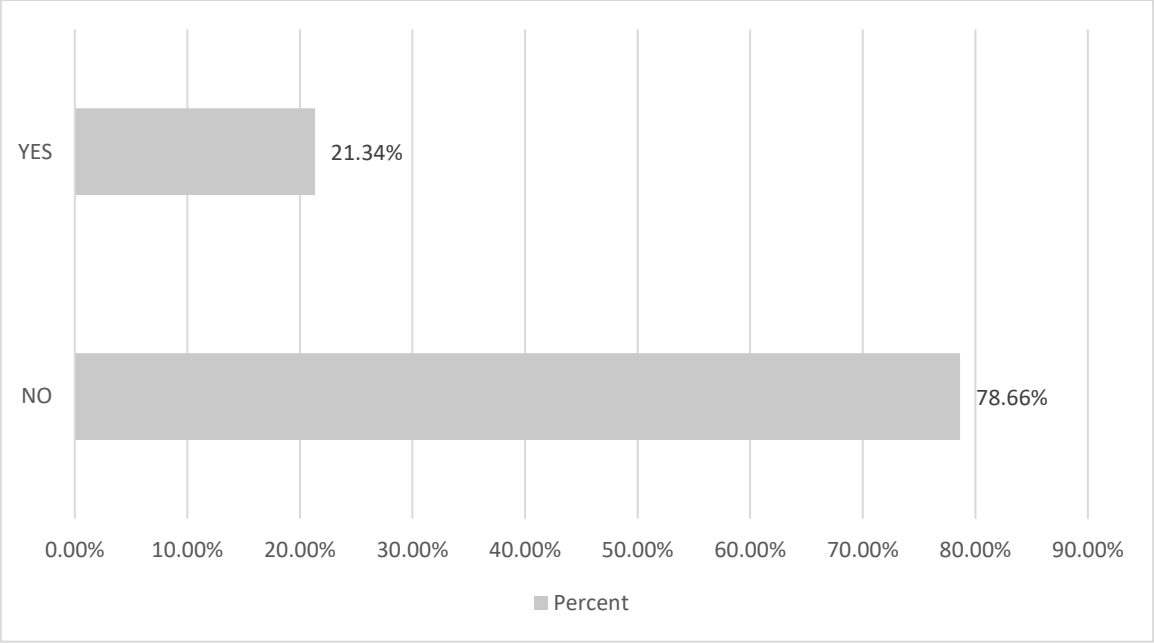


GDM:

21.34% of women had GDM.

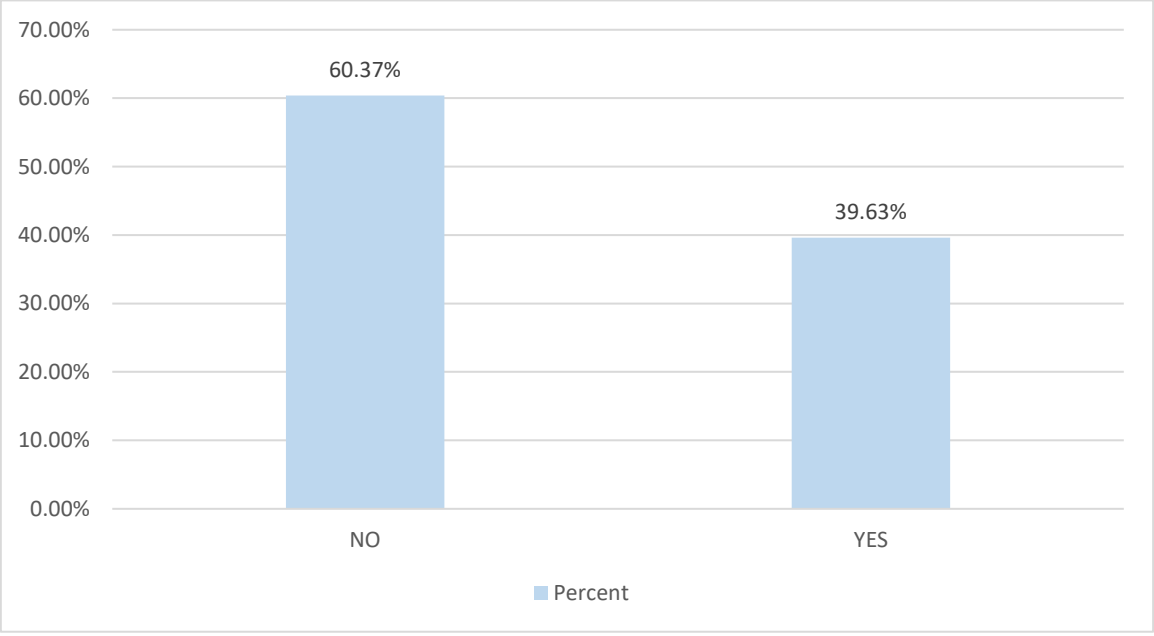
GDM	Frequency	Percent
NO	129	78.66%

YES	35	21.34%
Total	164	100.00%



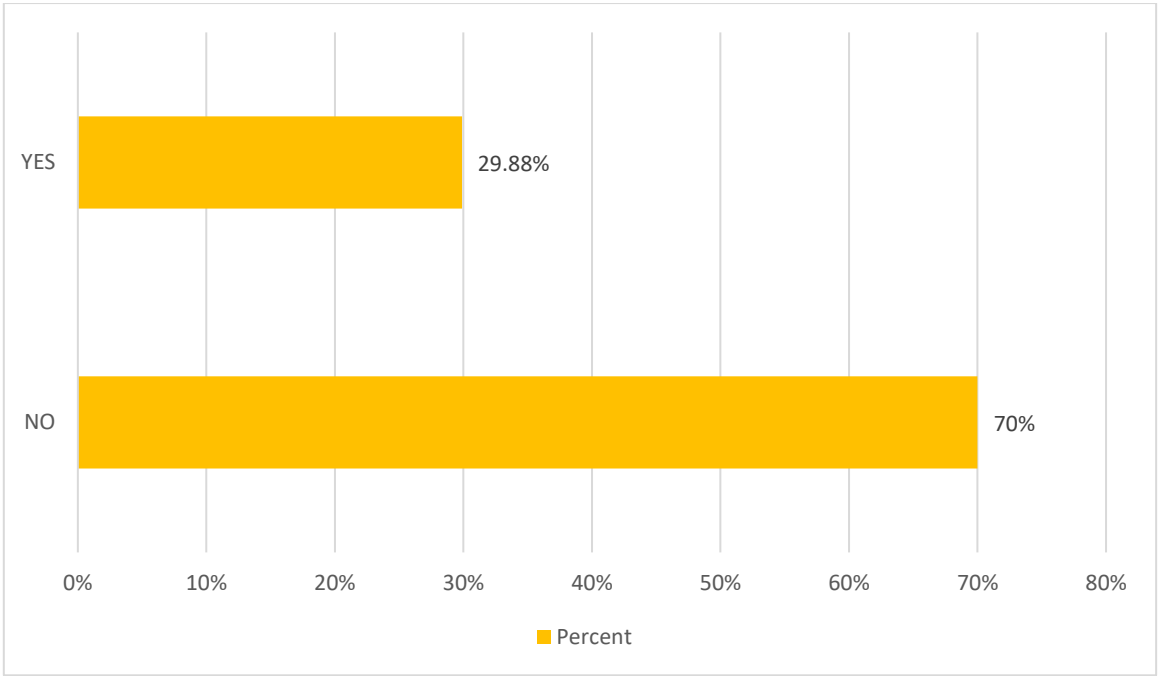
PIH:
39.63% of women had PIH.

PIH	**Frequency**	**Percent**
NO	99	60.37%
YES	65	39.63%
Total	164	100.00%



HYDRAMNIOS:
29.88% of women had hydramnios.

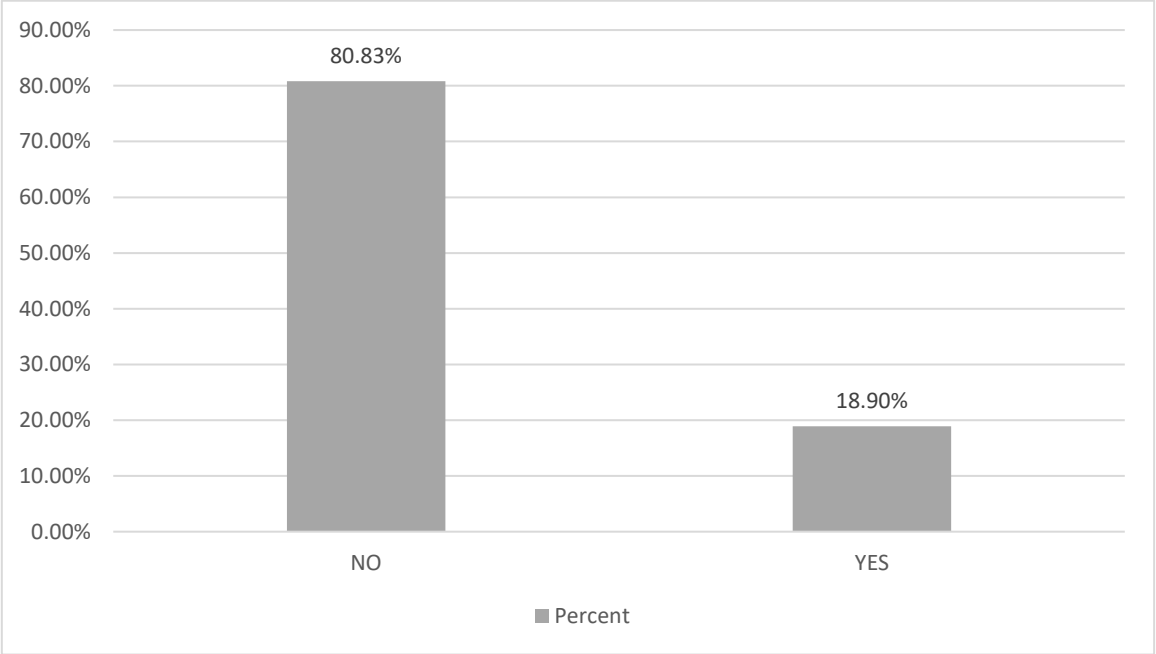
HYDRAMNIONS	**Frequency**	**Percent**
NO	115	70%
YES	49	29.88%
Total	164	100.00%



IMMUNOCOMPROMISED STATUS:

18.90% of women were immunocompromised (HIV, TB, Malignancies etc)

IMMUNOCOMPROMISED	Frequency	Percent
NO	133	80.83%
YES	31	18.90%
Total	164	100.00%



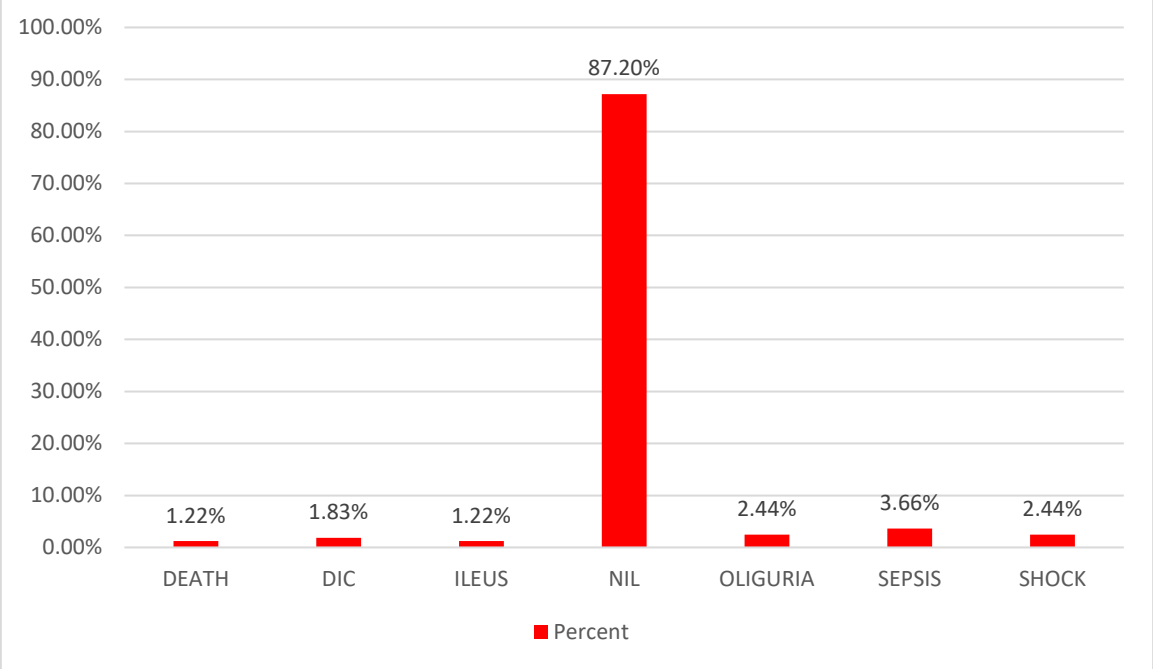
COMPLICATIONS:

87.20% of women had no complications,3.66% of the patients had sepsis.

Death was seen among 1.22% of cases. No complications were seen in 87.2% of patients.

COMPLICATIONS	Frequency	Percent
DEATH	2	1.22%
DIC	3	1.83%
ILEUS	2	1.22%
NIL	143	87.20%
OLIGURIA	4	2.44%

SEPSIS	6	3.66%
SHOCK	4	2.44%
Total	164	100.00%



AGE & COMPLICATIONS:

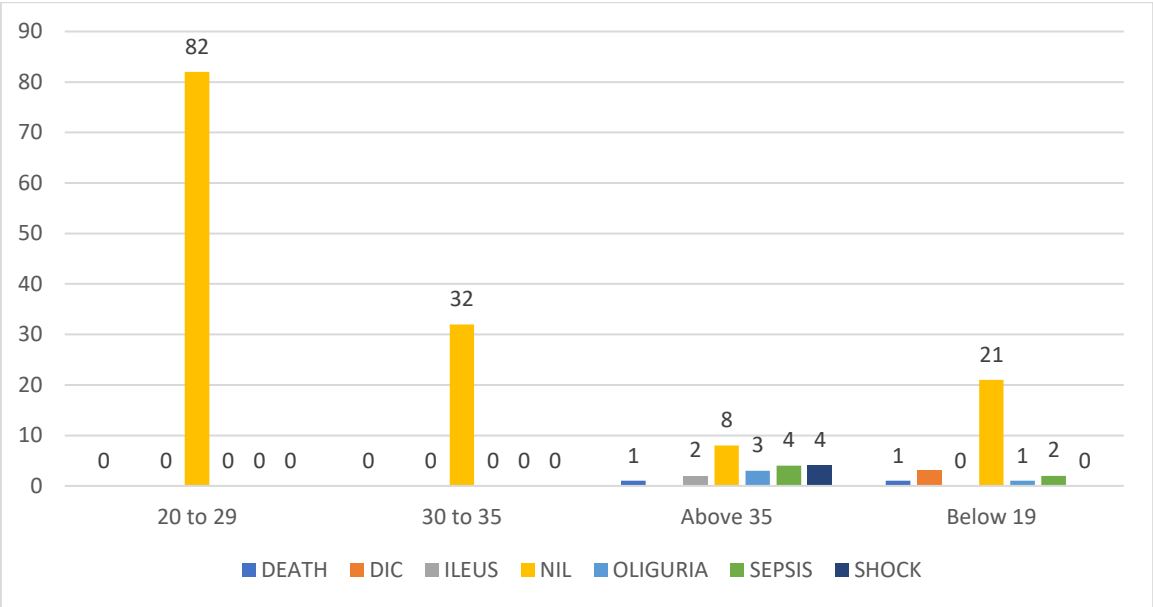
There is significant association between complications & age.

Most of the complications were seen in patients aged above 35 years and below 19 years.

	COMPLICATIONS							
AGE	**DEATH**	**DIC**	**ILEUS**	**NIL**	**OLIGURIA**	**SEPSIS**	**SHOCK**	**Total**
20 to 29	0	0	0	82	0	0	0	82
30 to 35	0	0	0	32	0	0	0	32
Above 35	1	0	2	8	3	4	4	22
Below 19	1	3	0	21	1	2	0	28
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
99.1156	18	0



MEMBRANES AND COMPLICATIONS:

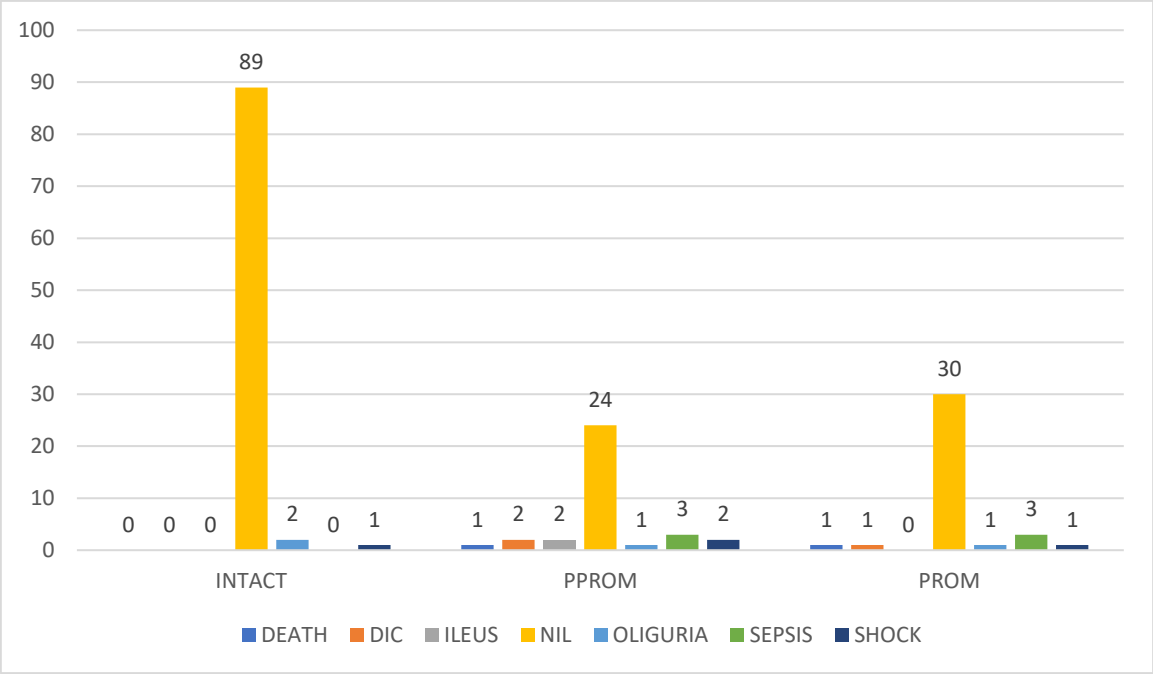
There is significant association between complications &condition of membranes.

Most of the complications were seen in patients with PROM and PPROM.

	COMPLICATIONS							
MEMBRANES	**DEATH**	**DIC**	**ILEUS**	**NIL**	**OLIGURIA**	**SEPSIS**	**SHOCK**	**Total**
INTACT	0	0	0	89	2	0	1	92
PPROM	1	2	2	24	1	3	2	35
PROM	1	1	0	30	1	3	1	37
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
27.1464	12	0.0074



MODE OF DELIVERY & COMPLICATIONS:

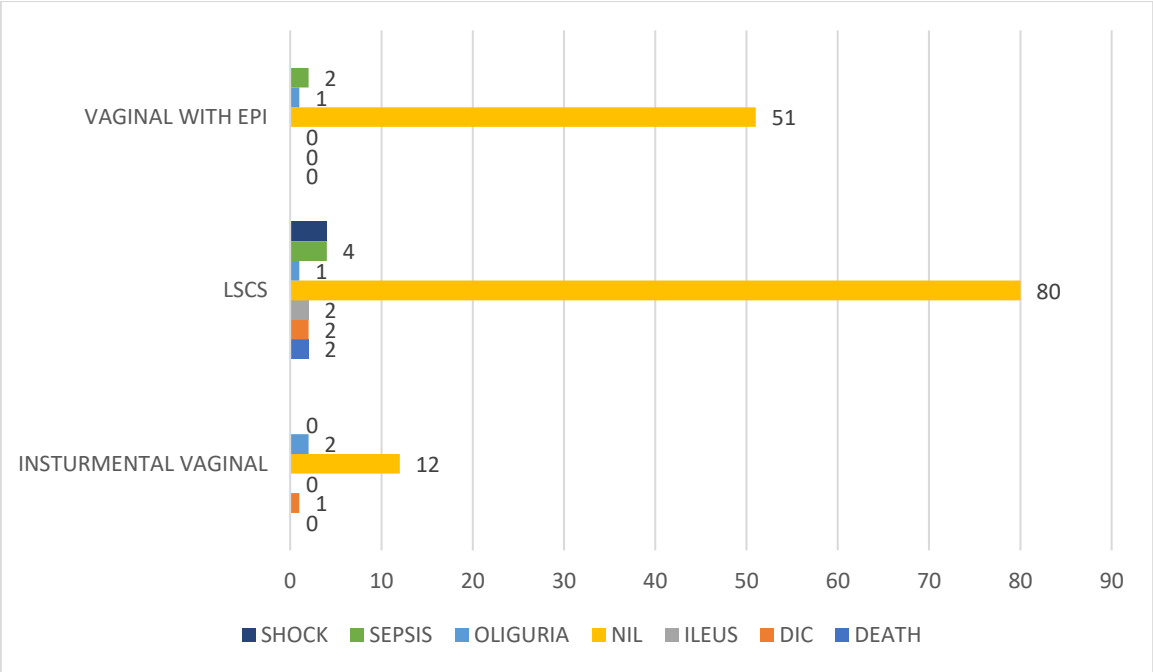
There is significant association between complications &mode of delivery.

Most of the complications were seen in patients who underwent LSCS.

	COMPLICATIONS							
MODE OF DELIVERY	**DEATH**	**DIC**	**ILEUS**	**NIL**	**OLIGURIA**	**SEPSIS**	**SHOCK**	**Total**
INSTURMENTAL VAGINAL	0	1	0	12	2	0	0	15
LSCS	2	2	2	80	1	4	4	95
VAGINAL WITH EPI	0	0	0	51	1	2	0	54
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
18.0207	12	0.1151



PLACE OF DELIVERY & COMPLICATIONS:

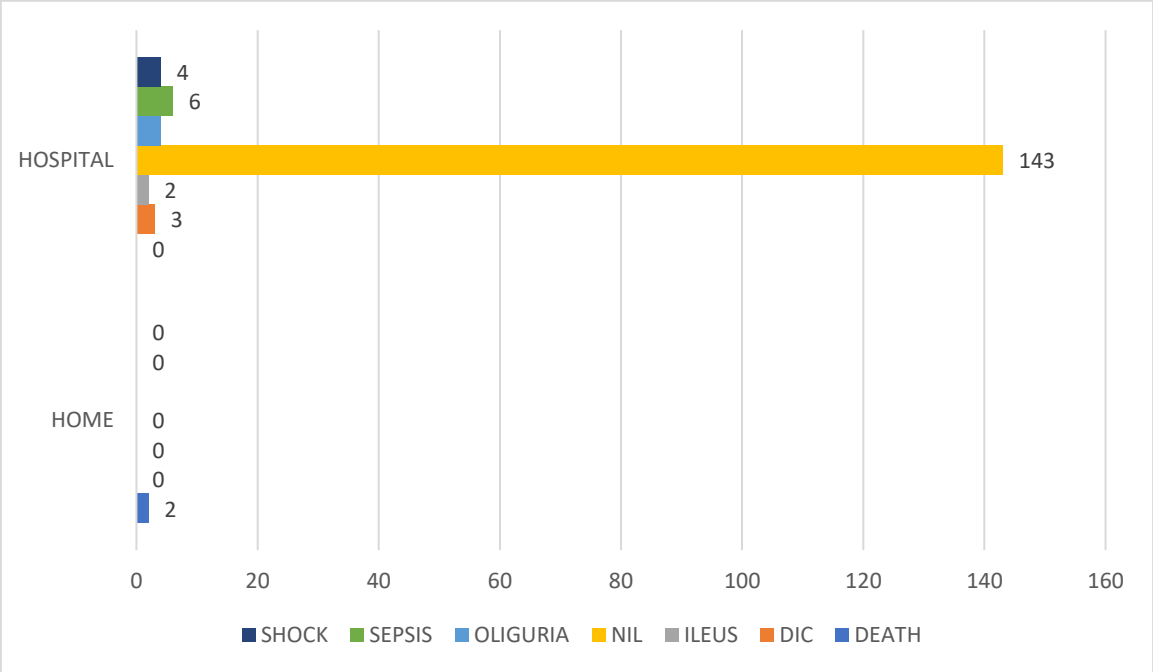
There is significant association between complications &place of delivery.

2 patients who had home delivery expired.

	COMPLICATIONS							
PLACE OF DELIVERY	**DEATH**	**DIC**	**ILEUS**	**NIL**	**OLIGURIA**	**SEPSIS**	**SHOCK**	**Total**
HOME	2	0	0	0	0	0	0	2
HOSPITAL	0	3	2	143	4	6	4	162
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
164	6	0



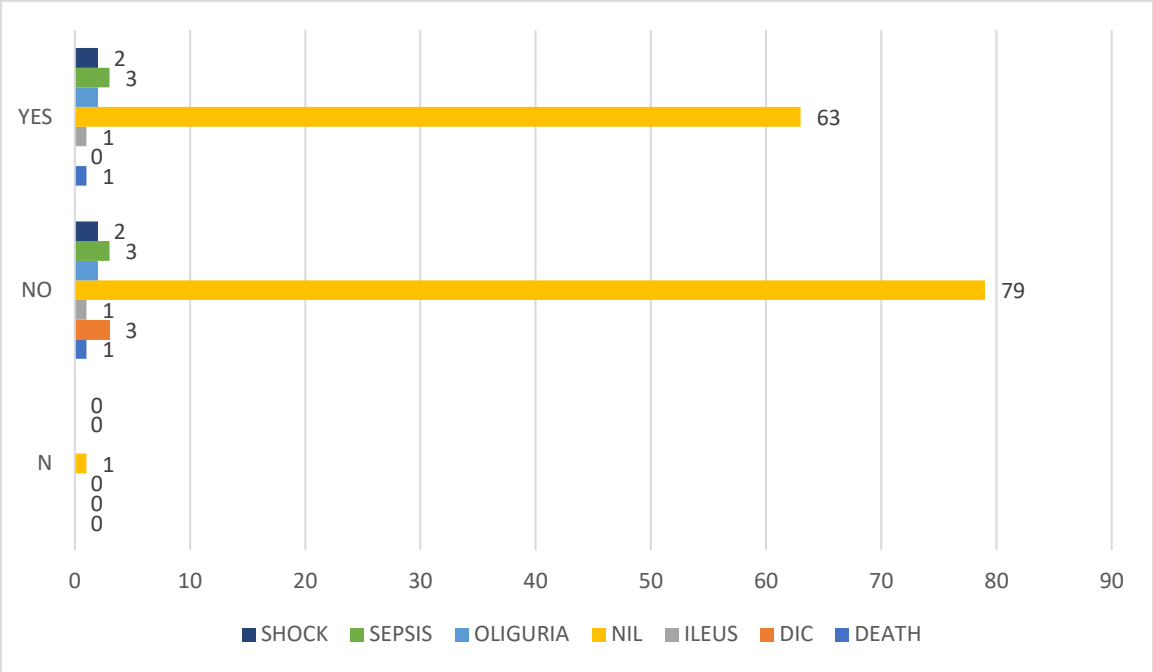
ANEMIA & COMPLICATIONS:

There is no significant association between complications &presence of anemia.

	COMPLICATIONS							
ANEMIA	**DEATH**	**DIC**	**ILEUS**	**NIL**	**OLIGURIA**	**SEPSIS**	**SHOCK**	**Total**
N	0	0	0	1	0	0	0	1
NO	1	3	1	79	2	3	2	91
YES	1	0	1	63	2	3	2	72
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
2.7876	12	0.9969



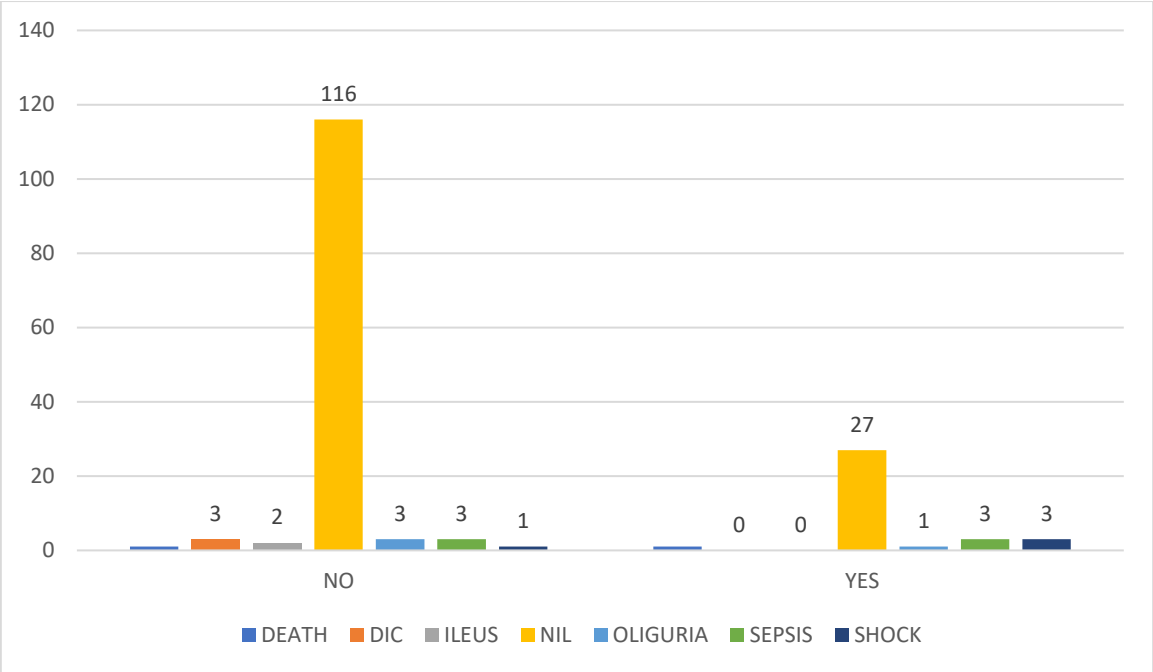
GDM & COMPLICATIONS:

There is no significant association between complications & presence of GDM.

	COMPLICATIONS							
GDM	**DEATH**	**DIC**	**ILEUS**	**NIL**	**OLIGURIA**	**SEPSIS**	**SHOCK**	**Total**
NO	1	3	2	116	3	3	1	129
YES	1	0	0	27	1	3	3	35
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
12.6789	6	0.0484



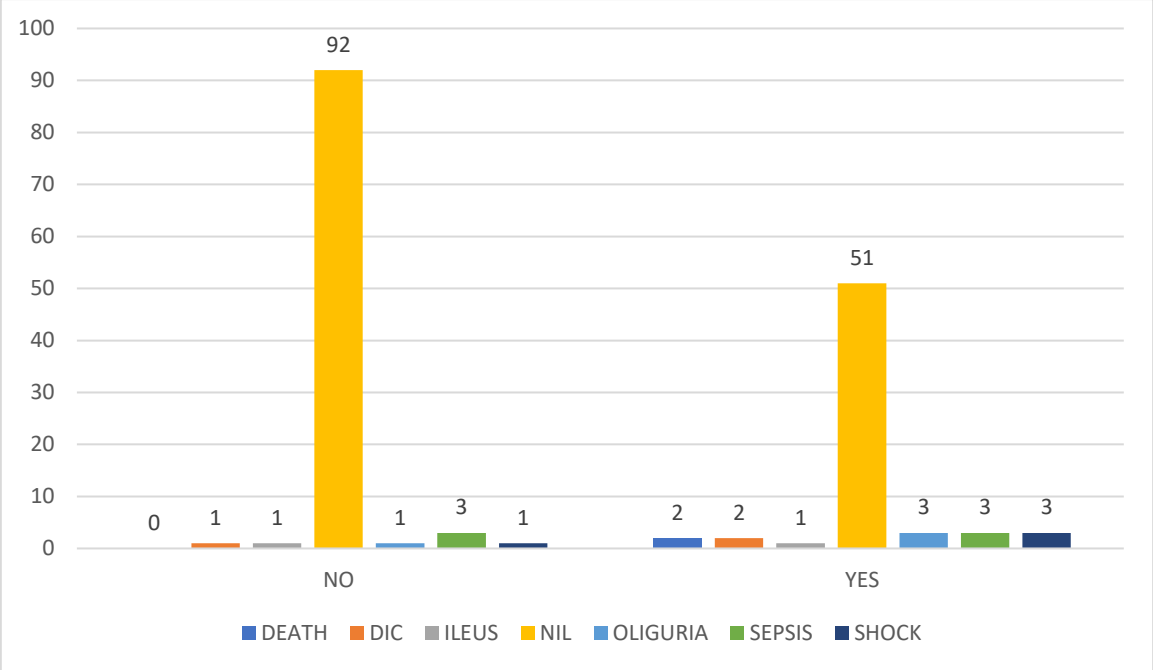
PIH& COMPLICATIONS:

There is no significant association between complications &presence of PIH.

	COMPLICATIONS							
PIH	**DEATH**	**DIC**	**ILEUS**	**NIL**	**OLIGURIA**	**SEPSIS**	**SHOCK**	**Total**
NO	0	1	1	92	1	3	1	99
YES	2	2	1	51	3	3	3	65
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
9.4458	6	0.15



HYDRAMNIOS & COMPLICATIONS:

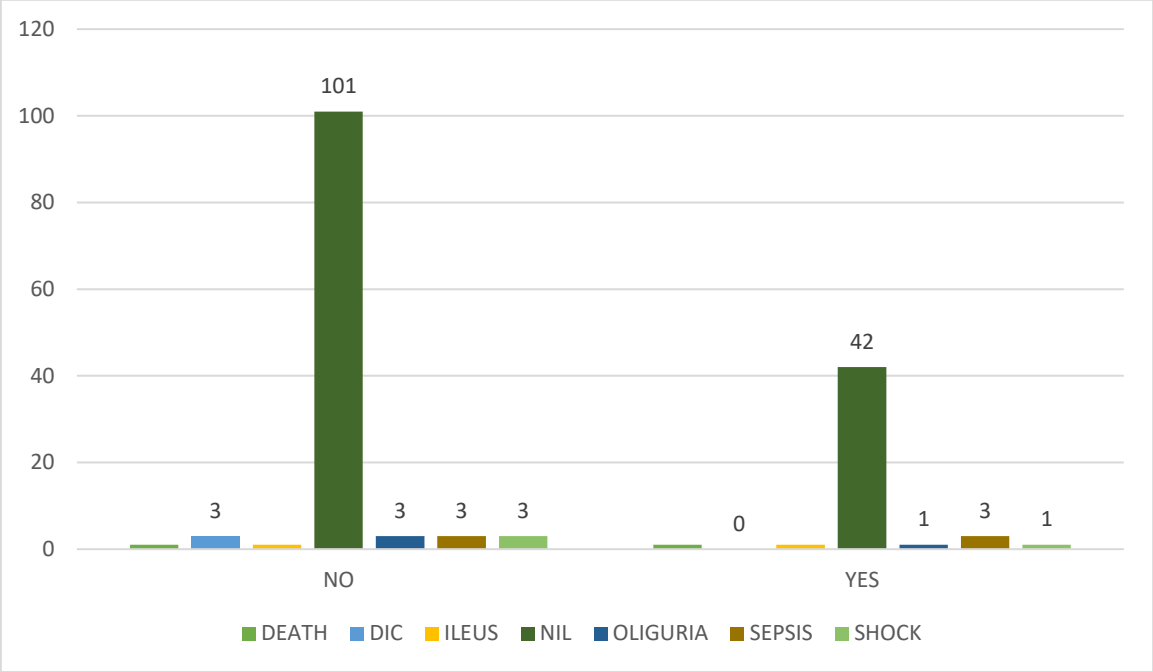
There is no significant associationbetween complications &presence of hydramnios.

	COMPLICATIONS	

HYDRAMNIONS	DEATH	DIC	ILEUS	NIL	OLIGURIA	SEPSIS	SHOCK	Total
NO	1	3	1	101	3	3	3	115
YES	1	0	1	42	1	3	1	49
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
3.4615	12	0.9913



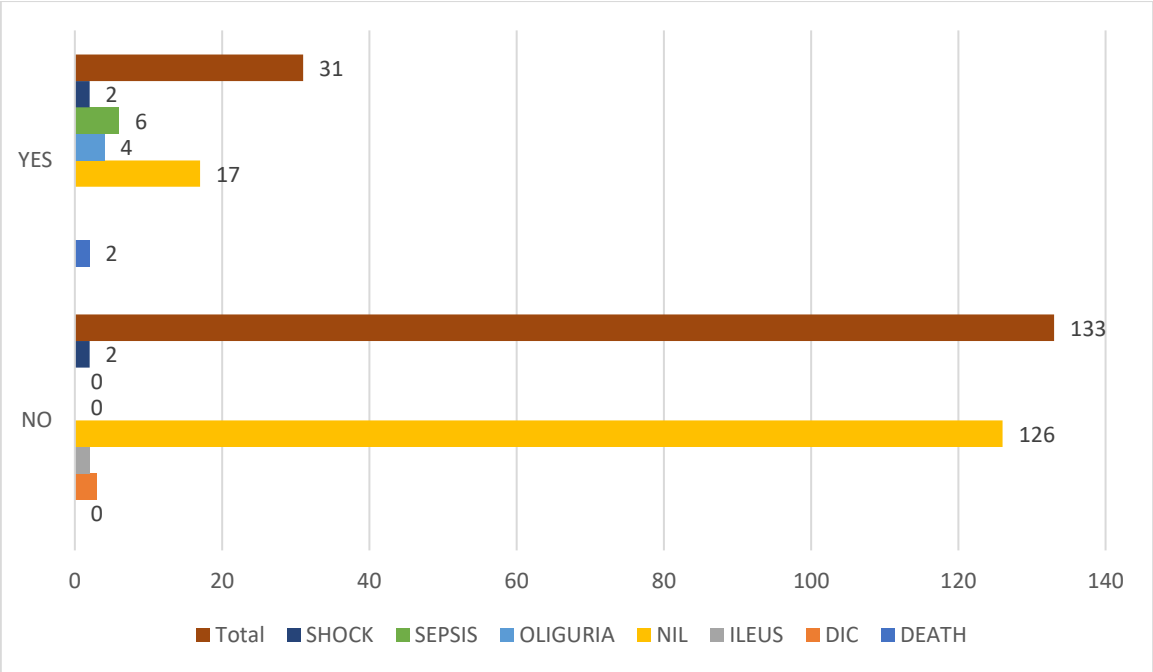
COMPLICATIONS & IMMUNOCOMPROMISED:

There is significant association in complications & immunocompromised status. More complications were seen in patients who are immunocompromised.

	COMPLICATIONS							
IMMUNOCROMPROMISED	DEATH	DIC	ILEUS	NIL	OLIGURIA	SEPSIS	SHOCK	Total
NO	0	3	2	126	0	0	2	133
YES	2	0	0	17	4	6	2	31
TOTAL	2	3	2	143	4	6	4	164

Single Table Analysis

Chi-Squared	df	Probability
59.9429	12	0



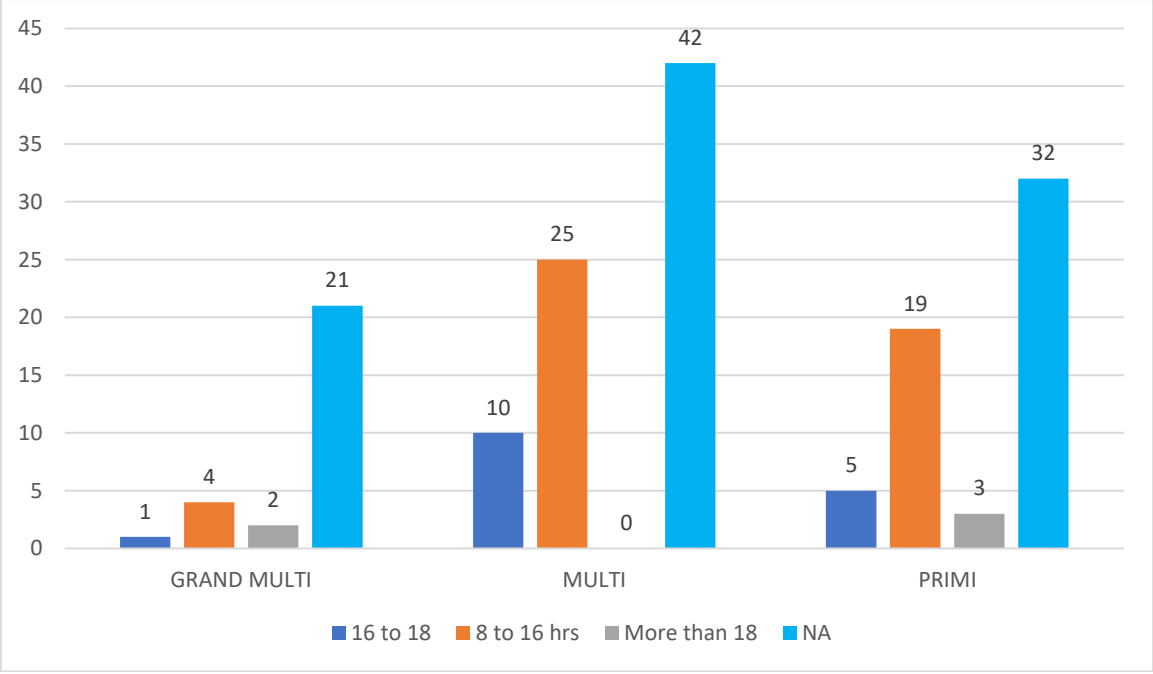
PARITY & DURATION OF LABOUR:

There is a significant association between parity & duration of labor.

	DURATION OF LABOUR				
PARITY	**16 to 18**	**8 to 16 hrs**	**More than 18**	**NA**	**Total**
GRAND MULTI	1	4	2	21	28
MULTI	10	25	0	42	77
PRIMI	5	19	3	32	59
TOTAL	16	48	5	95	164

Single Table Analysis

Chi-Squared	df	Probability
11.0001	6	0.0884



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