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FREQUENCY OF PERINATAL OUTCOME IN WOMEN WITH OLIGOHYDRAMNIOS

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Abstract

Background: *Reduced amniotic fluid volume or oligohydramnios is a serious obstetric condition that makes managing pregnancy more difficult especially if it is discovered close to term. It frequently results in interventions like labor induction and is linked to increased prenatal monitoring. Due to variations in study settings and diagnostic criteria reported prevalence varies greatly between populations. Early detection and appropriate treatment are crucial because oligohydramnios has been associated with poor outcomes for both mothers and newborns.*

Objective: *To find out how frequently pregnant women with oligohydramnios experience unfavorable perinatal outcomes.*

Methodology: *A descriptive cross-sectional study was conducted in the Department of Obstetrics and Gynecology at Shaheed Mohtarama Benazir Bhutto Medical University (SMBBMU) Larkana Pakistan over a six-month period from January 31 to July 30 2023. Informed consent was obtained before pregnant women who fit the inclusion criteria were enrolled. An ultrasound evaluation of the amniotic fluid index was used to diagnose oligohydramnios. Data on mothers and newborns that were pertinent were methodically collected and examined.*

Results: *The participant's ages ranged from 20 to 45 with a median age of 27. There was a range of 37 to 42 weeks of gestation. Meconium-stained liquor caesarean delivery breech presentation intrauterine growth restriction low Apgar scores admissions to the neonatal intensive care unit and low birth weight were common perinatal outcomes. Premature rupture of membranes vaginal delivery stillbirth and neonatal mortality were linked to a high percentage of cases.*

Conclusion: *High rates of unfavorable perinatal outcomes including stillbirth and vaginal delivery were linked to oligohydramnios. These were followed by premature rupture of membranes and neonatal death. To strengthen clinical management techniques and confirm these results larger multicenter studies are advised.*

INTRODUCTION

A sufficient volume of amniotic fluid is essential for healthy fetal development because it supports lung maturation during pregnancy cushions the fetus and reduces the risk of umbilical cord compression [1]. A significantly lower volume is linked to unfavorable pregnancy outcomes even though the amount of amniotic fluid typically varies with gestational age. An amniotic fluid

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volume of less than 500 ml between 32 and 36 weeks of gestation is known as oligohydramnios a dangerous obstetric condition that can be accurately diagnosed by ultrasound in the late second or third trimester [2]. Nearly half of cases of oligohydramnios occur during the second trimester due to fetal abnormalities and severe or fatal congenital malformations may cause significant fluid loss because of fetal anuria. Amnioinfusion has been demonstrated to enhance sonographic visualization in such circumstances especially of the fetal urinary tract by momentarily increasing the volume of amniotic fluid [3]. In pregnancies complicated by non-lethal fetal anomalies this method may also help extend pregnancy and enhance perinatal outcomes [4]. Pulmonary hypoplasia is still a significant factor limiting neonatal survival despite the fact that standard obstetric management usually involves the use of corticosteroids to improve fetal lung maturity and antibiotics to prolong latency. When pre-viable iatrogenic preterm prelabor rupture of membranes occurs the amniopatch procedure has been shown to improve neonatal survival and reduce skeletal abnormalities [5]. Meconium-stained amniotic fluid [6] breech presentation [7] higher rates of cesarean deliveries stillbirth intrauterine growth restriction [8] low Apgar scores admission to the neonatal intensive care unit low birth weight induction of labor vaginal delivery premature rupture of membranes and neonatal death [9] are just a few of the adverse perinatal outcomes associated with oligohydramnios. This study was carried out to assess the severity of perinatal outcomes linked to oligohydramnios in our population due to the scarcity of local data. By promoting early detection prompt management and better prenatal care region-specific evidence generation may help prevent unfavorable perinatal outcomes.

Methodology:

A descriptive cross-sectional study was conducted at the Department of Obstetrics and Gynecology Shaikh Zaid Women Hospital Shaheed Mohtarama Benazir Bhutto Medical University Larkana after the research summary was approved. The study ran from January 31 to July 30 2023 a span of six months. Using the Raosoft formula $n = z^2p(1-p)/e^2$ the sample size was determined and 151 pregnant women with oligohydramnios were included. With a precision level of 6% the computation was based on the lowest recorded percentage of breech presentation (17%). Using a non-probability consecutive sampling method participants were recruited. The study included pregnant women between the ages of 20 and 45 regardless of parity whose gestational ages ranged from 37 to 42 weeks based on the last menstrual cycle and decreased amniotic fluid volume. After reviewing medical records women with documented fetal chromosomal or uterine abnormalities—such as renal anomalies gestational diabetes Rh incompatibility multiple pregnancies or pre-existing medical conditions like hepatic cancer cardiopulmonary disorders or renal insufficiency—were excluded. The College of Physicians and Surgeons Pakistans Research and Ethics Unit granted approval and each participant provided written informed consent. An experienced sonologist with more than five years of clinical experience used ultrasonography to assess the amniotic fluid index and operational guidelines were followed to define oligohydramnios. A thorough clinical history physical examination pertinent investigations and record verification were carried out in order to reduce bias. Under the guidance of a senior obstetrician the principal investigator carried out all study procedures. Data on perinatal outcomes and maternal risk factors were recorded on a structured proforma and SPSS version 22 was used for analysis. For categorical variables descriptive statistics were used to compute frequencies and percentages for continuous variables the mean with standard deviation or median with interquartile range were used. Kurtosis and skewness were used to evaluate the datas normality. Control effect modifiers were stratified and post-stratification analysis was performed at a 95 percent confidence level using either Fishers exact test or Chi-square with a p-

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value of ≤0. 05 being deemed statistically significant.

RESULTS:

The participant's average maternal age was 28. 93 years with a standard deviation of 6. 00 years. The study population varied by 12. 58 kg with an average body weight of 76. 77 kg. A mean height of 169. 05 cm and a standard deviation of 7. 98 cm were found. With a standard deviation of 4. 12 kg/m² the average body mass index was 26. 87 kg/m² indicating variation in the nutritional status of mothers. The majority of participants were near term at the time of assessment as evidenced by the mean gestational age at presentation of 39. 46 weeks with a standard deviation of 1. 49 weeks.

Table 1.0 Descriptive Statistics of Maternal and Obstetric Variables

Variable (Unit)	Mean ± Standard Deviation
Maternal age (years)	28.93 ± 6.00
Weight (kg)	76.77 ± 12.58
Height (cm)	169.05 ± 7.98
Body mass index (kg/m²)	26.87 ± 4.12
Gestational age (weeks)	39.46 ± 1.49

According to Figure 1. 0 81 people were found to have hypertension whereas the remaining 70 participants had no history of the condition. This distribution shows that in comparison to people with normal blood pressure a slightly higher percentage of the study population had elevated blood pressure.

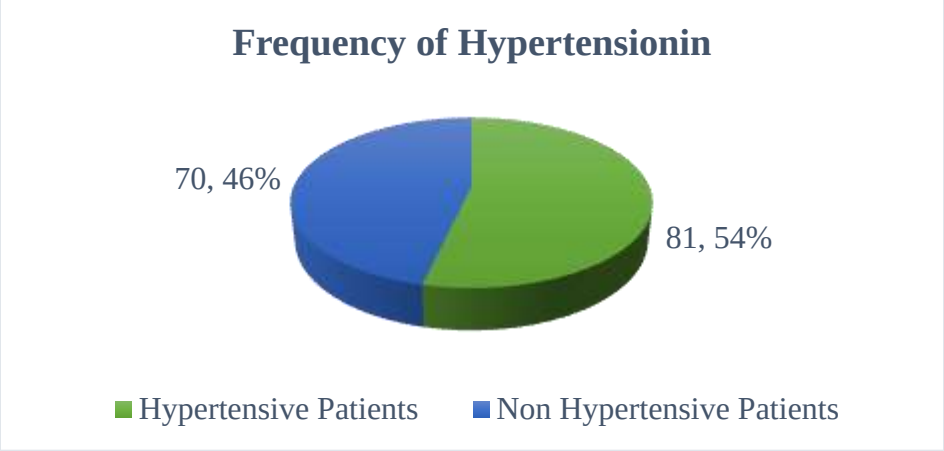

Figure 1.0 Distribution of Hypertensive and Non-Hypertensive Patients in the Study Population

One-fifth (20%) of the study population as depicted in figure 2. 0 smoked while the majority (80%) did not. This suggests that tobacco use was present in a comparatively small percentage of participants in comparison to those who did not smoke.

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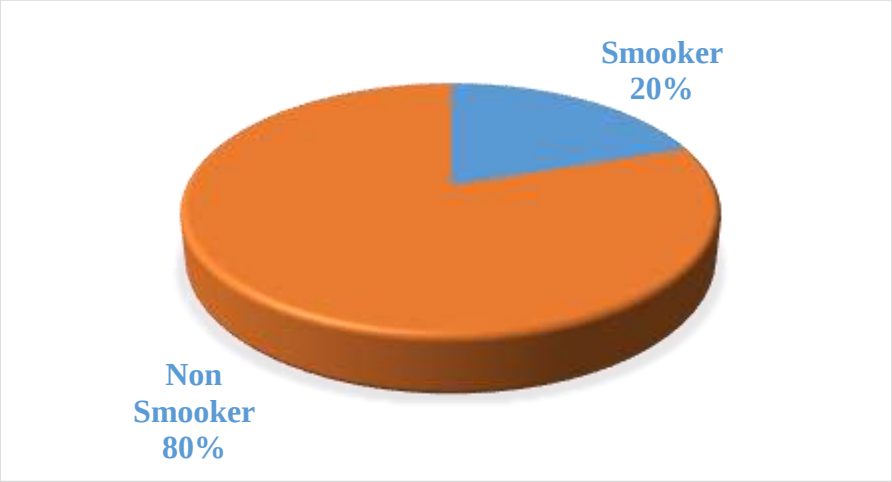

Figure 2.0 Smoking Status of the Study Participants

Thirty-five percent of the total participants were classified as obese while sixty-five percent were classified as non-obese (table 3. 0). According to this distribution a greater percentage of the study population was classified as non-obese as obese.

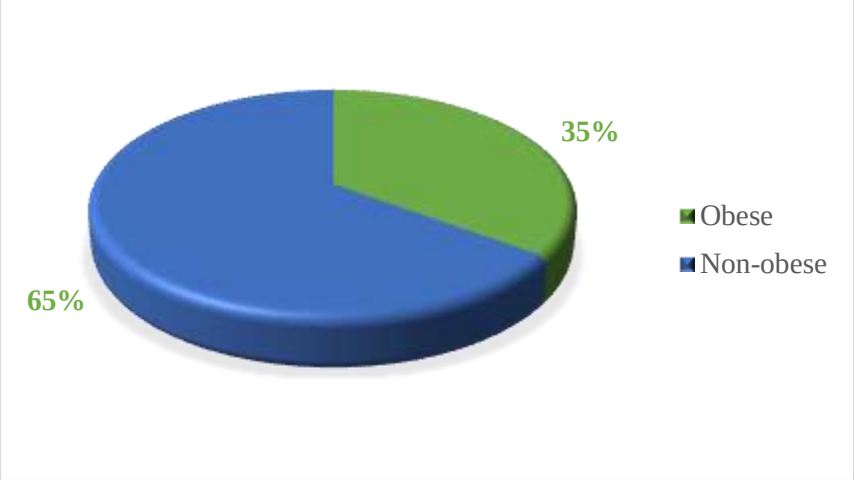

Figure 3.0 Distribution of Obese and Non-Obese Participants in the Study Population

Table 4. 0 shows that while 25% of the study population was found to be anemic the majority of patients (75%) were not.

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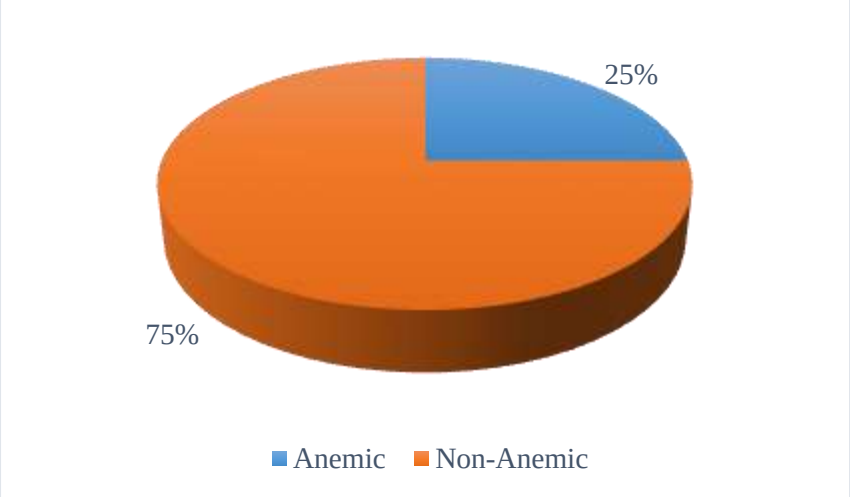

Figure 4.0 Distribution of Anemia Status among the Study Participants

The distribution of participants by diabetes status is displayed in Table 5, 0 which shows that 28% of the study population had diabetes and 72% did not.

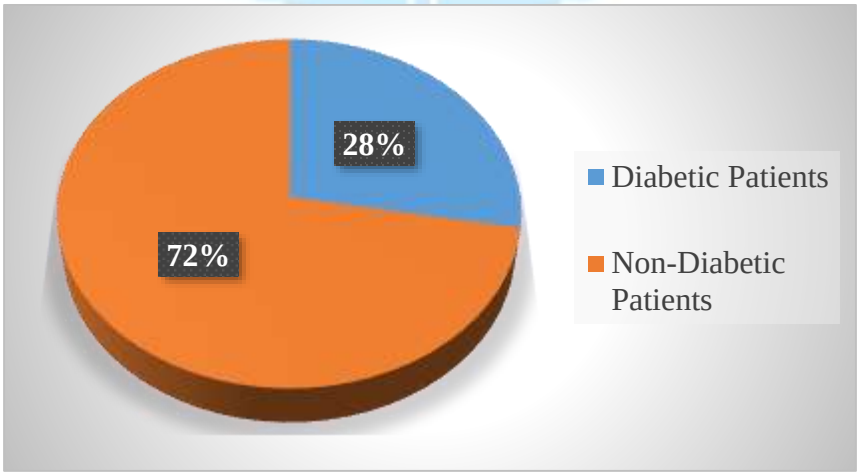

Figure 5.0 Percentage Distribution of Diabetic and Non-Diabetic Participants

Among 151 participants the frequency of perinatal outcomes is shown in Table 2. 0. 31. 8% of cases had amniotic fluid stained with meconium whereas 68. 2% had clear liquor. 15. 9% of deliveries had breech presentation while the majority had cephalic presentation. In 36. 4 percent of cases a cesarean section was performed while 63. 6 percent of deliveries were vaginal. 36. 4 percent of cases resulted in live births whereas 63. 6 percent of cases were reported to be stillbirths. Of the neonates 72. 2 percent had normal growth and 27. 8 percent had intrauterine growth retardation. Of the newborns 76. 8% had satisfactory Apgar scores while 23. 2% had low scores. Of the neonates 58. 3 percent needed to be admitted to the NICU whereas 41. 7 percent did not. Sixty-two percent of babies had low birth weights, while thirty-seven percent had normal birth weights. Forty-five percent of the newborns died and fifty-five percent survived. Nearly half of the cases (49. 0%) had premature membrane rupture, while the remaining 51. 0% had intact membranes.

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Table 2.0 Frequency of Perinatal Outcomes

Perinatal Outcome (n=151)	Yes, n (%)	No, n (%)
Meconium-Stained Amniotic Fluid	48 (31.8%)	103 (68.2%)
Breech Presentation	24 (15.9%)	127 (84.1%)
Cesarean Section	55 (36.4%)	96 (63.6%)
Stillbirth	96 (63.6%)	55 (36.4%)
Intrauterine Growth Retardation (IUGR)	42 (27.8%)	109 (72.2%)
Low Apgar Score	35 (23.2%)	116 (76.8%)
NICU Admission	88 (58.3%)	63 (41.7%)
Low Birth Weight	95 (62.9%)	56 (37.1%)
Vaginal Delivery	96 (63.6%)	55 (36.4%)
Neonatal Death	68 (45.0%)	83 (55.0%)
Premature Rupture of Membranes	74 (49.0%)	77 (51.0%)

The relationship between prenatal care status and perinatal outcomes is shown in Table 3. 0. Meconium-stained amniotic fluid was reported in 20. 8% of non-booked mothers and 29. 2% of booked mothers with no discernible difference between the two groups. Both the rate of cesarean sections and the incidence of breech presentations were comparable between cases that were scheduled and those that were not. Prenatal care status and stillbirth were found to be statistically significantly correlated with higher rates among booked mothers compared to non-booked mothers (p = 0. 044). Prenatal care status did not significantly correlate with intrauterine growth retardation NICU admission low birth weight vaginal delivery neonatal death or premature rupture of membranes.

Table 3.0 Association between Antenatal Care Status and Perinatal Outcomes

Perinatal Outcome	Booked Antenatal Care n (%)	Non-Booked Antenatal Care n (%)	p-value
Meconium-Stained Amniotic Fluid	Yes: 38 (29.2%) No: 75 (72.8%)	Yes: 10 (20.8%) No: 28 (79.2%)	0.402
Breech Presentation	Yes: 18 (75.0%) No: 95 (74.8%)	Yes: 6 (25.0%) No: 32 (25.2%)	0.984
Cesarean Section	Yes: 43 (78.2%) No: 70 (72.9%)	Yes: 12 (21.8%) No: 26 (27.1%)	0.473
Stillbirth	Yes: 77 (80.2%) No: 36 (65.5%)	Yes: 9 (19.8%) No: 19 (34.5%)	0.044
Intrauterine Growth Retardation	Yes: 35 (83.3%) No: 78 (71.6%)	Yes: 7 (16.7%) No: 31 (28.4%)	0.135
NICU Admission	Yes: 64 (72.7%) No: 49 (77.8%)	Yes: 24 (27.3%) No: 14 (22.2%)	0.481
Low Birth Weight	Yes: 70 (73.7%) No: 43 (76.8%)	Yes: 25 (26.3%) No: 13 (23.2%)	0.671
Vaginal Delivery	Yes: 70 (72.9%) No: 43 (78.2%)	Yes: 26 (27.1%) No: 12 (21.8%)	0.473

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Neonatal Death	Yes: 52 (76.5%) No: 61 (73.5%)	Yes: 16 (23.5%) No: 22 (26.5%)	0.675
Premature Rupture of Membranes	Yes: 57 (77.0%) No: 56 (72.7%)	Yes: 17 (23.0%) No: 21 (27.3%)	0.543

DISCUSSION:-

Oligohydramnios, which is frequently associated with impaired placental function has been linked to low Apgar scores post-term pregnancy meconium aspiration syndrome increased perinatal morbidity and mortality and an increased risk of caesarean section due to fetal distress [10]. Preterm premature rupture of membranes (PROM) intrauterine growth restriction (IUGR) diabetes mellitus hypertensive disorders congenital malformations and other maternal or fetal conditions frequently coexist with oligohydramnios [11]. Unfavorable fetal outcomes are more likely when any of these conditions are present. Therefore it is still unclear whether poor perinatal outcomes are mostly caused by coexisting complications or are only the result of decreased amniotic fluid volume. Depending on population characteristics and diagnostic criteria the reported prevalence of oligohydramnios varies from 0. 5 percent to 5 percent worldwide [12]. Amniotic fluid is mostly produced by the placenta and fetal membranes in the early stages of pregnancy but after 18 weeks of gestation fetal renal function takes over as the main source. As a result it is generally accepted that placental insufficiency is a major cause of oligohydramnios at term. However a number of studies have shown that isolated oligohydramnios in otherwise straightforward term pregnancies is not a reliable indicator of fetal compromise [13] and changes in amniotic fluid volume close to term may be due to increased renal reabsorption rather than pathology [14]. Oligohydramnios can occur alone or in conjunction with conditions affecting both the mother and the fetus including congenital abnormalities hypertension PROM and fetal growth restriction. Although unfavorable outcomes in related cases are typically associated with the underlying pathology it is still unknown how isolated oligohydramnios progresses and what its clinical significance is. While physiological maturation of the fetal renal system may also contribute through increased fluid absorption decreased placental efficiency has been proposed as a major cause of decreased amniotic fluid volume in post-term pregnancies [15]. Apart from the effects on the fetus oligohydramnios has been associated with higher rates of maternal morbidity mainly because of labor induction and surgical delivery. Obstetric care often includes elective caesarean sections or labor induction to improve perinatal outcomes [16]. There are differences between early-onset and late-onset oligohydramnios in terms of causes treatment and results. Research indicates that the amniotic fluid index is not a reliable indicator of poor perinatal outcomes on its own [17]. Although oligohydramnios frequently has no known cause it can be linked to conditions like PROM placental insufficiency and chromosomal or structural abnormalities. According to a large amount of research oligohydramnios is typically associated with a higher risk of unfavorable pregnancy outcomes [18]. Nevertheless there is ongoing discussion about whether isolated oligohydramnios has an independent impact on perinatal outcomes. Non-reassuring fetal heart rate (NRFHR) lower Apgar scores and an increase in neonatal intensive care unit (NICU) admissions have all been linked to higher rates of caesarean delivery according to some studies [19]. On the other hand other studies have found that pregnancies complicated by isolated oligohydramnios and those with normal amniotic fluid volumes have similar perinatal outcomes [20]. Additionally it has been suggested that rather than oligohydramnios itself the higher rates of unfavorable outcomes in isolated oligohydramnios may be the consequence of more medical procedures like labor induction and caesarean sections [21]. Higher rates of congenital defects perinatal morbidity and mortality and pregnancy complications have all been linked to oligohydramnios. The current

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studys findings are in line with those of several other international studies. The gestational age range in this study was 37 to 42 weeks with a median of 40. On the other hand a different study recorded a gestational age of 37 ± 0 weeks [105] while another study reported a mean gestational age of 33. 5 ± 2. 1 weeks [22]. Meconium-stained amniotic fluid in 48 (31. 8 percent) breech presentation in 24 (15. 9 percent) caesarean section in 55 (36. 4 percent) stillbirth in 96 (63. 6 percent) intrauterine growth retardation in 42 (27. 8 percent) low birth weight in 95 (62. 9 percent) induction of labor in 62 (41. 1 percent) vaginal delivery in 96 (63. 6 percent) neonatal death in 68 (45. 0 percent) and PROM in 74 (49. 0 percent). Meconium-stained amniotic fluid (29 point 1 percent) [11] breech presentation (17 percent) [11] caesarean section (35 point 2 percent) [11] stillbirth (80 point 5 percent) [12] intrauterine growth restriction (24 point 5 percent) [11] neonatal death (75 point 0 percent) [12] low Apgar score (25 percent) [13] NICU admission (60 percent) [14] induction of labor (42 percent) [15 percent) [16] and PROM (49 point 35 percent) [17]. Amniotic fluid is necessary for healthy fetal growth and development during pregnancy. It supports the development of the gastrointestinal tract through fetal swallowing facilitates fetal movement aids in musculoskeletal development and provides the fetus with essential nutrients. Amniotic fluid also has bacteriostatic qualities helps regulate fetal body temperature and protects against external trauma. Amniotic fluids pressure also promotes healthy lung development and lessens pulmonary fluid loss [23].

Conclusion:

Conclusions of the study indicate that oligohydramnios is frequently linked to unfavorable pregnancy outcomes, particularly increased labor intervention and newborn problems. Despite the fact that many adverse effects are impacted by linked maternal or fetal diseases, isolated oligohydramnios still requires cautious clinical attention. The findings of the current study are in line with previously published research. Careful prenatal surveillance and timely decision-making are necessary to improve maternal and perinatal outcomes.

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