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A PROSPECTIVE OBSERVATIONAL STUDY ON INCIDENCE OF MATERNAL, PERINATAL OUTCOME AND ITS EFFECTS ON OLIGOHYDRAMNIOS DURING PREGNANCY IN TERTIARY CARE HOSPITAL

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ABSTRACT

Oligohydramnios or reduced amniotic fluid during pregnancy can be well-defined by an amniotic fluid index (AFI) that is below the 5th percentile for gestational age. Early detection and management can help, on the one hand, to reduce perinatal morbidity and mortality and, on the other hand, to reduce caesarean deliveries. To study the incidence and causes of oligohydramnios during pregnancy, its effects on maternal and perinatal outcomes, calculate the amniotic fluid index (AFI), find out the causes and maternal age group of having oligohydramnios, APGAR score, possible correlation between diet and oligohydramnios; stress and oligohydramnios. It is a hospital based, prospective, observational study conducted for a period of 6 months (November 2014 to April 2015) with a sample size (N=880) in third trimester, of which 80 participants were with oligohydramnios were selected after satisfying inclusion and exclusion criteria. Mean maternal age – 26 years. In our research, the incidence of oligohydramnios was higher in primipara (52%), and operative morbidity was higher in primipara as well. Most common cause of oligohydramnios is idiopathic (52%), secondly due to pregnancy induced hypertension (10%), and followed by patients with fetoplacental insufficiency (7%). Oligohydramnios is detected more often these days by performing obstetric ultrasonography routinely. According to our study we observed that many mothers were stressed about the baby. Every mother of oligohydramnios needs careful perinatal and

maternal monitoring, counseling; individualized decision regarding timing and mode of delivery, proper diet and medications to relieve stress can help in controlling the oligohydramnios.

Keywords: Amniotic Fluid Index (AFI), Appearance Pulse Grimace Activity Respiration (APGAR), Oligohydramnios, Pregnancy Induced Hypertension (PIH)

INTRODUCTION

Oligohydramnios is a disorder in which liquor amnii have a deficiency of less than 200 ml on a term basis. It is described in sonographic terms when the maximum vertical liquor pocket is less than 2 cm or when the amniotic fluid index (AFI) is less than 5 cm. Lower symphysiofundal height, fetal malpresentation and undue fetal parts prominence and decreased volumes of amniotic fluid are typical clinical characteristics. Amniotic fluid is a clear, slightly yellowish liquid that surrounds the fetus during pregnancy [1]. It is contained in the amniotic sac. The fluid is faintly alkaline with low specific gravity of 1.010. The volume of amniotic fluid is associated with gestational age [2]. After that, the volume decreases until it measures about 600-800 ml on a term basis. Oligohydramnios is a serious and widespread pregnancy complication and the occurrence of this is estimated to be between 1% and 5% of total pregnancies [3]. Maternal complications can be prolonged labor due to inertia, increased operative interference due to malpresentation ultimately leading to increased maternal

morbidity [4]. Abortions, deformity due to intra-amniotic adhesions, cord compression are the fetal complications. The present study has been done to know the calculate the amniotic fluid index in pregnant woman, Appearance, Pulse, Grimace, Activity, and Respiration (APGAR) score is any relation with oligohydramnios, find out the causes of oligohydramnios during pregnancy, maternal age group more chance to having oligohydramnios, correlation between diet, stress and oligohydramnios with incidence.

METHODS

Source of data

The patients were screened based on inclusion and exclusion criteria. Patients who satisfy the inclusion criteria were included in the study. Data was collected from patient case record such as demographics, present clinical status, maternal data and other information that explains the clinical progression of the patient.

Study site

The study was conducted after obtaining approval from Institutional Ethics Committee number **SVCP/IEC/15/3** and patient consent.

The study was carried out in three hospitals SVR Hospital, Varma hospital, Government General Hospital, Bhimavaram, November 2014 to May 2015

Study design

A hospital based non-experimental prospective observational study

Sample size

80 subjects were included in our study based on inclusion and exclusion criteria

Study duration

The study was conducted over a period of 6 months from November 2014 to May 2015.

Study Criteria

Inclusion Criteria

Pregnant woman with oligohydramnios taken as a case group and pregnant woman without oligohydramnios was taken as a control group and in this study second and third trimester pregnant woman was only included in the study. Gestational age 13-40 weeks, (taken for which gestational age group will have more chance to oligohydramnios), amniotic fluid index with <10, maternal age 18-35, any changes in APGAR score in oligohydramnios patients. For any associated conditions with oligohydramnios and the causes of oligohydramnios we considered patient occupation, type of diet, location, life style of the patients, feeling stress during pregnancy and parity of patient

Exclusion Criteria

The first trimester pregnant woman was excluded

Data analysis

The obtained results were tabulated and arranged on Microsoft excel 2007

Statistical analysis

In the statistical analysis the data was analyzed by using the software graph pad prism 6. By using this software percentages, mean, standard deviation were calculated and graphs were plotted.

RESULTS AND DISCUSSION

This study was to evaluate the incidence and causes of oligohydramnios during pregnancy and its effects on maternal and perinatal outcome

Demographic profile of the study population patients were divided into 6 groups depending on the ages i.e., 13-30,30-32,32-34,34-36,36-38,38-40 weeks respectively and percentage of patients in each group was calculated. Here more number of cases i.e; 38 cases were observed in the gestational age of 34-36 weeks with Oligohydramnios having a percentage of 10%.

In this study, patients were divided into 6 groups depending on ages i.e., 13-30,30-32,32-34,34-36,36-38,38-40 weeks respectively and their percentages were calculated. Among 80 patients, nearly

38(47.5%) in the group of 34-36 weeks followed by 23(28.75%) patients in the group of 36-38 weeks, 8(10%) patients in the group of 32-34 weeks and 5(6.25%) under 13-30 weeks. The least no. of patients were in the age group of 3(3.75%) in the age group of 30-32 weeks and 38-40 weeks. By calculating the distribution of cases in between the gestational age, mean=26.567, standard deviation=8.225 **(Table 1, Figure 1)**.

In this study we found that 22(27.5%) cases has greatest AFI 6cm and 3(3.75%) cases has least AFI i.e., <1cm, 1cm, 2cm, 8cm and 10cm. By calculating AFI, mean=5.00, standard deviation=3.316 **(Table 2, Figure 2)**.

In this study, distribution of done by birth weight. Among 80 cases it was found that 56(70%) of infants having birth weight of 2000-3000g followed by 16(20%) of infants having birth weight of >3000 and 7(8.75%) having birth weight of 1000-2000g, the least number of infants 1 (1.25), with birth weight of <1000. By calculating the distribution of infants by birth weight, mean=20.00, standard deviation=24.78, standard error=12.39 **(Table 3, Figure 3)**.

Demographic profiles of population were divided into 3 age groups i.e., 18-23, 24- 29, 30-35 years and percentage of patients in each group was calculated. Among 80 patients it was found that 37(46.25%) of cases fall in the group of 18-23 years followed by 32(40%) of patients fall in the age group of 24-29 years and 11(13.75%) under 30-35 years. When maternal age calculated along with percentages, mean=26.556, standard deviation=5.338 **(Table 4, Figure 4)**.

Among 80 cases, it was found that 54 (67.5%) fall in the primigravida and 26 (32.5%) were under multigravida. By calculating parity, mean =40.00, standard deviation =19.799 **(Table 5, Figure 5)**.

In overall 80 cases, the highest 42 (52.5%) with APGAR score 10 and least number is 0 with APGAR score of 1,4,6. By calculating the APGAR score and no. of cases with percentages mean=5.500, standard deviation=3.0276 **(Table 6, Figure 6)**.

In this study cases were divided according to their associated conditions and they were calculated along with percentages by calculating the associated conditions. Mean=2.846, standard deviation=2.115 **(Table 7, Figure 7)**.

Among 80 cases 2(2.5%) are vegetarians and 78(97.5%) are non vegetarians. It is calculated along with percentages mean=40.00, standard deviation=53.84 **(Table 8, Figure 8)**.

In this study the percentage of patients with Normal and L.S.C.S was calculated. Among 80 cases 75(93.75%) are with L.S.C.S delivary and 5(6.25%) with normal delivary. After calculating the mode of delivery, mean=40.00, standard deviation=49.50 **(Table 9, Figure 9)**.

Among 80 cases 74(92.5%) are house wife's and 6(7.5%) are job holders and they are calculated then mean=40.00, standard deviation=48.083 **(Table 10, Figure 10)**.

In this study term type delivery is divided into pre term, term, and post term. The highest no. of delivery 57 (71.25%) observed in term and followed by 14 (17.5%) are pre term. The least number of delivery 9(11.25%) under post term, when calculated the term type, mean=26.667, standard deviation=26.388 **(Table 11, Figure 11)**.

The baby condition is expressed by considering both NICU 9 (11.25%) admissions and Non NICU 71 (88.75%) admissions, when it is calculated mean=40.00, standard deviation=43.840 **(Table 12, Figure 12)**.

Table 1: Distribution of cases in between gestational age

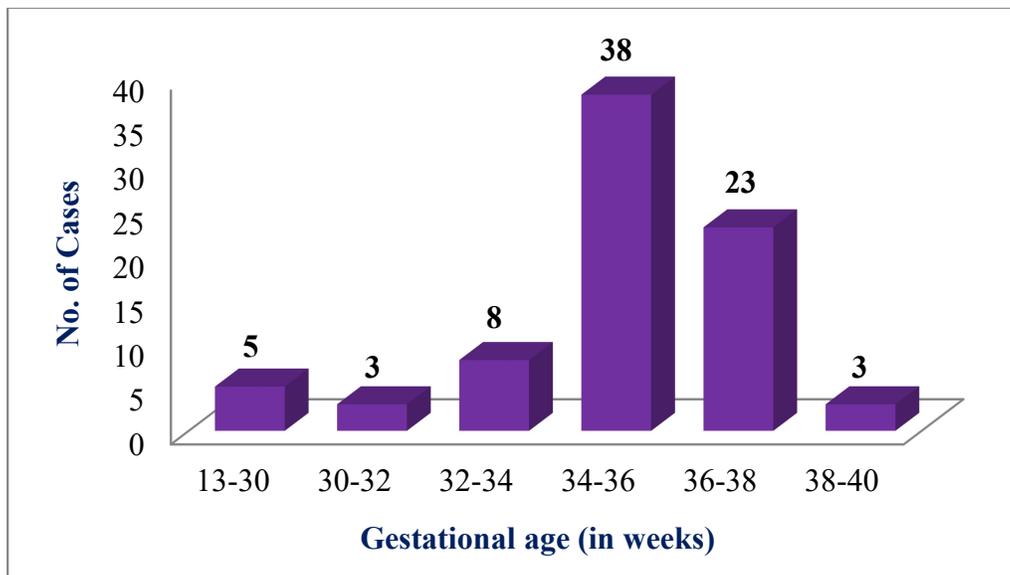| Gestational age in weeks	Number of cases	Percentage
13-30	5	6.25
30-32	3	3.75
32-34	8	10.0
34-36	38	47.5
36-38	23	28.75
38-40	3	3.75

Figure 1: Gestational age

Table 2: Depending on Amniotic Fluid Index (AFI)

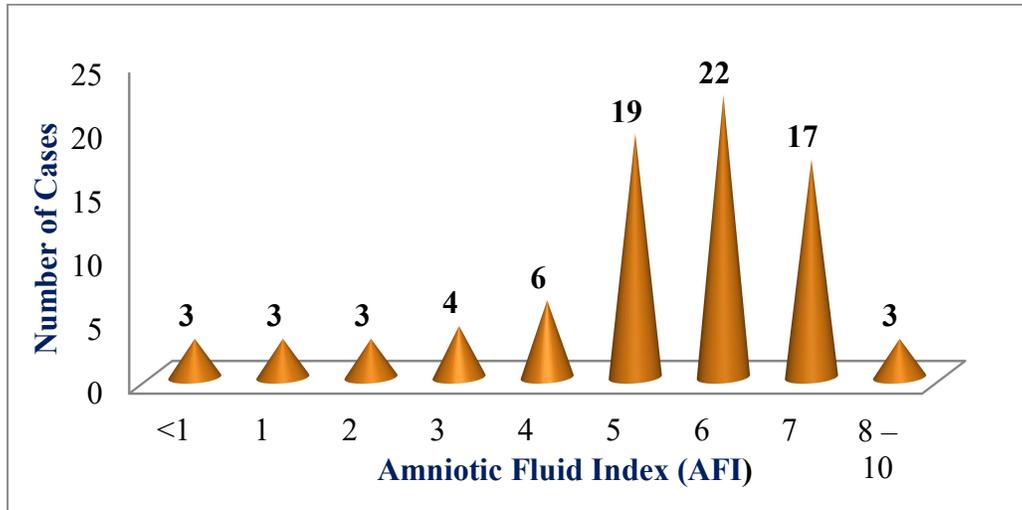| Amniotic Fluid Index (cm)	Number of cases	Percentage
<1	3	3.75
1	3	3.75
2	3	3.75
3	4	5.0
4	6	7.5
5	19	23.75
6	22	27.5
7	17	21.25
8 – 10	3	3.75

Figure 2: Amniotic Fluid Index

Table 3: Distribution of cases by birth weight

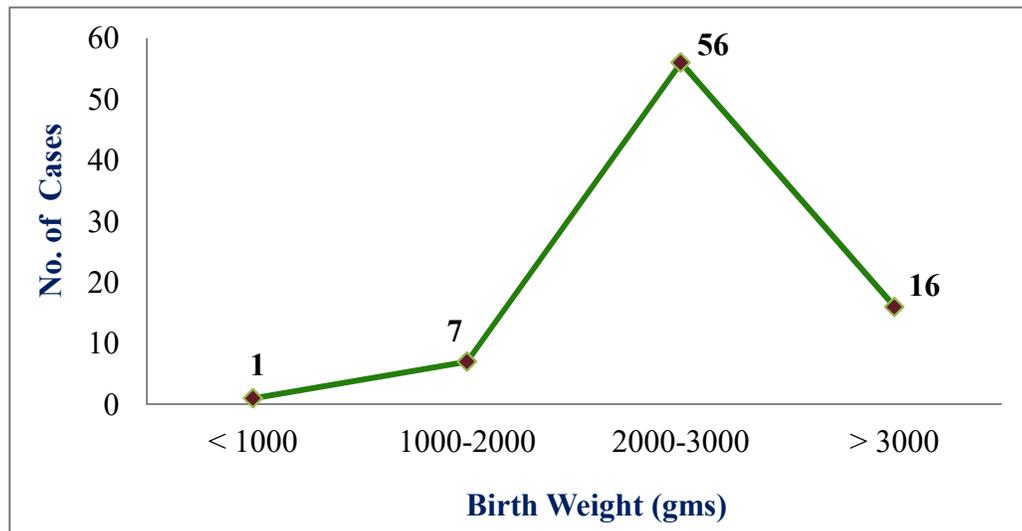| Birth weight (g)	Number of cases	Percentage
< 1000	1	1.25
1000-2000	7	8.75
2000-3000	56	70.0
> 3000	16	20.0

Figure 3: Birth weight

Table 4: Depending on the maternal age

Maternal age (Years)	Number of cases	Percentage
18-23	37	46.25
24-29	32	40.0
30-35	11	13.75
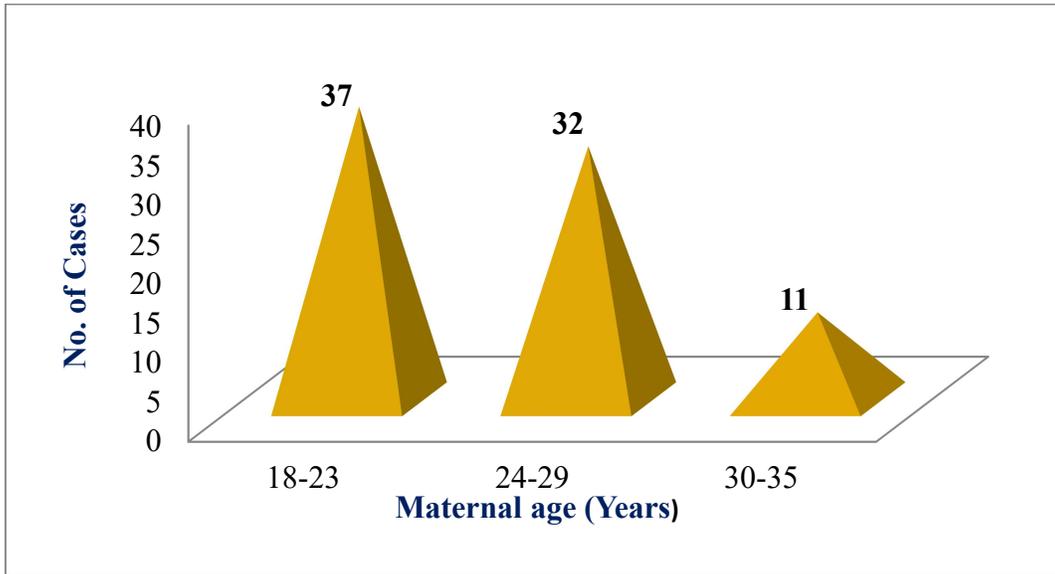
Figure 4: Maternal age

Table 5: Depending on parity

Parity	Number of cases	Percentage
Primigravida	54	67.5
Multigravida	26	32.5
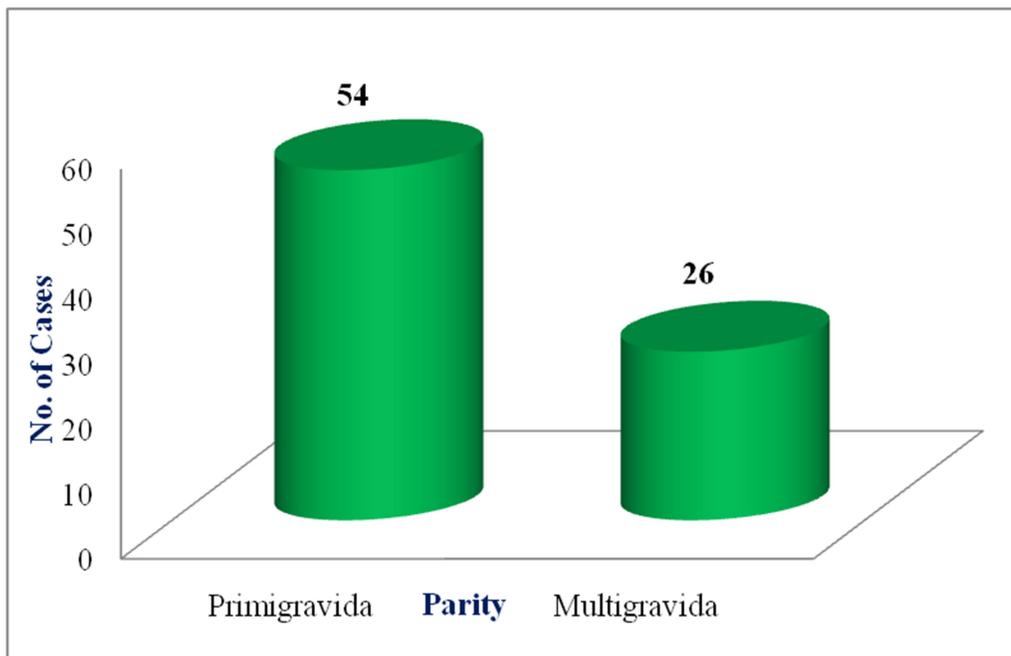
Figure 5: Parity

Table 6: Depending on APGAR Score

APGAR Score	Number of cases	Percentage
1	0	0
2	1	1.25
3	1	1.25
4	0	0
5	1	1.25
6	0	0
7	2	2.5
8	30	37.5
9	4	5.0
10	42	52.5
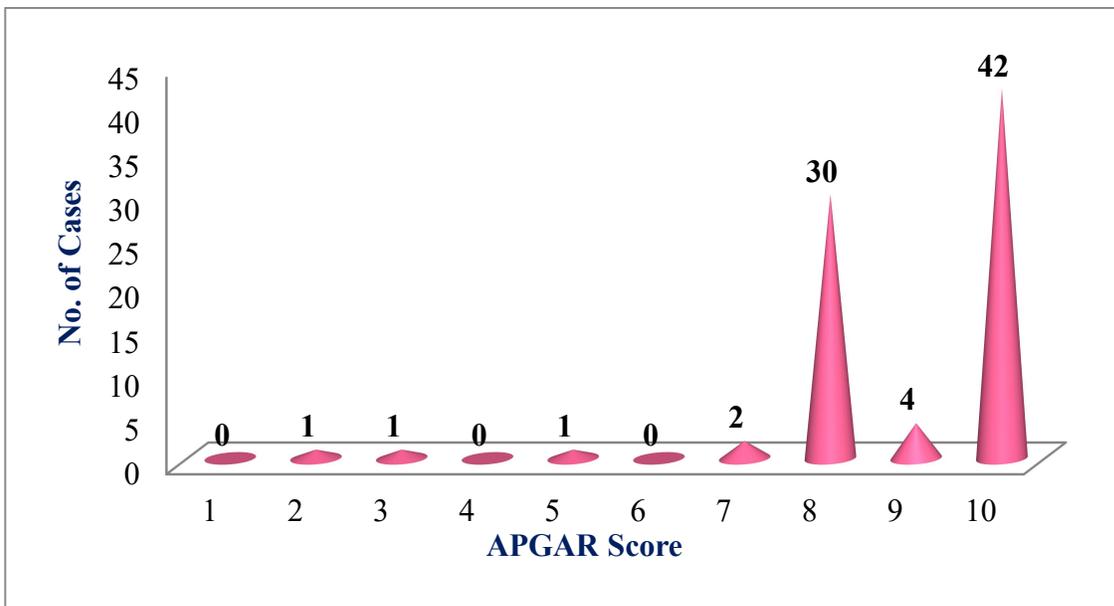
Figure 6: APGAR Score

Table 7: Depending on associated conditions

APGAR Score	Number of cases	Percentage
Pregnancy Induced Hypertension (PIH)	8	10
Postdate pregnancy	3	3.75
Intrauterine Growth Restriction (IUGR)	2	2.5
Thyroid Disorder	5	6.25
Fetal Anomalies	5	6.25
Heart Disease	1	1.25
Poly Cystic Ovarian Disease (PCOD)	1	1.25
Urinary Tract Infections (UTI)	4	5.0
Epilepsy	2	2.5
Anemia	1	1.25
Acute Gastroenteritis	1	1.25
Diabetes Mellitus (DM)	4	5.0
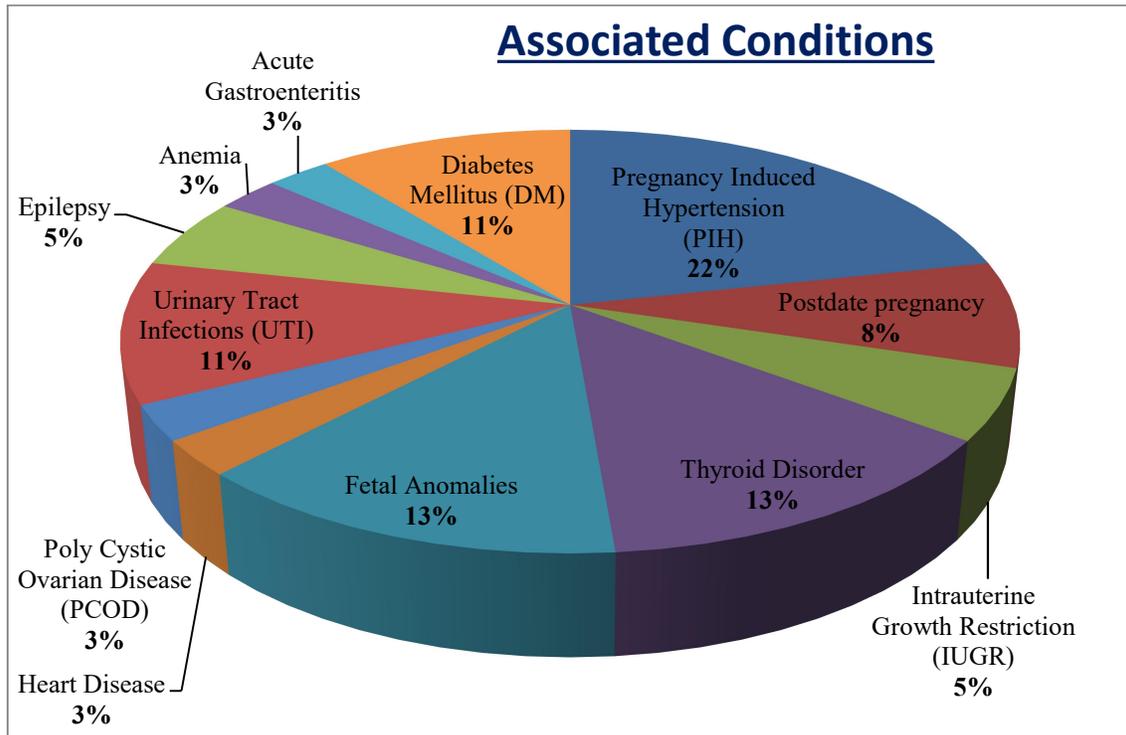
Figure 7: Associated conditions

Table 8: Depending on diet

Diet	Number of cases	Percentage
Vegetarian	2	2.5
Non-vegetarian	78	97.5
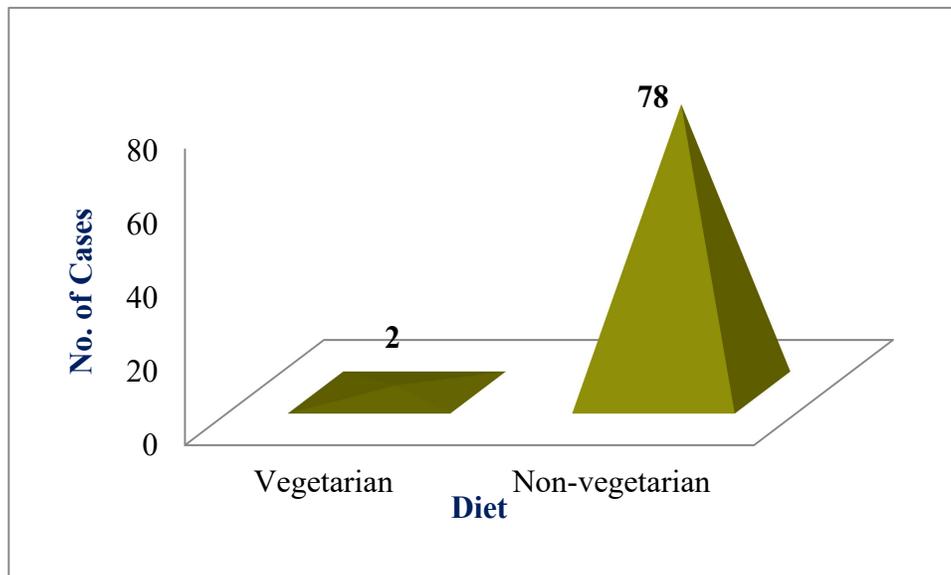
Figure 8: Diet

Table 9: Mode of Delivery

Mode of Delivery	Number of cases	Percentage
Spontaneous Vaginal Delivery (Normal)	5	6.25
Operative / Assisted Delivery (L.S.C.S)	75	93.75
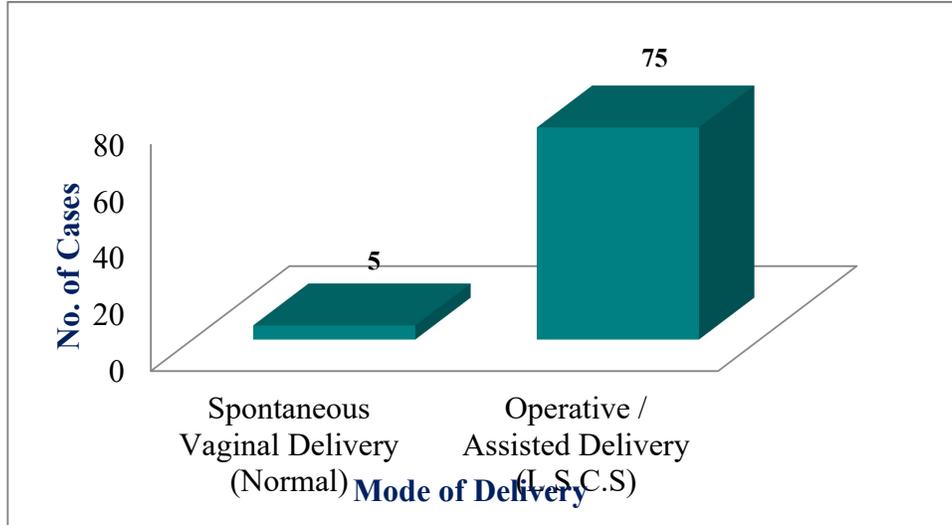
Figure 9: Mode of delivery

Table 10: Depending on occupation

Occupation	Number of cases	Percentage
House wives	74	92.5
Job holders	6	7.5
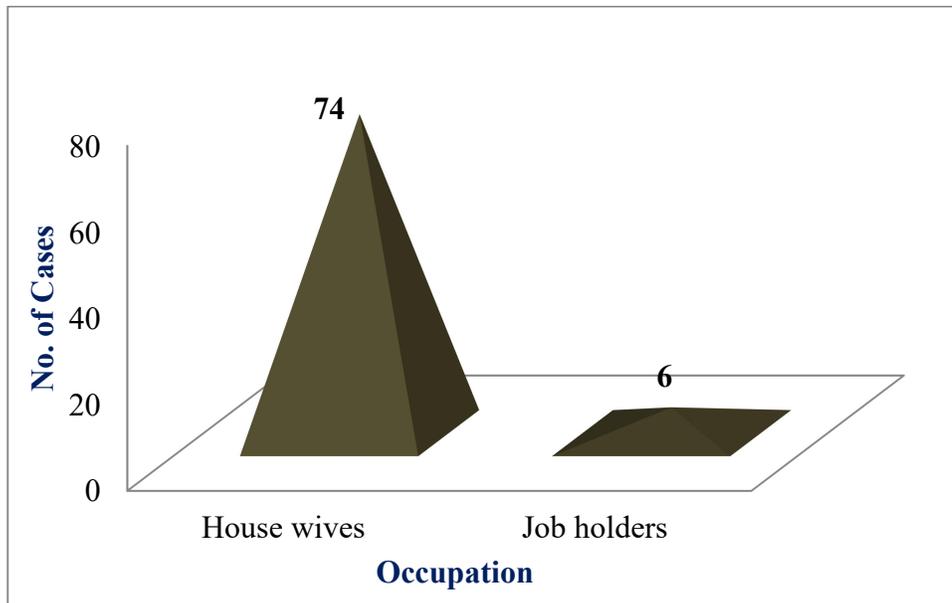
Figure 10: Occupation

Table 11: Based on term type

Term type	Number of cases	Percentage
Pre term	14	17.5
Term	57	71.25
Post term	19	11.25
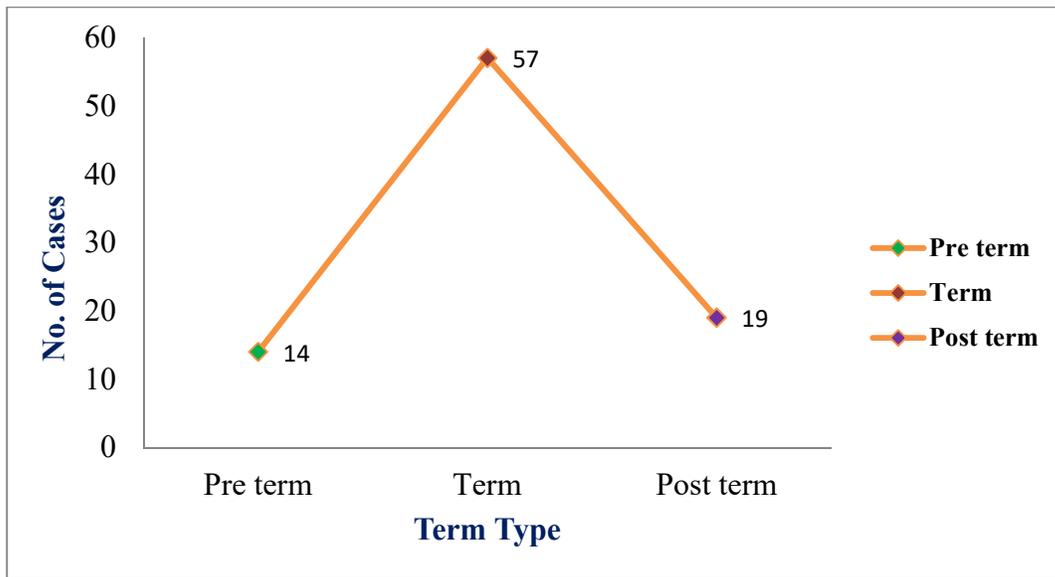
Figure 11: Term type

Table 12: Depending on baby condition

Baby Condition	Number of cases	Percentage
NICU admission	9	11.25
Non-NICU admission	71	88.75

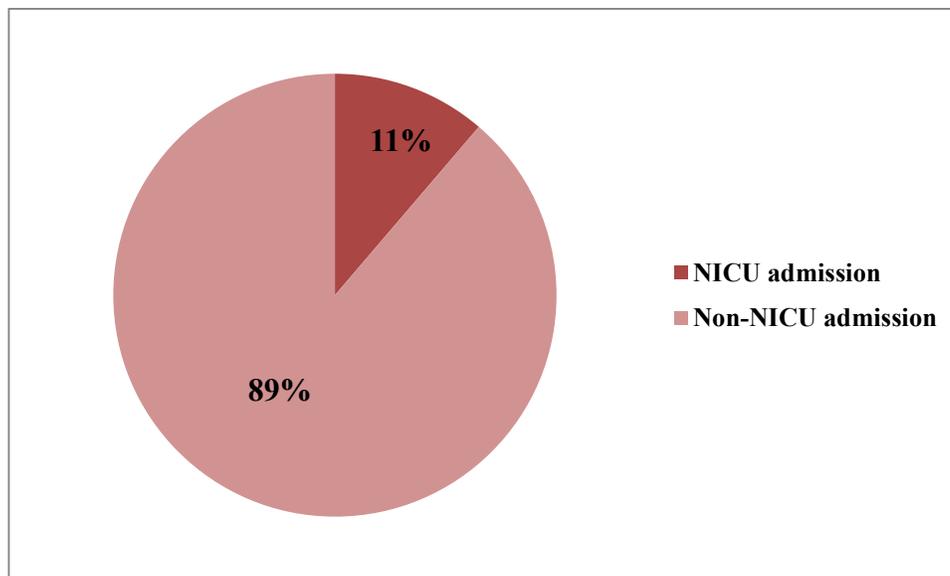**Figure 12: Baby condition**

Table 13: Oligohydramnios and Non-oligohydramnios

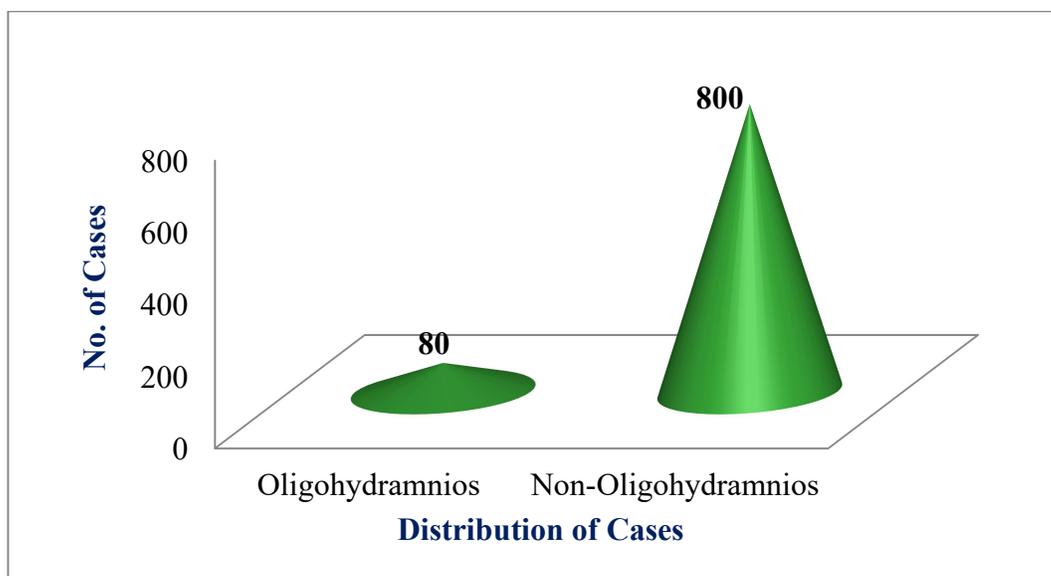| Distribution of cases	Number of cases	Percentage
Oligohydramnios	80	9.1
Non-Oligohydramnios	800	90.9

Figure 13: Oligohydramnios and Non-oligohydramnios

In the present study, total numbers of cases collected were 880. In that 80 cases are oligohydramnios and 800 cases with non-oligohydramnios. By calculating the distribution of cases between the oligohydramnios and non-oligohydramnios, mean=440, standard deviation=509.117. In study, vidyadhar, *et al*, in the 20-29 age range, 78 percent of women with oligohydramnios **(Table 13, Figure 13)**. The mean maternal age of (± SD) was 22.8 ± 4.2 years. By gestational age, 22% of women were in the 34-36 week gestational age group, followed by 20% of women in the 38-40 and >40 week gestational age group. The mean gestational age was approximately 36.7 ± 4.1 weeks. By parity, 54% women were primigravidas followed by 46%

multigravidas, postdated pregnancy (16%), pregnancy induced hypertension (16%), and anhydramnios (10%) were commonly seen in women with oligohydramnios. As regards to mode of delivery, it was observed that, 56% had spontaneous vaginal delivery and 44% had operative/assisted delivery. Similar study by Jun Zhang *et*. al., Everett F *et al*., Casey B *et al*. Iffath *et al*. The mean gestational age was 38.1 ± 3.3 weeks, 37.5 ± 2 weeks, 34.3 ± 2.1 weeks and 36.3 ± 2 weeks, respectively (mean ± SD) **[7-10]**. These findings indicate that the problem of oligohydramnios was more common in the later part of pregnancy. It is mainly due to physiological or pathological causes of reduced placental perfusion near term. Kalavathi *et al*, similar study, 22 out of the

58 patients 38% had vaginal delivery and 36 patients (62%) underwent lower segment caesarean section. The most common indication was fetal distress 42% followed by intra uterine growth retardation 18% and failed induction 13.4% **[11]**.

CONCLUSION

Due to regularly performed obstetric ultrasonography, the presence of oligohydramnios is observed more frequently these days. Pregnancy induced hypertension and fetal anomalies, diabetes mellitus, thyroid disorders, urinary tract infections, postdated pregnancies are during the second and third trimesters of pregnancy, the most common causes of decreased amniotic fluid. Generally anomalies of the fetal renal system are responsible for oligohydramnios in second and third trimester. The mode of delivery of these cases depends on severity of oligohydramnios and status of fetal wellbeing. While observing APGAR score of babies who's mothers having oligohydramnios, the APGAR score of babies less effected due to early detection and treatment. Babies are relatively more prone for certain complications like NICU admissions due to fetal distress. Perinatal adverse outcome can be avoided by careful intrapartum fetal heart rate monitoring. Every case of oligohydramnios needs careful perinatal, maternal monitoring, counseling, individualized decision regarding timing and mode of delivery, more cases of oligohydramnios undergone caesarian section. While observing oligohydramnios cases they feel more stress about their baby. The incidence of oligohydramnios in Bhimavaram is 9.1%. Continuous intrapartum fetal monitoring and good neonatal care are necessary for better perinatal outcome and maternal outcome. Proper diet and stress relief meditation is helpful for to control oligohydramnios.

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