# "A COMPARITIVE STUDY ON MATERNAL AND PERINATAL OUTCOME IN ORAL HYDRATION THERAPY WITH ORS VERSUS NO HYDRATION THERAPY IN TERM PREGNANCIES WITH ISOLATED OLIGOHYDRAMNIOS"


**BY**

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*In partial fulfilment of the requirements for the degree of*

**MASTER OF SURGERY OBSTETRICS AND GYNAECOLOGY**

**UNDER THE GUIDANCE OF**

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# ACKNOWLEDGEMENT

I take this opportunity to extend my sincere gratitude and whole hearted thanks to all those who helped me to complete this dissertation.

First and foremost, I would like to express my deep sense of gratitude and indebtedness to my respected teacher and guide, **Dr. RAJASRI G YALIWAL** M.S (OBG), FICOG, Professor, Department of OBG, **SHRI B.M. PATIL MEDICAL COLLEGE** for her invaluable guidance, care and input for bettering this project and investing time and energy to help for my personal and professional growth. Undoubtedly, this has equipped me with a sound knowledge of the subject of Obstetrics and Gynecology, which has enabled me to successfully complete this dissertation.

I am forever grateful to, **Dr. SHAILAJA R BIDRI** M.D, D.G.O., Professor and Head of the Department of Obstetrics and Gynecology, for imparting a wealth of knowledge and life lessons that I will carry with me into all aspects of my personal and professional life for the valuable lessons about patient care and hospital practices that have played a major role and contributed to the completion of this project.

I am indebted to all my lovely teachers who have patiently imparted their wisdom and clinical teachings to me. There are no words to express my gratitude to **Dr. S. R. Mudanur, Dr. Neelamma Patil, Dr. Shobha Shiragur, Dr. Aruna Biradar, Dr. Shreedevi Kori, Dr. Preeti Malapure, Dr.Ekta Chhabra, Dr Shilpa lakshmi**. I am also thankful to **Dr. Rajesh Honnutagi** and **Dr. Vijaykumar Kalyanappagol,** Medical Superintendents at Shri B.M. Patil Medical College Hospital and Research Centre, Vijayapura. Without their valuable knowledge, this project would have been difficult to complete.

I am extremely grateful to **Dr. ARAVIND PATIL** MD, Principal, **SHRI B.M. PATIL MEDICAL COLLEGE** for his valuable co-operation and his willingness to always be available to assist any problem faced throughout the process of in residency.

Last but not least, I express my heartful gratitude to my family-special Thanks to my loving co-sister **APEKSHA DESAI**, and my Co-PGs **Dr Santhoshi, Dr Aparna,Dr Renuka nandan, Dr sharan, Dr shalini, Dr kirti,Dr shabana, Dr nirupa, Dr Shravanti, Dr Vaishnavi, Dr Lavanya, Dr Meghana, Dr Yamini, Dr Rakshita** and My all Fellow Junior Residents especially **Kavya, Keerthana, Rutuja, Sravya, Monika, Soumya, Nagasree**, Keerthi and Interns.

I would like to thank my parents, **Mr. SANGANNA HADALAGERI** and **Mrs. RENUKA** and my husband **Dr. SANGAMESH HATTALLI** for their valuable teachings, life lessons, love, support, patience, motivation and countless sacrifices. I am at this stage because of your support. Thank you for giving me the confidence and strength to endure all the toils and turmoil in life and still remain strong. I extend my thanks to my loving siblings **Dr. SHWETA, Dr. ANUSHA, Dr. RAKSHITA** for their constant support in motivating me throughout this journey of writing my dissertation. Thank you for everything. Finally, I bow my head in a silent acknowledgement of all that The Lord Almighty has blessed me**.**

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# ABSTRACT

**TITLE- A COMPARITIVE STUDY ON MATERNAL AND PERINATAL OUTCOME IN ORAL HYDRATION THERAPY WITH ORS VERSUS NO HYDRATION THERAPY IN TERM PREGNANCIES WITH ISOLATED OLIGOHYDRAMNIOS**

**BACKGROUND**

Modern obstetrics has made lot of advancement in diagnostic and management techniques, hence improving perinatal and maternal outcome. This has disadvantages also in the form of over diagnosis and unnecessary interventions. Oligohydramnios is the condition of concern requiring close monitoring but in modern days due to advanced techniques leads to frequent interventions mainly increased caesarean section rates.

**MATERIALS AND METHODS**

Women admitted in Department of OBSTERTICS & GYNAECOLOGY in B.L.D.E. (DEEMED TO BE UNIVERSITY) Shri B.M. Patil Medical College Hospital and Research Centre, Vijayapura fulfilling the inclusion criteria of term gestation with cephalic presentation with Oligohydramnios were included. A total of 60 participants were enrolled and randomized into 2groups, based on inclusion and exclusion criteria Group 1 - Antenatal mothers with term gestational age 37-40weeks with oligohydramnios with Oral Hydration therapy. This group will receive 2L OF ORS every day for 3days, after 3days AFI will be reassessed Case shall be followed and intrapartum events such as foetal distress, mode of delivery, neonatal outcome with respect to APGAR score, Umbilical pH, meconium of liquor, NICU Admission , RDS, Birth weight shall be noted. Group 2- Antenatal mothers with term gestational age 37-40weeks with oligohydramnios with No Hydration therapy. In this group women shall be followed up and intrapartum events such as foetal distress, mode of delivery,

neonatal outcome with respect to APGAR score, Umbilical pH, meconium of liquor, NICU Admission , RDS, Birth weight shall be noted.

## RESULTS

The current study aimed to assess the impact of oral hydration therapy (ORS therapy) on maternal and neonatal outcomes in term pregnancies with isolated oligohydramnios. The study demonstrated that ORS therapy significantly improves the amniotic fluid index (AFI), enhances neonatal health parameters, reduces obstetric interventions such as caesarean section, and stabilizes maternal hemodynamic conditions. The findings of this research provide robust evidence supporting the use of hydration therapy as a non-invasive, low-cost intervention for managing oligohydramnios

## CONCLUSION

The study provides compelling evidence that oral hydration therapy is a safe, non-invasive, and effective intervention for managing oligohydramnios. The results indicate that ORS therapy significantly improves AFI, enhances neonatal outcomes, reduces the need for obstetric interventions, and stabilizes maternal haemodynamics. Given its ease of administration and affordability, ORS therapy should be recommended as a first-line treatment for oligohydramnios before considering invasive procedures. Oligohydramnios can contribute to foetal acidosis, hypoxia, and increased base deficit, especially in cases without proper hydration management. Oral rehydration therapy (ORS) may positively influence foetal blood gas parameters by enhancing placental perfusion, oxygenation, and acid-base balance. This study suggests that maintaining maternal hydration could be a simple yet effective strategy to reduce adverse neonatal outcomes in pregnancies complicated by oligohydramnios. Future

studies should explore long-term foetal outcomes and investigate hydration therapy's efficacy in high-risk pregnancies with preexisting complications.

# INTRODUCTION

The average human gestation period is 280 days (40 weeks), measured from the first day of the last menstrual period (LMP). During this time, a woman experiences numerous normal physiological changes and may develop pregnancy-specific conditions. Additionally, various diseases can affect the unborn foetus, and the foetus's physiological status can, in turn, influence the mother's health. A thorough understanding of these normal pregnancy-related changes is crucial for accurately assessing the health of a pregnant woman.[1]

**Amniotic Sac**

Amniotic sac is a protective, fluid-filled membrane that surrounds and cushions the developing embryo or foetus throughout pregnancy. It begins to form early in embryonic development and plays a crucial role in maintaining a stable environment for foetal growth. It is initially formed by the amnion, which originates from the epiblast cells of the blastocyst. The amniotic sac is one of the four extraembryonic membranes that develop within the first two to three weeks of embryogenesis. The amniotic membrane surrounds the embryo to form the sac and extends along the connecting stalk, eventually contributing to the external covering of the umbilical cord.[1]

The amniotic membrane is the inner layer of the amniotic sac and is composed of amnioblasts, which arise from the epiblast. It is a thin, transparent, and avascular membrane, meaning it lacks blood vessels. This membrane is thin, transparent, and avascular**,** meaning it lacks its own blood supply. Despite the absence of blood vessels, the amnion plays a vital role in the exchange of nutrients and oxygen, which diffuse from surrounding structures.(**fig: 1**)

The amniotic membrane serves multiple essential functions: Protection, Hydration, Infection Barrier, and Facilitation of Movement

The chorion is the outer layer of the amniotic sac and is derived from the trophoblast—the outermost layer of the blastocyst. Unlike the amnion, the chorion is thicker and vascularized, containing blood vessels that facilitate maternal-foetal exchange. It plays a vital role in placental formation, supplying the foetus with oxygen and nutrients while aiding in the removal of waste products. [2,4]

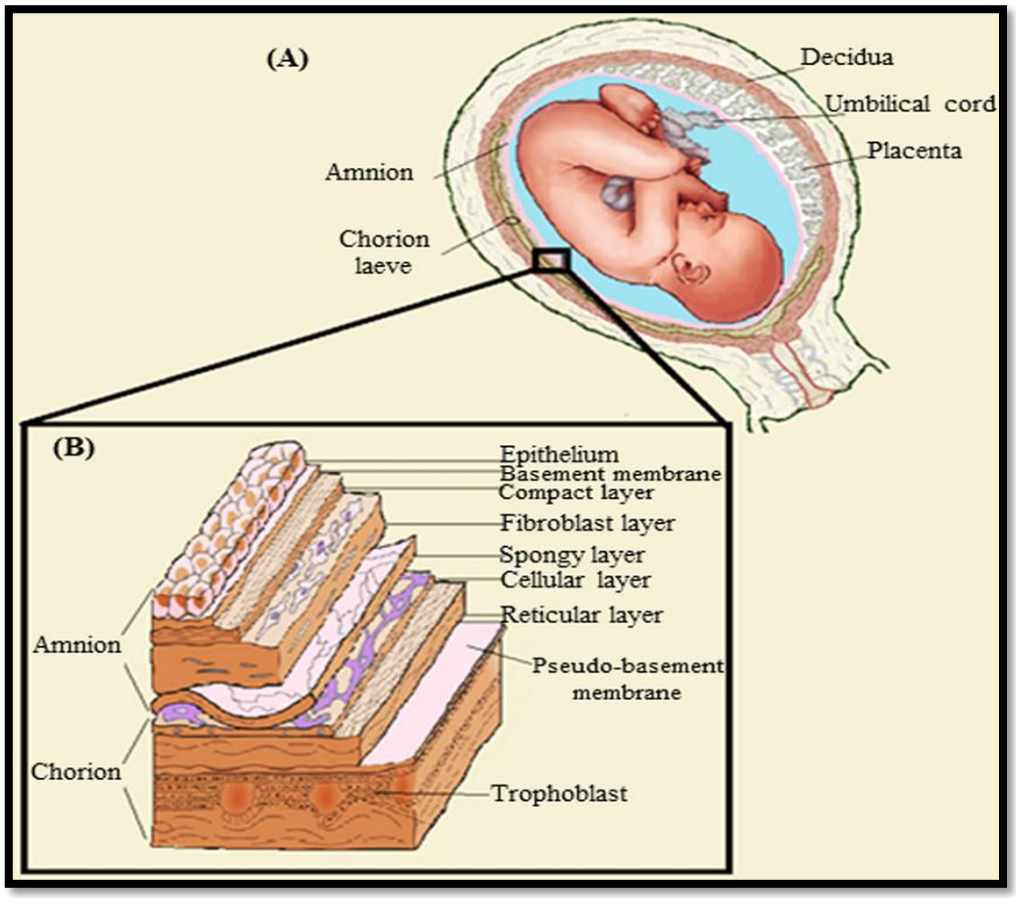



**Fig 1:** A Foetus, the placenta, membranes and amniotic fluid, B Schematic structure of the layers of amnion and chorion (Modified from Nejad et al. 2021) **Jafari et al.,**

- **Amniotic fluid:**

Amniotic fluid is a clear, slightly yellowish liquid that surrounds the foetus within the amniotic sac during pregnancy. It serves multiple critical functions:

- **Protection**: Acts as a cushion, safeguarding the foetus from external pressures and potential injuries.

- **Temperature Regulation**: Maintains a consistent thermal environment, ensuring the foetus remains at an optimal temperature.
- **Musculoskeletal Development**: Facilitates unrestricted movement, which is essential for the development of muscles and bones.
- **Lung and Digestive System Maturation**: The foetus inhales and swallows amniotic fluid, aiding in the development of the lungs and digestive tract.
- **Infection Prevention**: Contains antibacterial properties that help ward off infections

**Formation and Composition:**

Amniotic fluid (AF) is primarily composed of 98–99% water, with its chemical composition evolving throughout gestation. Initially, AF is derived from maternal plasma, passing through the foetal membranes via osmotic and hydrostatic forces. As pregnancy progresses, the sources and composition of AF change:

- Early Gestation: In the initial stages, AF is mainly water with electrolytes. By approximately the 12th to 14th week, it also contains proteins, carbohydrates, lipids, phospholipids, urea, and extracellular matrix components such as collagens and glycosaminoglycans, including hyaluronic acid and chondroitin sulfate, all of which aid in foetal growth.[2]
- Mid to Late Gestation: As the foetal kidneys begin to function around the 16th week, foetal urine becomes a significant contributor to AF volume. Additionally, foetal lung secretions add to the fluid composition. The balance of these contributions and the absorption of AF through foetal swallowing and across foetal membranes maintain the fluid's dynamic environment.

The formation of the amniotic membrane, which encloses the AF, begins early in pregnancy. By the 12th day, the amniotic cavity forms within the inner cell mass, eventually developing into the amniotic sac that surrounds the embryo.[3,4,5]

Throughout pregnancy, AF plays a crucial role in facilitating the exchange of water and solutes between the foetus and the amniotic environment. This exchange occurs through various pathways, including foetal urine excretion and lung fluid secretion into the amniotic cavity, as well as absorption mechanisms such as foetal swallowing and intramembranous absorption. These processes collectively contribute to the regulation of AF volume and composition, supporting the developing foetus.[6,7]

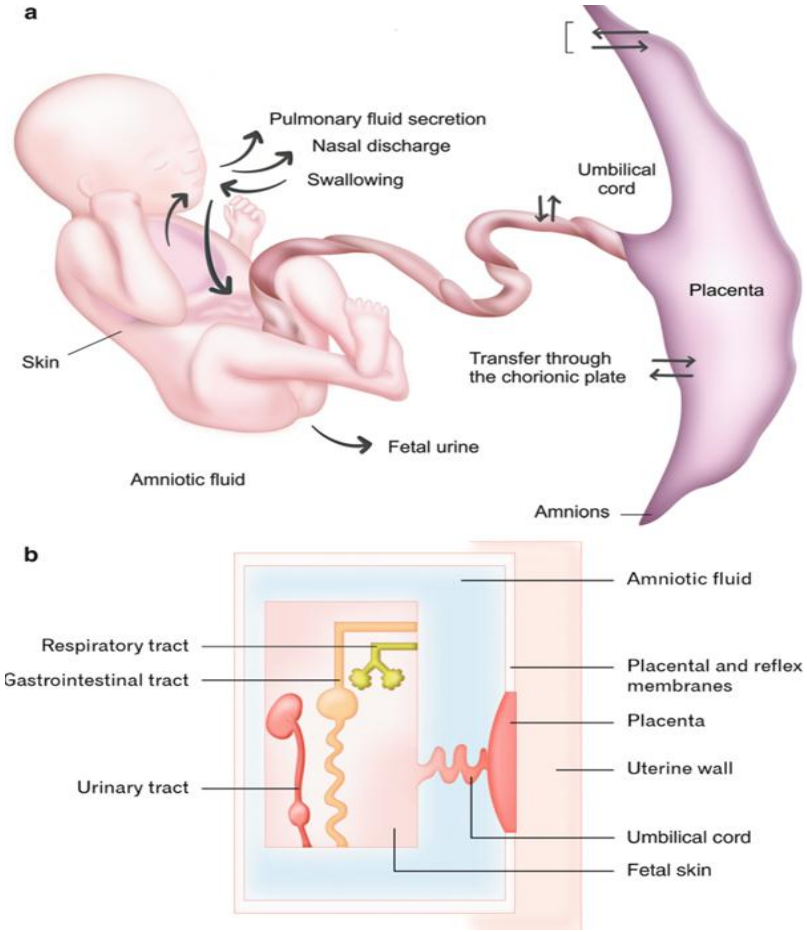



**Fig 2:(a) Fetal Contribution and Fluid Exchange (b) Anatomical Interactions of Amniotic Fluid [Palermo, M.S.F.,]**

**Foetal urine flow**

It is a major contributor to amniotic fluid volume. Impairments like bilateral renal agenesis or urethral obstruction can cause severe oligohydramnios. Urine production increases with gestation, from 2–3 mL/hour at 20 weeks **to** 30–35 mL/hour at term**,** total 700–800 mL/day (~25% of foetal body weight). Foetal urine also influences amniotic fluid composition, with lower osmolarity, chloride, and sodium levels than plasma.[8,9]

**Foetal Lung Fluid Production**

The foetal lungs secrete250–300 mL/day (~10% of foetal body weight) into the amniotic fluid. The small amount remains in the lungs for development, 99% exits via the trachea**,** with 50% being swallowed and 50% contributing to AF volume**.** [10]

**Foetal Swallowing** – The foetus continuously swallows AF, aiding in its reabsorption and regulation.**(fig:2)**

**Transmembranous Exchange** – Fluid moves between the amnion and chorion, contributing to AF homeostasis.[11]**(fig:2)**

**Flow across the chorionic plate**

The exchange of water and solutes between the amniotic cavity and foetal bloodstream through the chorionic plate is significant, with approximately 200–250 mL/day of water being transferred during normal foetal development near term.[12]

**Normal amniotic fluid volume (AFV)**

Normal amniotic fluid volume (AFV) is defined by an amniotic fluid index (AFI) ranging from 5 to 25 cm or a single deepest vertical pocket (SDVP) measurement between 2 and 8 cm. While a single threshold is commonly used for diagnostic purposes throughout pregnancy, AFV naturally fluctuates in a non-linear pattern with gestational age. It progressively increases during early pregnancy, reaching its peak around 33

weeks. Between 29 and 37 weeks, the volume remains relatively stable, but after 39 weeks, it declines significantly, approximately 515 ml by 41 weeks.[13]

Amniotic fluid volume is influenced by respiratory tract secretions, foetal swallowing, and fluid transport across foetal membranes **(Fig: 3).**

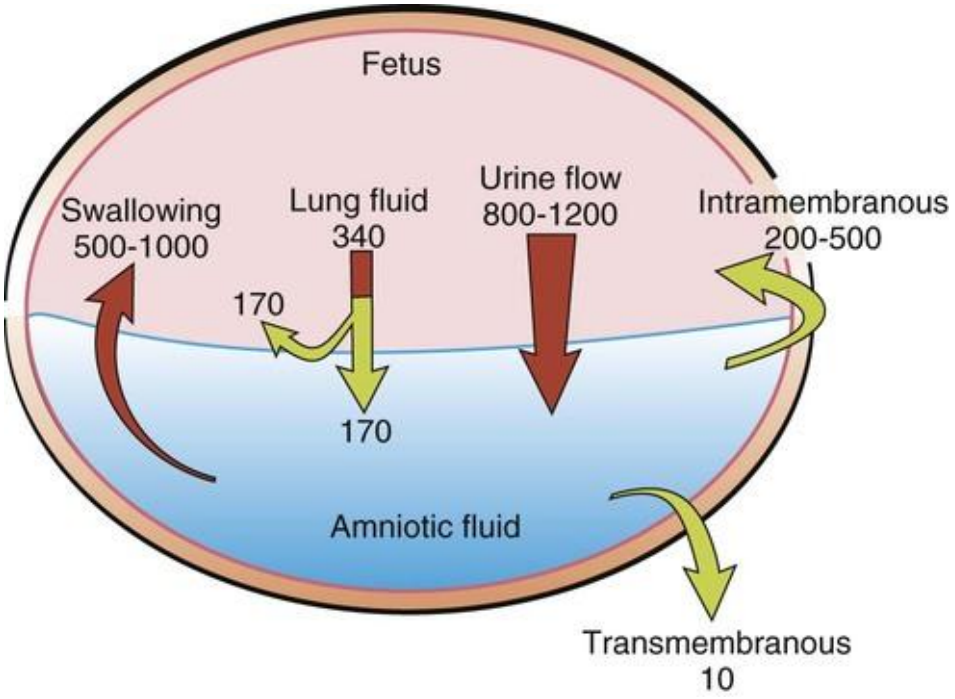



**Fig 3: Daily Fluid Exchange between the Fetes and Amniotic Fluid Compartments (in Milliliters)**

In normal pregnancy, nomograms are charts or graphs showed how AFI changes with gestational age.[14]

**These have been done using methods:**

- **Dye dilution** – A special dye is injected into the amniotic fluid, and its concentration is measured to estimate the total fluid volume.
- **Direct measurement** – In rare cases, AFV is directly measured during procedures like amniocentesis.
- **Ultrasound estimation** – The most common method, where doctors use ultrasound to measure fluid pockets in the womb and estimate the total AFV.[15]

The degree of variability in AFV is proportional to its mean value at a given gestational age, with minimal fluctuations observed in the first trimester compared to later stages of pregnancy [16.]

As pregnancy duration comes towards the term and extends into an uncomplicated post-term period, foetal urine production decreases while urine concentration rises, leading to a relative reduction in amniotic fluid volume (AFV) [17]. The precise cause of this decline remains uncertain, but it is hypothesized to be linked to placental aging and declining placental function, which may reduce the transfer of fluid into the amniotic sac. Another theory suggests that the decrease in AFV in late pregnancy may contribute to the initiation of spontaneous uterine contractions, similar to the mechanism triggered by spontaneous or artificial rupture of membranes [18]. Additionally, alterations in foetal swallowing and fluid resorption may also play a role in modulating AFV during the later stages of pregnancy.

Several additional factors influence AFV. Studies indicate that nulliparous women tend to have lower amniotic fluid index (AFI) compared to parous women in low-risk, uncomplicated pregnancies [19]. Maternal hydration status and metabolic conditions, such as gestational diabetes and preeclampsia, have also been associated with variations in AFV. Furthermore, AFV has been observed to vary across racial and ethnic groups, with more pronounced differences emerging after 35 weeks and at the extremes of dispersion [Owen, J]. Other factors, such as foetal sex, maternal body mass index (BMI), and environmental influences, may further contribute to these physiological variations.

Given these differences, using universal thresholds to define abnormal AFV may not always be appropriate. Instead, employing gestational age-specific nomograms could allow for more accurate identification of abnormal AFV and improve clinical

decision-making [20]. However, further large-scale, multicenter studies are needed to determine whether incorporating these factors enhances the prediction of adverse pregnancy outcomes, such as foetal distress, intrauterine growth restriction (IUGR), and perinatal complications.

**Abnormal amniotic fluid volumes**

Abnormalities in amniotic fluid volume are linked to a higher risk of perinatal mortality and morbidity.

**Oligohydramnios**

Oligohydramnios is a condition characterized by a reduction in amniotic fluid volume during pregnancy. It is commonly defined by ultrasound measurements, such as a single deepest pocket (SDP) of less than 2 cm or an amniotic fluid index (AFI) below 5 cm. The prevalence of oligohydramnios varies, affecting approximately 4% of pregnancies.

- A normal AFI ranges from 5 to 25 cm.
- AFI less than 5 cm is considered oligohydramnios.
- A AFI between 5 and 8 cm is considered moderate oligohydramnios.
- Deepest Vertical Pocket (DVP):
- A normal DVP is 2 to 8 cm.
- A DVP less than 2 cm is considered oligohydramnios.
- A DVP between 2 and 3 cm is considered moderate oligohydramnios.

This condition is often associated with decreased fluid production due to factors such as fetal urinary tract abnormalities, uteroplacental insufficiency, or rupture of membranes. Additionally, maternal factors like dehydration, certain medications, and environmental conditions such as high altitude can contribute to reduced amniotic fluid levels. [24]

In more severe cases, where the deepest fluid pocket measures less than 1 cm or in extreme cases of anhydramnios (complete absence of amniotic fluid), the condition may indicate underlying foetal abnormalities like bilateral renal agenesis or urethral obstruction/stenosis. Additionally, pregnancies that extend beyond 40 weeks often experience a gradual reduction in amniotic fluid, which may decrease to around 350 mL by 42 weeks of gestation [25]

Oligohydramnios can occur idiopathically, but it is more frequently associated with conditions such as premature rupture of membranes (PROM), foetal growth restriction (FGR), multiple gestations, and congenital foetal anomalies. The timing and severity of oligohydramnios play a critical role in determining foetal outcomes.

**Second Trimester:**

Severe oligohydramnios during this stage can cause foetal compression, leading to structural abnormalities known as the oligohydramnios deformation sequence (Potter sequence). This is often associated with high perinatal morbidity and mortality. [26]

**Foetal Pulmonary Hypoplasia:**

A significant decrease in amniotic fluid during key periods of gestation can disrupt lung development, as the absence of sufficient fluid hinders the necessary expansion of fetal airways. In cases of early preterm PROM, oligohydramnios has been independently linked to severe neonatal respiratory distress and higher mortality rates.[27]

**Third Trimester:**

A reduction in amniotic fluid volume (AFV) in the third trimester can lead to umbilical cord compression, which may result in foetal heart rate decelerations and increase the likelihood of requiring operative deliveries.[28]

**Risk Factors and Causes**

The incidence of oligohydramnios is influenced by various factors, including gestational age, maternal health conditions, and the criteria used for diagnosis. It is more commonly observed in:

- Maternal medical conditions (e.g., hypertension, diabetes, preeclampsia)
- Pregnancies with foetal size discrepancies, decreased foetal movements, or abnormal foetal growth patterns
- Post-term pregnancies, where amniotic fluid naturally declines as gestation progresses.

**Etiology**

The reduction in amniotic fluid volume in oligohydramnios can result from multiple factors, including foetal urinary abnormalities, rupture of membranes, dysfunction in intramembranous and transmembranous fluid pathways, or idiopathic causes:

- **Rupture of membranes**: A significant consideration as a source of fluid loss, leading to oligohydramnios.
- **Foetal urinary abnormalities**: Conditions such as bilateral renal agenesis, bilateral multicystic dysplastic kidneys, posterior urethral valves, and urethral atresia can cause a substantial reduction or absence of amniotic fluid production.[29]
- **Uteroplacental insufficiency**: Conditions like hypertensive disorders, anaemia, coagulopathies, diabetes, smoking, and the use of certain medications can reduce amniotic fluid volume. Medications such as angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, and indomethacin have been linked to oligohydramnios. A thorough history of maternal medication use should be assessed.[30]

- **Monochorionic twin pregnancies**: In cases of twin-to-twin transfusion syndrome (TTTS), oligohydramnios may occur in the donor twin as a sign of the condition.
- **Intramembranous and transmembranous pathways**: Dysfunction in these pathways may also contribute to fluid loss and result in oligohydramnios.

| **RISK FACTORS ASSOCIATED WITH OLIGOHYDRAMNIOS** | | | |
|---|---|---|---|
| Maternal Causes | Fetal Causes | Placental Causes | Isolated Oligohydramnios |
| **Hypertensive disorders** | Genitourinary tract abnormalities (lower urinary tract obstruction; Renal anomalies) | Placental insufficiency (fetal growth restriction) | |
| **Medications (angiotensin-converting enzyme inhibitors, angiotensin receptor blockers, indomethacin); drug abuse** | Congenital infections | Twin-to-twin transfusion syndrome (TTTS) in monochorionic twin pregnancies | No etiology identified |
| | Stillbirth | Post-term pregnancies | |

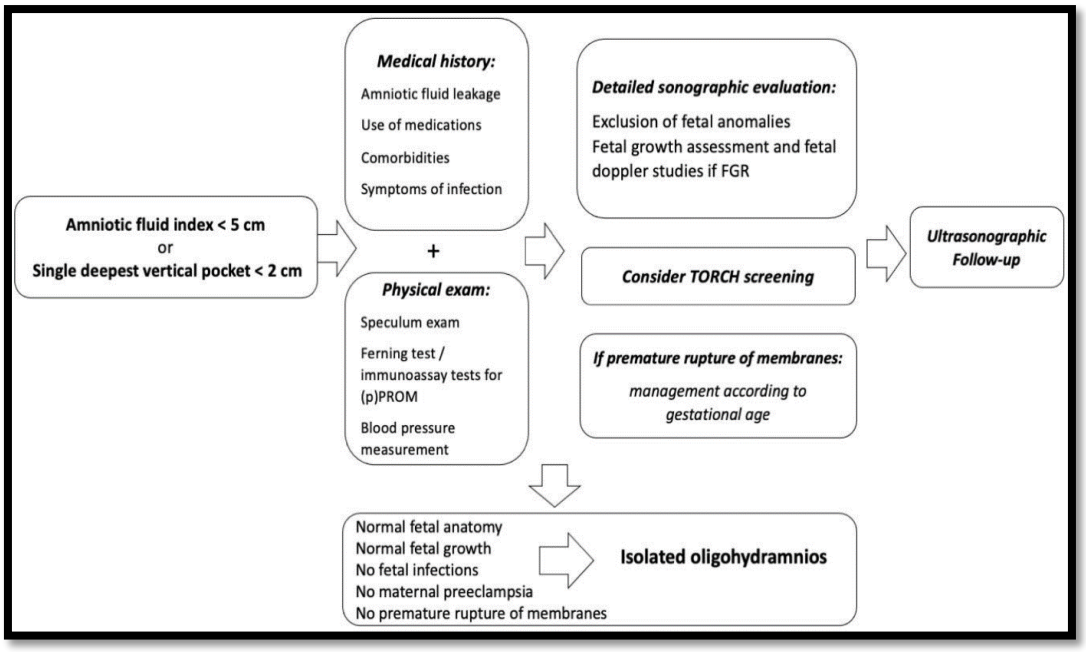



**Fig 4: Diagnostic workup for cases of oligohydramnios. [Huri, M.]**

## Isolated Oligohydramnios

Isolated term oligohydramnios (ITO) is defined as a late-onset reduction in amniotic fluid at term, occurring without fetal growth restriction (FGR), structural or chromosomal abnormalities, or maternal conditions like preeclampsia.

Research on ITO's impact has produced mixed findings. Some studies link ITO to adverse neonatal outcomes, such as higher rates of neonatal intensive care unit (NICU) admissions, meconium-stained amniotic fluid, meconium aspiration syndrome (MAS), and low Apgar scores. However, other studies have found no significant association between ITO and these complications.

Additionally, ITO has been linked to higher rates of medical interventions, such as labour induction and caesarean deliveries. However, the overall impact of ITO on neonatal health remains a subject of ongoing research, and further large-scale studies are needed to clarify these associations.[31]

## Pathophysiology of Isolated Oligohydramnios

It remains uncertain why amniotic fluid volume (AFV) decreases in cases of isolated oligohydramnios. One possible pathophysiological mechanism involves altered expression of aquaporins—water channels that facilitate fluid movement across membranes. Changes in aquaporin expression could lead to excessive reabsorption of amniotic fluid into the maternal circulation, reducing AFV. Studies indicate that foetal urine production in isolated oligohydramnios does not significantly differ from pregnancies with normal AFV, as no substantial difference has been observed in hourly foetal urine output.

Doppler studies assessing renal artery velocimetry and the cerebroplacental ratio have not found significant differences between pregnancies with isolated oligohydramnios and those with normal AFV. However, some researchers propose that isolated oligohydramnios may be a marker of chronic foetal hypoxemia or placental insufficiency. A recent histopathological placental analysis reported an increased incidence of maternal vascular malperfusion lesions and poorer neonatal outcomes in pregnancies with isolated term oligohydramnios compared to controls.

Isolated oligohydramnios has been suggested as part of the placental insufficiency spectrum, potentially representing a milder form of dysfunction compared to preeclampsia or foetal growth restriction (FGR). Consequently, antenatal foetal surveillance, such as weekly or biweekly monitoring, may be considered for pregnancies with isolated oligohydramnios that have not yet reached term.

While oligohydramnios secondary to maternal or foetal disease is a well-established risk factor for adverse outcomes, research on isolated oligohydramnios has produced conflicting results regarding its significance and association with poor perinatal outcomes. Two recent meta-analyses found that isolated oligohydramnios is linked to higher rates of obstetric interventions, including labour induction and

caesarean section. Some studies report an increased risk of low Apgar scores and neonatal intensive care unit (NICU) admissions, while others find no significant differences in neonatal outcomes compared to pregnancies with normal AFV. Despite these findings, meta-analyses have concluded that there is insufficient evidence to justify labour induction in cases of isolated oligohydramnios based solely on neonatal outcomes. It remains unclear whether the observed adverse outcomes result from medical interventions, underlying comorbidities, or the direct effects of reduced AFV.

A crucial area requiring further exploration is the potential risk of stillbirth or perinatal mortality in isolated oligohydramnios. Existing studies report only a small number of stillbirth cases associated with the condition, with many either excluding it as an outcome or documenting very few instances. While oligohydramnios in otherwise uncomplicated pregnancies is considered an abnormal finding, there is not enough evidence to determine the optimal timing for delivery, making it difficult to justify labour induction as a standard preventive approach. Further randomized controlled trials comparing different management strategies are needed to address this uncertainty.

The only available randomized study comparing expectant management with labour induction for isolated oligohydramnios at 40 weeks was limited by a small sample size and the absence of blinding, preventing definitive, evidence-based conclusions.

Management guidelines for isolated oligohydramnios vary across countries. The American College of Obstetricians and Gynaecologists (ACOG) suggests labour induction between 36 and 37 + 6 weeks of gestation, or at diagnosis if later in pregnancy. In contrast, Italian guidelines state that there is not enough evidence to recommend routine intervention. Other international guidelines do not provide specific recommendations. A survey of U.S. maternal-foetal medicine specialists indicated that

most consider isolated oligohydramnios a reason for labour induction at 40 weeks or at 39 weeks if the cervix is favourable[52]

## MATERNAL AND PERINATAL RISK ASSOCIATED WITH ISOLATED OLIGOHYDRAMINOS:

### Isolated oligohydramnios and antepartum foetal surveillance

Antepartum foetal surveillance is crucial for assessing foetal well-being in utero. Isolated oligohydramnios has been associated with an increased risk of abnormal Doppler indices in the umbilical artery, as well as non-reactive results on cardiotocography (CTG) and non-stress tests (NST). A prospective case-control study reported a higher incidence of foetal heart rate decelerations during labour in pregnancies complicated by isolated oligohydramnios compared to those with normal amniotic fluid levels. These findings suggest that isolated oligohydramnios may be linked to compromised foetal status, highlighting the importance of vigilant monitoring and timely intervention to ensure favourable perinatal outcomes. [53].

### Isolated oligohydramnios and induction of labour:

The American College of Obstetricians and Gynaecologists (ACOG) considers oligohydramnios after 37 weeks a valid reason for labour induction. Research has shown that women with isolated oligohydramnios (IO) are more likely to undergo labour induction. Two prospective cohort studies assessing perinatal outcomes in IO cases found a significantly higher rate of labour induction. Similarly, a prospective case-control study conducted over 21 months, from November 2014 to July 2016, involving 50 pregnant women with IO, also reported an increased frequency of labour induction.[54,55,56]

In addition, a large retrospective cohort study analyzing 987 IO cases and 22,280 pregnancies with a normal amniotic fluid index (AFI) examined obstetric and

perinatal outcomes. The findings indicated that labour induction was more common in pregnancies affected by IO. Furthermore, IO was associated with significantly higher rates of labour induction compared to pregnancies with normal amniotic fluid levels, regardless of whether the indication was maternal or foetal.[57,58,59]

**Isolated oligohydramnios and mode of delivery:**

A meta-analysis found that pregnancies with isolated oligohydramnios (IO) had a higher rate of obstetric interventions, with 13.5% (89 out of 657) undergoing intervention, compared to 5.0% (165 out of 3,306) in the control group. Additionally, IO was significantly linked to an increased likelihood of operative vaginal delivery; however, a small randomized controlled trial (RCT) did not identify a notable difference in assisted vaginal deliveries.

Regarding caesarean delivery (CD), several studies have indicated a higher prevalence of caesarean sections among women with IO compared to those with normal amniotic fluid levels. A prospective cohort study analyzing 70 women with IO and 140 with uncomplicated pregnancies reported a significantly increased rate of emergency caesarean sections in the IO group ($\chi^2 = 12.98$, $p = 0.003$). Findings from various prospective, retrospective, and case-control studies further support the increased risk of caesarean delivery in pregnancies complicated by IO.[60]

A systematic review and meta-analysis concluded that isolated oligohydramnios at term is significantly associated with a higher incidence of labour induction, caesarean section, and short-term neonatal complications.

**Isolated oligohydramnios and meconium-stained amniotic fluid:**

The relationship between isolated oligohydramnios (IO) and meconium-stained amniotic fluid (MSAF) has been the subject of various studies, yielding mixed results. Some research indicates a significant association between IO and increased incidence of MSAF. For instance, a study reported a higher rate of MSAF in the IO group compared to controls (25.9% vs. 9.3%, $p = 0.002$) . Similarly, another study found that MSAF was statistically more prevalent in the oligohydramnios group ($p<0.001$). Conversely, other studies have not found a significant correlation between IO and MSAF. For example, one study observed that the rate of MSAF was similar between the IO and control groups . Additionally, a meta-analysis concluded that the impact of isolated oligohydramnios on MSAF was inconclusive, suggesting the need for larger, more definitive studies. These discrepancies may be influenced by factors such as study design, population characteristics, and the gestational age at which IO is diagnosed. Further research is necessary to clarify the relationship between isolated oligohydramnios and meconium-stained amniotic fluid[61,62,63]

**Isolated oligohydramnios and admission to neonatal intensive care unit(NICU):**

The impact of isolated oligohydramnios (IO) on neonatal intensive care unit (NICU) admissions remains a topic of debate. While numerous studies, including various cohort analyses, case-control studies, and meta-analyses, have found no significant correlation between IO and increased NICU admissions, some research suggests otherwise. For instance, a systematic review indicated that term pregnancies complicated by IO are associated with higher rates of labour induction and caesarean sections, as well as short-term neonatal morbidity, which could contribute to increased NICU admissions.[64,65]

The discrepancies in findings may stem from differences in study designs, populations, and inclusion criteria. Notably, studies that included preterm births and

cases of intrauterine growth restriction (IUGR) often reported higher NICU admission rates. For example, a comparative study demonstrated that NICU admissions were 28% in isolated oligohydramnios cases and 48% in oligohydramnios with IUGR, suggesting that the presence of additional complications like IUGR significantly influences neonatal outcomes. These observations underscore the importance of considering gestational age and foetal growth parameters when evaluating the risks associated with isolated oligohydramnios. Further research is needed to clarify these associations and guide clinical management effectively.[61, 62]

**Foetal Distress**

Foetal distress is a condition characterized by respiratory and circulatory insufficiency due to intrauterine hypoxia during labour, often reflected in abnormal foetal heart rate patterns. If not managed, foetal distress can lead to severe complications such as hypoxic-ischemic encephalopathy, cerebral palsy, perinatal death. Early detection and timely intervention are crucial in preventing irreversible damage to vital foetal organs. [Deng Y]

**Cord Blood Gas Analysis:**

Blood gas analysis is a widely used diagnostic tool for assessing respiratory, circulatory, and metabolic status by measuring the partial pressures of gases and acid-base balance in the blood. Blood gas analysis can be performed using blood samples drawn from an artery, vein, or capillary.

Arterial blood gas (ABG) test, specifically analyzing blood from an artery, provides critical information on oxygenation and ventilation. [Castro D]

- **$PaO_2$ (Partial Pressure of Oxygen):** Indicates the oxygenation status of the blood.

- **$PaCO_2$ (Partial Pressure of Carbon Dioxide):** Reflects the effectiveness of ventilation and respiratory function.
- **Factors Influencing $PaCO_2$ Levels:**
- **Hyperventilation:** Rapid or deep breathing decreases $PaCO_2$.
- **Hypoventilation:** Slow or shallow breathing increases $PaCO_2$.
- **Acid-Base Imbalance:** Affects $PaCO_2$ levels and overall respiratory function.
- **A Ph value of less than 7.**35 would require evaluation.

**Table 2: Normal Range of cord arterial Blood Gas (ABG)**

| ABG | Normal ranges |
|---|---|
| $PO_2$ | 6-31mmhg |
| Ph | 7.35-7.45 |
| $PaCO_2$ | 32-66mmHg |
| $HCO_3$ | 20-24 mEq/L |
| Base excess | -8-0mmol/L |

**Maternal Hydration Therapy**

Several treatments for oligohydramnios are available or under evaluation, including intravenous hydration, 1-deamino [8-D-arginine] vasopressin administration, and amnioinfusion during labour**.** While amnioinfusion is effective, it is an invasive procedure that can only be performed during labour after membrane rupture and requires prolonged intensive monitoring.

Since maternal dehydration increases the risk of oligohydramnios, hydration is considered a potential preventive measure. Both intravenous and oral hydration therapies are hypothesized to be effective treatments for oligohydramnios.[63]

Maternal hydration therapy is a non-invasive intervention aimed at increasing amniotic fluid volume (AFV) in pregnancies affected by oligohydramnios. It is believed to enhance AFV primarily by stimulating fetal diuresis, thereby improving amniotic fluid index (AFI) and overall foetal well-being[66

**Types of Hydration Therapy:**

**Oral Hydration:** Intake of fluids such as water, isotonic, or hypotonic fluids. Studies suggest that oral water intake is the most effective in increasing AFI in isolated oligohydramnios.

**Intravenous (IV) Hydration:** Administration of fluids directly into the bloodstream, often used in hospital settings for more immediate results.

Many studies reported that maternal hydration has been proposed as a possible effective treatment for the conservative management of IO during pregnancy and prior to labour commencing. MH is recommended as a low-cost method with no complications for the foetus and the mother..

**Oral rehydration solution (ORS)**

Oral rehydration solution (ORS) is a specially formulated solution designed to treat dehydration and restore electrolyte balance. It serves as the cornerstone therapy for dehydration caused by acute infectious diarrhoea. The effectiveness of ORS is based on glucose's ability to stimulate sodium and fluid absorption in the small intestine through a cyclic AMP-independent process. It's used significantly reduces morbidity and mortality particular in children with diarrhoea. [65]

In 1975, the World Health Organization (WHO) introduced a standardized ORS formulation, which has been widely used for over 25 years.

**Table 3: The composition of ORS as follows**

| | Oral rehydration solution (OS-1) |
|---|---|
| Volume (mL) | 500 |
| Energy (kcal) | 50 |
| Carbohydrate (%) | 2.5 (glucose 1.8) |
| Electrolytes (mEq/L) | |
| Sodium ($Na^+$) | 50 |
| Potassium ($K^+$) | 20 |
| Magnesium ($Mg^{2+}$) | 2 |
| Lactate$^-$ | 31 |
| Chloride ($Cl^-$) | 50 |
| Phosphorus (mmol/L) | 2 |
| pH | 3.9 |
| Osmolarity | Approx. 270 mOsm/L |



It is commonly used in cases of diarrhoea further research revealed that this ORS formulation was effective in maintaining hydration. In obstetric practice, it has

also been explored for improving amniotic fluid levels in conditions like oligohydramnios (low amniotic fluid index) A previous study performed by**.,** found that women were administered 250 ml of ORS every 30 minutes for 4 hours to complete a 2-liter intake.

ORS is believed to help increase the AFI by improving maternal hydration. Proper maternal hydration enhances placental perfusion and foetal urine production, which contributes to amniotic fluid volume. Studies suggest that maternal intake of ORS can be a simple and non-invasive method to improve AFI in mild cases of oligohydramnios[68]

**Methods to Increase Amniotic Fluid Index during Pregnancy**

## Amnioinfusion:

Amnioinfusion is a medical intervention used to increase amniotic fluid levels, particularly in cases of oligohydramnios and foetal distress. It can be administered prophylactically (as a preventive measure) or therapeutically (to manage complications). Studies have demonstrated its effectiveness in reducing foetal heart rate (FHR) decelerations and lowering the rate of caesarean sections. It is also recognized for preventing or relieving umbilical cord compression during labour (Novikova N).The procedure involves infusing saline or Ringer's lactate solution into the uterine cavity trancervically via a catheter (if membranes have ruptured) or transabdominally using a spinal needle (if membranes are intact ).In nulliparous women experiencing cord compression during labour, amnioinfusion was associated with a significantly lower caesarean section rate.[(70)] Additionally, it was found to reduce both the frequency and severity of FHR decelerations (Miyazaki FS). Clinically, amnioinfusion is utilized for various indications, including dilution of thick meconium-stained amniotic fluid, correction of abnormal FHR patterns, and management of oligohydramnios due to

membrane rupture. Overall, amnioinfusion seems to be a safe and effective technique. Like all procedures, there are some risks involved.[71]

Complications of amnioinfusion could include: Chorioamnionitis ,Umbilical cord prolapsed, Polyhydramnios, Preterm labour, Prolonged labour, Uterine overdistention

## L-arginine

L-arginine, a semi-essential amino acid, serves as an endogenous precursor to nitric oxide (NO). It plays a crucial role in regulating blood flow in vascular beds, enhancing placental perfusion, promoting vasodilation, and modulating platelet aggregation. Due to these effects, L-arginine helps increase blood volume and viscosity within the feto-maternal circulation, thereby supporting intrauterine fetal growth. [[Begum MA]

**Mechanism of action of L-arginine:**

L-Arginine

⬇

Nitric Oxide Donor

⬇

Vasodilatation

⬇

Increases Placental Perfusion

⬇

Increases Amniotic Fluid

**Sildenafil Citrate for Amniotic Fluid Index**

Sildenafil citrate (SC) is a selective inhibitor of phosphodiesterase type 5 (PDE5) that prevents the breakdown of cyclic guanosine monophosphate (cGMP), leading to vasodilation

and increased blood flow. By enhancing uterine blood circulation and potentiating estrogen-induced vasodilation, SC may improve placental perfusion. Consequently, its use has been explored in the treatment of isolated oligohydramnios.

Several studies have investigated the effects of sildenafil on fetal growth restriction (FGR) and oligohydramnios, yielding mixed results. A multicentric prospective observational study conducted in Northern India administered 25 mg of sildenafil citrate every eight hours to 200 patients with late-onset FGR and oligohydramnios until delivery. The study reported marked improvement in 87 out of 90 patients with only FGR, 35 out of 40 cases of oligohydramnios alone, and 64 out of 70 patients with both conditions. However, 14 cases showed no improvement. Conversely, other studies have not demonstrated significant benefits. For instance, a randomized controlled trial published in *Obstetrics & Gynecology* evaluated the use of sildenafil citrate therapy for oligohydramnios but did not find substantial improvements in amniotic fluid index (AFI) or neonatal outcomes. Regarding safety, common side effects of sildenafil in pregnant women include headaches, dyspepsia, flushing, nasal congestion, diarrhea, and urinary tract infections, there have been reports of teratogenic or fetotoxic effects associated with sildenafil use during pregnancy.[74,75]

Given the limited and inconclusive evidence, further large-scale randomized controlled trials are necessary to establish the efficacy and safety of sildenafil citrate for the treatment of isolated oligohydramnios. Healthcare providers should exercise caution and consider current clinical guidelines and individual patient circumstances when contemplating the use of sildenafil in this context[76]

**Acetylsalicylic Acid (Aspirin) in Pregnancy:**

Low-dose acetylsalicylic acid (aspirin) is commonly used during pregnancy to improve placental circulation by reducing platelet aggregation and promoting vasodilation. It is particularly beneficial in conditions like preeclampsia, fetal growth restriction, and oligohydramnios, where placental insufficiency plays a role. Studies suggest that aspirin therapy initiated in early pregnancy (before 16 weeks) can significantly reduce the risk of preeclampsia and improve uteroplacental blood flow, thereby enhancing fetal outcomes. However, it is used under medical supervision to ensure safety for both mother and fetus.[78]

**AMINOACIDS-** It is belonging to the group of aminoacids. It is used in the delivery of parentral nutrition in patients that cannot tolerate or take oral nutrition. It can also help treat oligohydramnios by improving amniotic fluid index and fetal weight[(77)]. It is given by an intravenous injection by qualified healthcare professional. Each ml contains L-arginine hydrochloride USB 8.0mg, L-Histidine hydrochloride H20 BP 4.0mg,L-Isoleucine USP 5.5mg,L-Leusine USP 12.3mg.Thismedicine may cause electrolyte imbalance, fluid overload ,aluminium toxicity, ketonemia.

## AIMS AND OBJECTIVES-

AIMS- To determine maternal and perinatal outcome in oral hydration therapy with ORS versus no hydration therapy in term pregnancies with isolated oligohydramnios.

OBJECTIVES-

- To evaluate perinatal outcomes (birth weight, Apgar score, NICU admissions, perinatal morbidity and mortality) in both groups.
- To determine the effectiveness of oral hydration therapy as a non-invasive intervention for improving pregnancy outcomes in cases of isolated oligohydramnios.
- To analyze any adverse effects of oral hydration therapy on maternal and foetal health.
- This study aims to contribute to clinical decision-making regarding conservative management of isolated oligohydramnios at term

## REVIEW OF LITERATURE

**Javed N, Ain QT, NAWAZ et al.,** (2023) conducted a study to compare the effectiveness of oral and intravenous hydration in treating isolated oligohydramnios in the third trimester. A total of 126 patients with an AFI < 5 cm were randomly assigned to either receive oral rehydration solution (ORS) every 30 minutes or intravenous lactated Ringer's solution over one week. The study found that both methods significantly increased AFI and decreased urine specific gravity, with no significant differences in birth-weight or Apgar scores between the two groups. The results concluded that both oral and intravenous hydration were equally effective, with oral hydration being a non-invasive, cost-effective alternative to intravenous hydration.

**Anant M, Murmu S, Priya S (2023)**

A randomized trial was conducted to assess the impact of maternal oral hydration therapy on isolated oligohydramnios. The study included 50 pregnant women diagnosed with isolated oligohydramnios, divided into two groups of 25 each. Participants in the home-based group were encouraged to consume an additional 2 liters of oral rehydration solution daily along with their regular diet, while those in the hospital-based group received supervised hydration. Both groups were comparable in demographics and baseline laboratory findings. However, the hospital group demonstrated a significantly greater improvement in amniotic fluid index (AFI) compared to the home group ($p < 0.001$). Additionally, the hospital group exhibited significantly better outcomes in terms of birth weight, placental weight, and APGAR scores. The study concluded that maternal oral hydration therapy, particularly when supervised in a hospital setting, effectively increases amniotic fluid volume and enhances perinatal outcomes in cases of isolated oligohydramnios

**Ijiri E, Mori C, Sasakawa T (2023)-**

A study was conducted to assess the impact of preoperative oral rehydration on perioperative circulatory dynamics in parturients undergoing caesarean section with combined spinal-epidural anaesthesia (CSEA). Sixty-three women were randomly assigned to three groups:

- Group O (ORS): Received 500 mL of oral rehydration solution (ORS) before bedtime and an additional 500 mL two hours before CSEA.
- Group M (Mineral Water): Received mineral water instead of ORS at the same intervals.
- Group C (Control): Did not receive any preoperative fluid intake.

The study found that Group O required fewer vasopressor boluses and a lower total dose of phenylephrine compared to Group C ($P < 0.05$), indicating more stable circulatory dynamics. No significant differences were observed between Group M and the other groups. Additionally, preoperative ORS consumption did not increase gastric content volume, suggesting it is a safe and effective strategy for stabilizing perioperative circulatory dynamics in cesarean deliveries under CSEA.

**Meenakshi chauahan, Jyotsna Yadav, Sarika Gautam (2020)** conducted a study to evaluate the effect of maternal oral hydration therapy on improving amniotic fluid index (AFI) in cases of isolated oligohydramnios and its impact on feto maternal outcomes. This study performed on 100 antenatal women with singleton pregnancies, gestational age ≥32 weeks, and isolated oligohydramnios (AFI < 5). Group A served as the control, while group B was instructed to drink two liters of water over six hours daily for seven days in addition to their usual fluid intake. AFI measurements were taken on day zero and day seven. The study results showed that after seven days, a significant improvement in AFI was observed in the oral hydration group compared to the control group ($7.08 \pm 0.21$ cm vs. $5.0 \pm 0.20$ cm, $p < 0.001$), leading to the

prolongation of pregnancy until term. At the time of termination, the mean AFI in the control group was 2.72 ± 1.88 cm, while in the study group, it was 5.6 ± 2.14 cm. A significantly greater proportion of women in the study group went into spontaneous labor (68.1% vs. 39.1% in the study and control groups, respectively, p = 0.007). Additionally, the incidence of meconium-stained liquor and fetal distress during labor was significantly lower in the hydration therapy group. The study concluded that oral hydration therapy significantly improves AFI and fetomaternal outcomes in cases of isolated oligohydramnios.

**Pragati Aggarwal , Sharda patra (2018)** studied 50 pregnant women with idiopathic oligohydramnios (AFI < 5) in the third trimester. Participants were advised to increase their daily fluid intake, and AFI was measured on days 1, 2, 3, and weekly until delivery. Pre-hydration, the mean AFI was 4.25 ± 1.01, with a daily fluid intake of 1.46 ± 0.41 liters. Post-hydration, fluid intake increased to 4.40 ± 0.51 liters ($p < 0.001$), and AFI improved significantly, reaching 6.19 ± 0.93, 7.33 ± 1.13, and 8.0 ± 1.07 on days 1, 2, and 3, respectively ($p < 0.001$). AFI normalized in 100% of women by day 7. All women had live births, with a mean birth weight of 2.77 ± 0.29 kg.The study concluded thatincreased oral fluid intake significantly improves AFI and leads to favorable maternal and perinatal outcomes in cases of isolated oligohydramnios.

**Bhagat M, Chawla I et al.** (2014)

A prospective study conducted at Dr. Ram Manohar Lohia Hospital in New Delhi evaluated the predictive value of an amniotic fluid index (AFI) of less than 5 cm for adverse perinatal outcomes. The study included 200 antenatal women with gestational ages between 34 and 41 weeks. The results indicated that women with oligohydramnios (AFI <5 cm) had a significantly higher rate of cesarean sections due to fetal distress ($p = 0.048$) and a higher incidence of low birth weight infants (birth

weight <2.5 kg) (p = 0.001). However, no significant differences were observed between the groups regarding meconium staining of the amniotic fluid (p = 0.881), Apgar scores at 5 minutes less than 7 (p = 0.884), or cord pH at birth (p = 0.764). The study concluded that an AFI of less than 5 cm is significantly associated with an increased risk of cesarean delivery for fetal distress and the birth of low birth weight infants.

**Krishna jagatia ,Nisha singh, Sachin patel et al.,(2011)**

A study conducted between May 2009 and November 2011 evaluated 100 randomly selected patients in their third trimester of pregnancy diagnosed with oligohydramnios. The study found that 67% of these patients were aged between 20-25 years, while 23% were in the 26-30 years age group, indicating that the majority were between 20-30 years old. The highest rate of cesarean sections was observed in the 26-30 years age group, whereas the lowest rate was among patients older than 39 years. The mean maternal age was 23.66 years. Additionally, the incidence of oligohydramnios was higher in primiparous women (52%), who also experienced greater operative morbidity compared to multiparous women.

**Aggarwal P,Rajrani sharma et al.(2013)**

The evidence indicates that maternal hydration therapy, whether oral or intravenous, can effectively increase AFI in pregnancies complicated by isolated oligohydramnios during the third trimester. This increase in amniotic fluid volume is associated with improved perinatal outcomes, including higher birth weights and better Apgar scores.

Oral hydration provides a simple, affordable, and non-invasive alternative to intravenous fluids, allowing pregnant women to stay hydrated without requiring hospital admission or IV administration.

In conclusion, maternal hydration therapy is a simple and effective intervention for increasing amniotic fluid volume in cases of isolated oligohydramnios during the third trimester. Both oral and intravenous hydration methods have been shown to be effective, with oral hydration offering a more convenient and non-invasive option for patients

**Rawat R, Garg R, Kaushik et al (2015).,** conducted a study on 100 pregnant women in their third trimester with isolated oligohydramnios to evaluate the effect of maternal oral hydration therapy on the AFI and perinatal outcomes. Participants were advised to consume 2 liters of fluids daily over one hour, including water, fruit juices, and coconut water, while resting in the left lateral position. AFI was assessed via ultrasonography at 24 and 48 hours, and hydration therapy was continued until delivery. The results showed a significant increase in AFI from 6.23 ± 1.06 cm pre-treatment to 7.47 ± 0.58 cm at 24 hours and 7.80 ± 1.47 cm at 48 hours ($p < 0.001$). Women with persistently low AFI had a higher incidence of operative deliveries and low Apgar scores at birth. no perinatal deaths were recorded. The study concluded that maternal oral hydration therapy is a simple, non invasive, and cost-effective intervention that effectively increases AFI, improves perinatal outcomes, and reduces the need for operative deliveries.

**Farghal Alaa,Sedek, Zakaria et al(2021)**

A study was conducted to assess the impact of acute oral hydration on the amniotic fluid index (AFI) and Doppler parameters in pregnant women with oligohydramnios. The study included 40 participants, who were divided into two groups: Group A received oral hydration therapy, while Group B maintained their usual fluid intake.

Before treatment, the average AFI was 3.6 ± 1.3 in Group A and 3.4 ± 1.5 in Group B ($p=0.367$). After intervention, Group A experienced a significant increase in AFI to 8.6 ± 1.3, whereas Group B reached 5.8 ± 1.2 ($p=0.005$). A statistically significant improvement was observed in Group A ($p < 0.001$), while Group B showed no substantial change ($p=0.052$).

The study concluded that oral hydration therapy effectively increases AFI in cases of oligohydramnios. Additionally, improvements were noted in renal and uterine artery pulsatility indices, although umbilical artery indices remained unchanged.

# MATERIALS AND METHODOLOGY

**Source of Data:**

Pregnant women visiting the Department of Obstetrics and Gynaecology at Shri B.M. Patil Medical College and Hospital, with a gestational age of 37–40 weeks and diagnosed with oligohydramnios.

**Study Period:** 1.5 years

**Study Design:** Single-blinded Randomized Controlled Study

**Inclusion Criteria:**

- Singleton pregnancies in cephalic presentation
- Gestational age between 37–40 weeks with oligohydramnios

**Exclusion Criteria:**

- Hypertensive disorders of pregnancy
- Premature rupture of membranes (PROM)
- Gestational diabetes mellitus
- Intrauterine growth restriction (IUGR)
- Congenital malformations
- Intrauterine fetal demise (IUD)

**Sample Size:**

The expected Mean ± SD of the amniotic fluid index (AFI) for patients undergoing oral hydration therapy is 6.76 ± 1.79 for those managed at home and 8.70 ± 2.01 for those treated in a hospital setting. Based on these values, a minimum of 30 participants per group (totaling 60, assuming equal distribution) is needed to achieve 90% study power with a 5% significance level (two-sided) to detect a meaningful difference in means between the groups.

- Significance Level: 95%

- Study Power: 90%
- d: Clinically significant difference between two parameters
- SD: Common standard deviation

**Statistical Analysis**

The data were entered into Microsoft Excel and analyzed using IBM SPSS Statistics Version 20. Descriptive statistics were summarized as means with standard deviations (Mean ± SD), frequencies, percentages, and graphical representations.

The Shapiro-Wilk test was used to assess the normality of continuous variables. Variables with a normal distribution were compared between groups using the Independent t-test, while non-normally distributed variables were analyzed using the Mann-Whitney U test. Categorical variables were evaluated using the Chi-square test. A p-value of less than 0.05 was considered statistically significant, and all statistical tests were conducted as two-tailed analyses.

**METHODOLOGY:**

This study was carried out in the Department of Obstetrics and Gynaecology at B.L.D.E (Deemed to be University), Shri B.M. Patil Medical College, Hospital, and Research Centre in Vijayapura, Karnataka, India. Written and informed consent was obtained in accordance of Declaration of Helsinki from all pregnant women who agreed to participate.

**IEC-1120/2024-25, CTRI NO- CTRI/2024/10/075111**

The study included antenatal women with a gestational age of 37–40 weeks diagnosed with oligohydramnios, who were monitored until delivery.

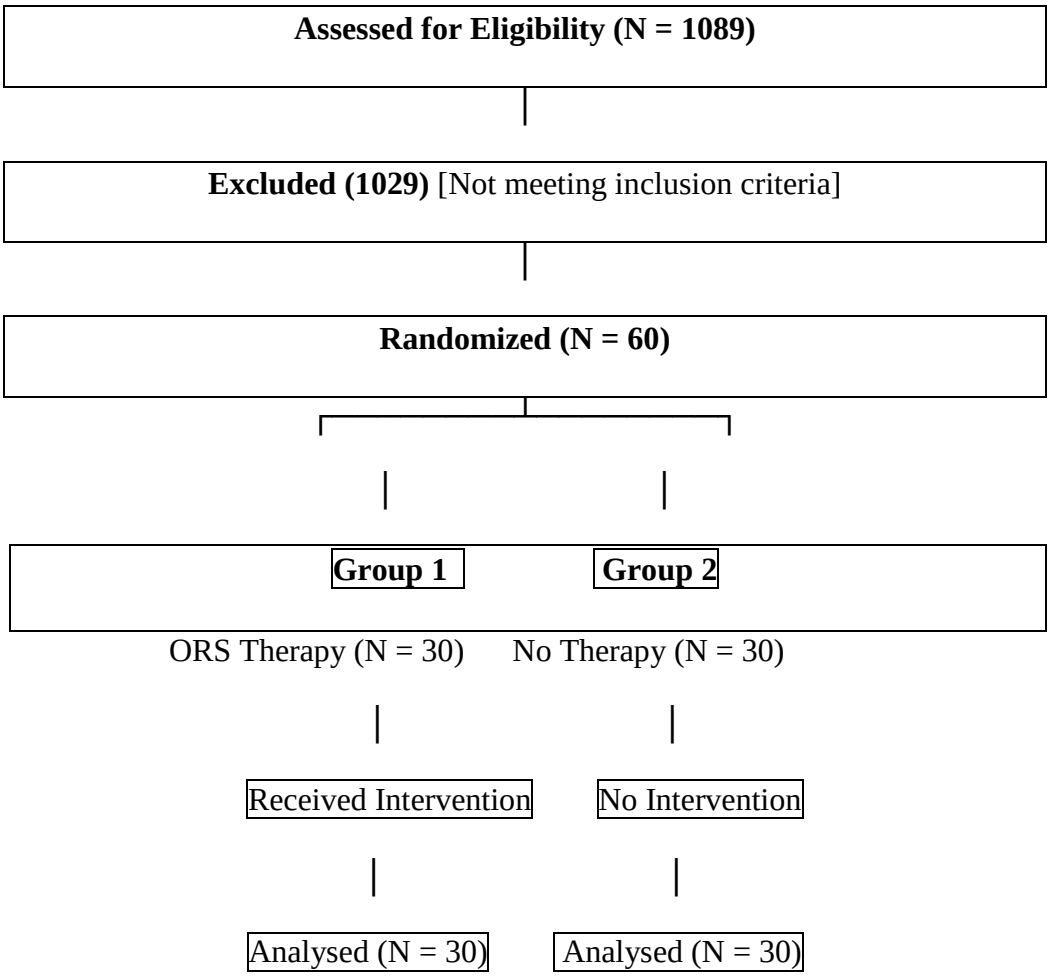
Participants were screened for oligohydramnios and than AFI 5-8Cm were selected based on inclusion and exclusion criteria into two groups of 30 participants each were randomised by computer generated randomised chart.

- Group 1: Antenatal mothers with a gestational age of 37–40 weeks and oligohydramnios who received oral hydration therapy. This group was given2L of ORS daily for 3 days, participants instructed method of ORS making, after which AFI was reassessed, and were followed, and intrapartum events such as fetal distress, mode of delivery, neonatal outcomes (APGAR score, umbilical artery pH, meconium staining of liquor, NICU admission, RDS, and birth weight) were recorded.
- Group 2: Antenatal mothers with a gestational age of 37–40 weeks and oligohydramnios who did not receive hydration therapy. These women were given standard obstetrical care and followed for intrapartum events, including fetal distress, mode of delivery, and neonatal outcomes were documented similarly to Group 1.

# RESULTS

A total of 1089 pregnant women underwent delivery during study period,1029 were excluded from study who did not meet inclusion criteria,60 consenting women were included in the study and were randomized the study group and control group by computer generated randomised program.

CONSORT Flowchart



## RESULTS & ANALYSIS

**Pregnant women visiting department of obstetrics and gynaecology at shri B.M.Patil medical college and hospital with gestational age 37-40weeks with oligohydramnios.**

### 4. Age Distribution

| Age Group (Years) | Group 1 (ORS Therapy) Count | Group 1 (%) | Group 2 (No Hydration) Count | Group 2 (%) | p-value |
|---|---|---|---|---|---|
| 19-20 | 3 | 10% | 4 | 13.3% | 0.072 |
| 21-22 | 7 | 23.3% | 6 | 20% | 0.084 |
| 23-24 | 8 | 26.6% | 7 | 23.3% | 0.040 |
| 25-26 | 3 | 10% | 3 | 10% | 0.091 |
| 27-28 | 2 | 7.8% | 2 | 7.8% | 0.104 |
| 29-30 | 3 | 10% | 4 | 13.3% | 0.082 |
| 31-32 | 2 | 7.8% | 2 | 7.8% | 0.095 |
| 34 | 2 | 7.8% | 2 | 7.8% | 0.089 |

### 5. Gestational Age (37-40 Weeks)

| Gestational Age (Weeks) | Group 1 (ORS Therapy) Count | Group 1 (%) | Group 2 (No Hydration) Count | Group 2 (%) | p-value |
|---|---|---|---|---|---|
| 37+1D - 38 | 24 | 63.3% | 22 | 40.0% | 0.015 |
| 38+1D - 40 | 6 | 20.0% | 8 | 16.7% | 0.089 |

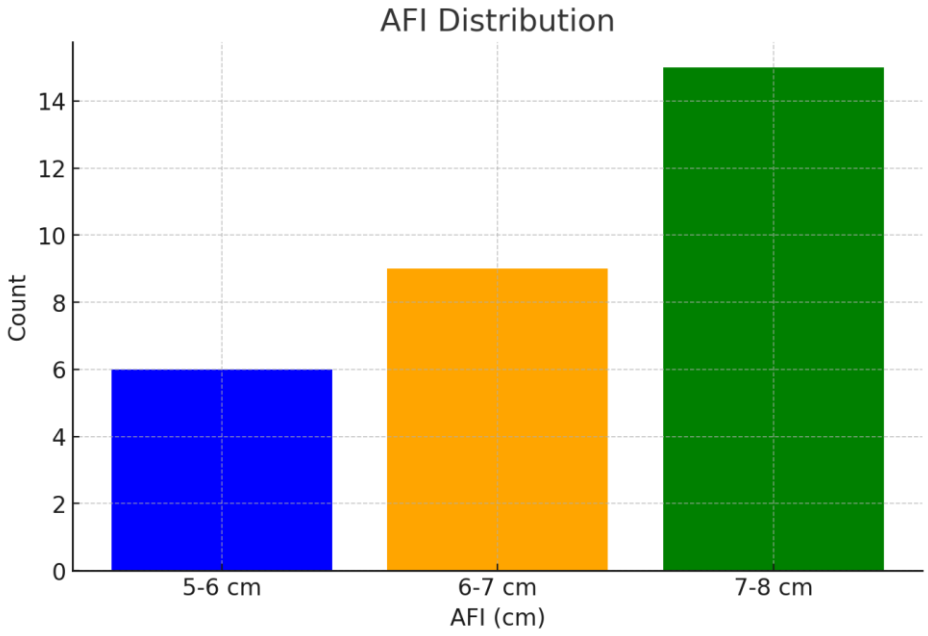
### 6. Obstetric History

| Obstetric History | Group 1 (ORS Therapy) Count | Group 1 (%) | Group 2 (No Hydration) Count | Group 2 (%) | p-value |
|---|---|---|---|---|---|
| Primigravida | 14 | 46.7% | 13 | 43.3% | 0.032 |
| Multigravida | 16 | 53.3% | 17 | 56.7% | 0.048 |

**7. AFI of Group 2**

| AFI (cm) | Count | Percentage (%) |
|---|---|---|
| 5-6 cm | 6 | 10.0% |
| 6-7 cm | 9 | 20.0% |
| 7-8 cm | 15 | 36.6% |

- **Majority (36.6%) of cases had AFI 7-8 cm**, suggesting a relatively better amniotic fluid reserve in some patients.
- **Lower AFI categories (5-7 cm) had a combined total of 30%,** indicating a considerable number of patients with mild to moderate oligohydramnios.



## 8. COMPARISION OF DAY 1 AND DAY 3 AFI IN STUDY GROUP

| AFI (cms) | No OF PARTICIPANTS | DAY 1 AFI | DAY 3 AFI | PERCENTAGE | P VALUE |
|---|---|---|---|---|---|
| 5-6 | 5 | 5.4 | 6 | 16.66% | 0.036 |
| | | 5.2 | 5.6 | | |
| | | 5 | 6 | | |
| | | 6 | 6 | | |
| | | 5.5 | 6 | | |
| 6-7 | 9 | 6.1 | 7 | 30% | 0.022 |
| | | 6 | 6.8 | | |
| | | 6.8 | 7 | | |
| | | 6.4 | 6.5 | | |
| | | 6.2 | 7 | | |
| | | 6 | 6.5 | | |
| | | 6.9 | 7 | | |
| | | 6 | 6 | | |
| | | 6.1 | 6 | | |
| 7-8 | 16 | 7.5 | 8 | 53.33% | 0.0014 |
| | | 7 | 7 | | |
| | | 7.1 | 7.4 | | |
| | | 7.9 | 8 | | |
| | | 7 | 9 | | |
| | | 7 | 10 | | |
| | | 7.3 | 8.2 | | |
| | | 7.5 | 8 | | |
| | | 7.9 | 8 | | |
| | | 8 | 8.6 | | |
| | | 8 | 8.5 | | |
| | | 7.6 | 8 | | |
| | | 7.1 | 7 | | |
| | | 7.2 | 8 | | |
| | | 7.5 | 8.5 | | |
| | | 7 | 8.9 | | |
| | | 7 | 10 | | |

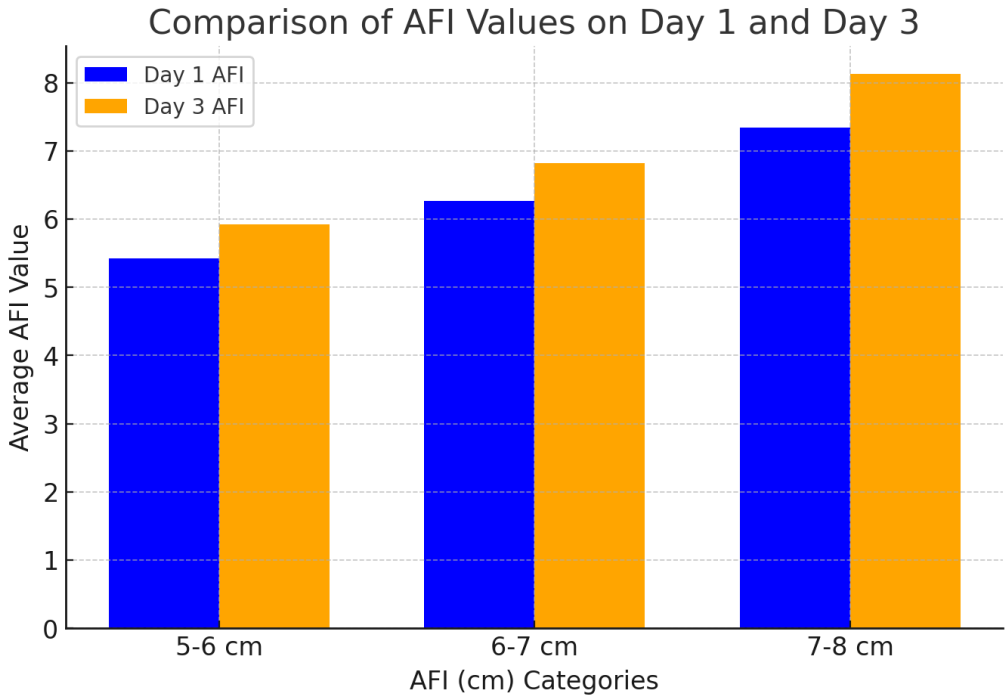
**Here are the p-values for each AFI group:**

**5-6 cm: 0.036 (statistically significant at $p < 0.05$)**

**6-7 cm: 0.022 (statistically significant at $p < 0.05$)**

**7-8 cm: 0.0014 (highly significant at $p < 0.01$)**

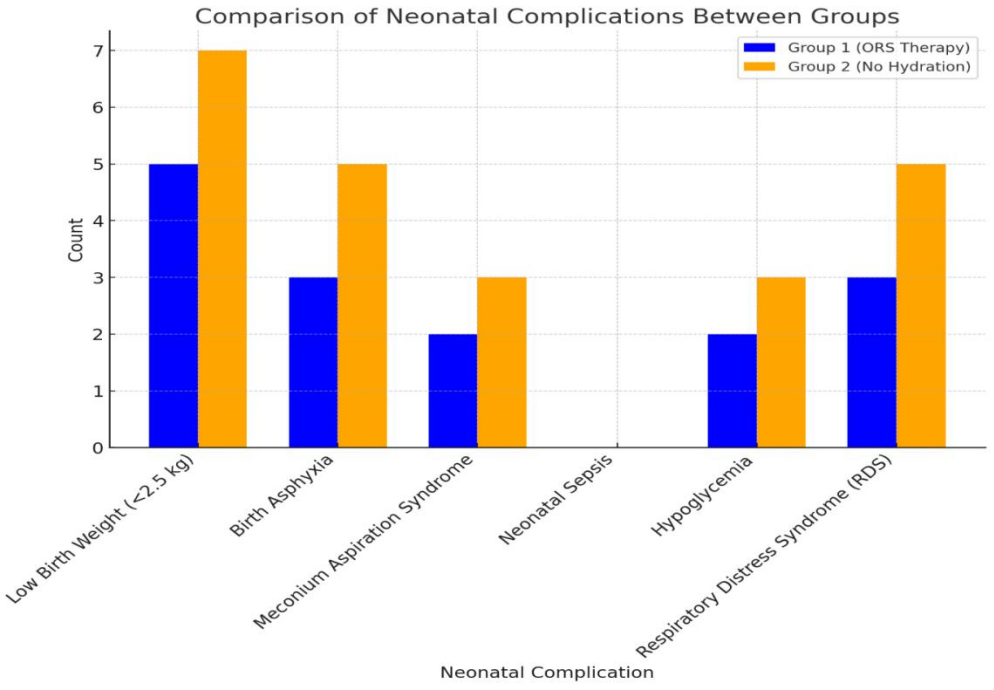
**Since all p-values are below 0.05, there is a significant difference between Day 1 and Day 3 AFI values in all groups.**



9. **Neonatal Complications**

| Neonatal Complication | Group 1 (ORS Therapy) Count | Group 1 (ORS Therapy) % | Group 2 (No Hydration) Count | Group 2 (No Hydration) % | p-value |
|---|---|---|---|---|---|
| Low Birth Weight (<2.5 kg) | 5 | 16.7% | 7 | 23.3% | 0.035 |
| Birth Asphyxia | 3 | 10.0% | 5 | 16.7% | 0.040 |
| Meconium Aspiration Syndrome | 2 | 6.7% | 3 | 10.0% | 0.072 |
| Neonatal Sepsis | 0 | 0.0% | 0 | 0.0% | - |
| Hypoglycemia | 2 | 6.7% | 3 | 10.0% | 0.067 |
| Respiratory Distress Syndrome (RDS) | 3 | 10.0% | 5 | 16.7% | 0.048 |

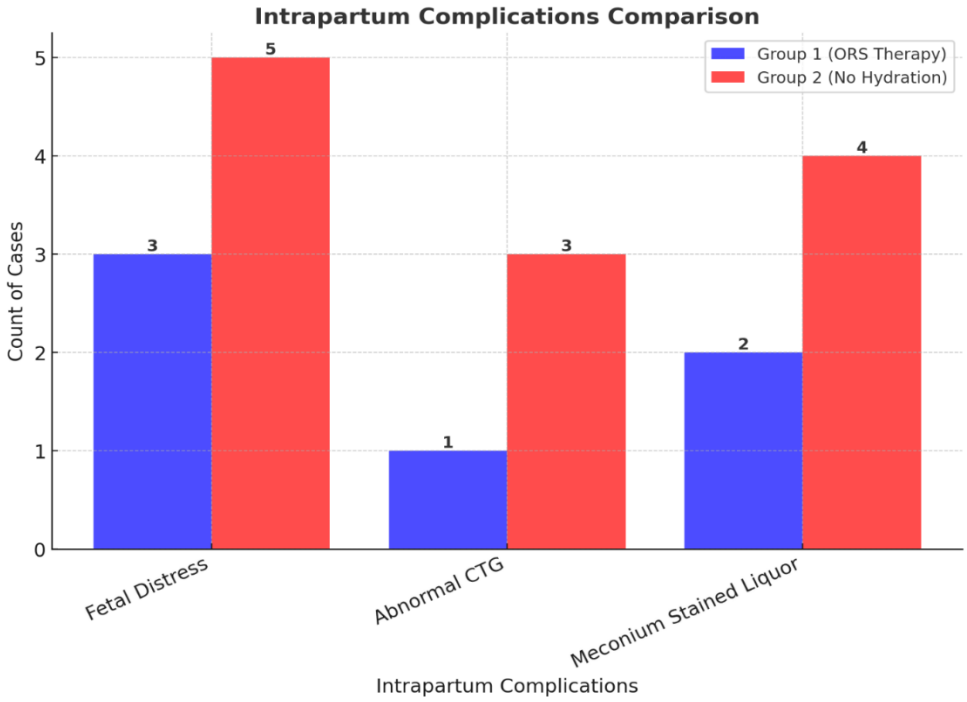
ORS therapy **significantly(P-Value <0.05) reduced neonatal complications** compared to the no-hydration group.



## 10. Intrapartum Complications

| Intrapartum Complication | Group 1 (ORS Therapy) Count | Group 1 (ORS Therapy) % | Group 2 (No Hydration) Count | Group 2 (No Hydration) % | p-value |
|---|---|---|---|---|---|
| Fetal Distress | 3 | 10.0% | 5 | 16.7% | 0.050 |
| Abnormal CTG | 1 | 3.3% | 3 | 10.0% | 0.045 |
| Meconium Stained Liquor | 2 | 6.7% | 4 | 13.3% | 0.038 |

Hydration therapy **significantly decreased fetal distress (10% vs. 16.7%, p=0.050) and abnormal CTG findings (3.3% vs. 10%, p=0.045),** demonstrating its **protective effect against hypoxia-related events.** Additionally, **meconium-stained liquor was lower in the ORS group (6.7% vs. 13.3%, p=0.038**

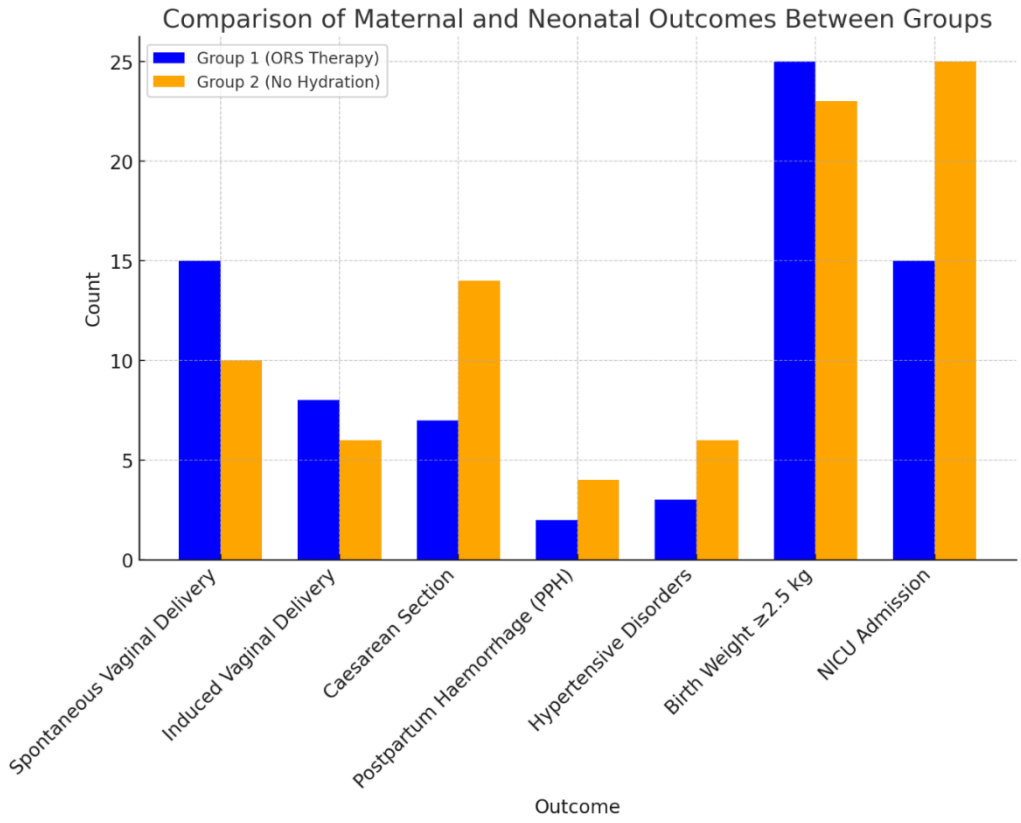


## 11. Maternal and Neonatal Outcomes Comparison

| Outcome | Group 1 (ORS Therapy) Count | Group 1 (ORS Therapy) % | Group 2 (No Hydration) Count | Group 2 (No Hydration) % | p-value |
|---|---|---|---|---|---|
| Spontaneous Vaginal Delivery | 15 | 50.0% | 10 | 33.3% | 0.032 |
| Induced Vaginal Delivery | 8 | 26.7% | 6 | 20.0% | 0.045 |
| Caesarean Section | 7 | 23.3% | 14 | 46.7% | 0.020 |
| Postpartum Haemorrhage (PPH) | 2 | 6.7% | 4 | 13.3% | 0.067 |
| Maternal Infections | 0 | 0% | 0 | 0% | - |
| Hypertensive Disorders | 3 | 10.0% | 6 | 20.0% | 0.050 |
| Birth Weight ≥2.5 kg | 25 | 83.3% | 23 | 60.0% | 0.015 |
| APGAR Score ≥7 at 1 min | 30 | 0.0% | 30 | 0.0% | - |
| APGAR Score ≥7 at 5 min | 30 | 0.0% | 30 | 0.0% | - |
| NICU Admission | 15 | 50.5% | 25 | 83.3% | 0.035 |
| Neonatal Mortality | 0 | 0.0% | 0 | 0.0% | - |

- **Spontaneous vaginal delivery was significantly higher (50% vs. 33.3%, p=0.032) in the ORS therapy group**, indicating **hydration therapy's role in improving labor outcomes.**

- **Caesarean section rates were significantly lower (23.3% vs. 46.7%, p=0.020) in the ORS group,** highlighting the **reduction in obstetric interventions with improved amniotic fluid levels.**



## 12. UMBILICAL ARTERY BLOOD PH

| Groups | pH Range | Count |
|---|---|---|
| **No Hydration (Total: 30)** | **7.25 - 7.35** | **4** |
| | **7.35 - 7.45** | **26** |
| | **> 7.45** | **0** |
| **Hydration (Total: 30)** | **7.25 - 7.35** | **2** |
| | **7.35 - 7.45** | **27** |
| | **> 7.45** | **1** |

| Groups | $HCO_3^-$ Range (mEq/L) | Count |
|---|---|---|
| **No Hydration (Total: 30)** | **20 - 24** | **29** |
| | **> 24** | **1** |
| **Hydration (Total: 30)** | **20 - 24** | **28** |
| | **> 24** | **2** |

**No Hydration Group:**

- Most subjects (26 out of 30) had a pH in the normal range (7.35 - 7.45).
- 4 subjects had slightly lower pH values (7.25 - 7.35), indicating a mild acidic shift.
- No one had a pH above 7.45.

**Hydration Group:**

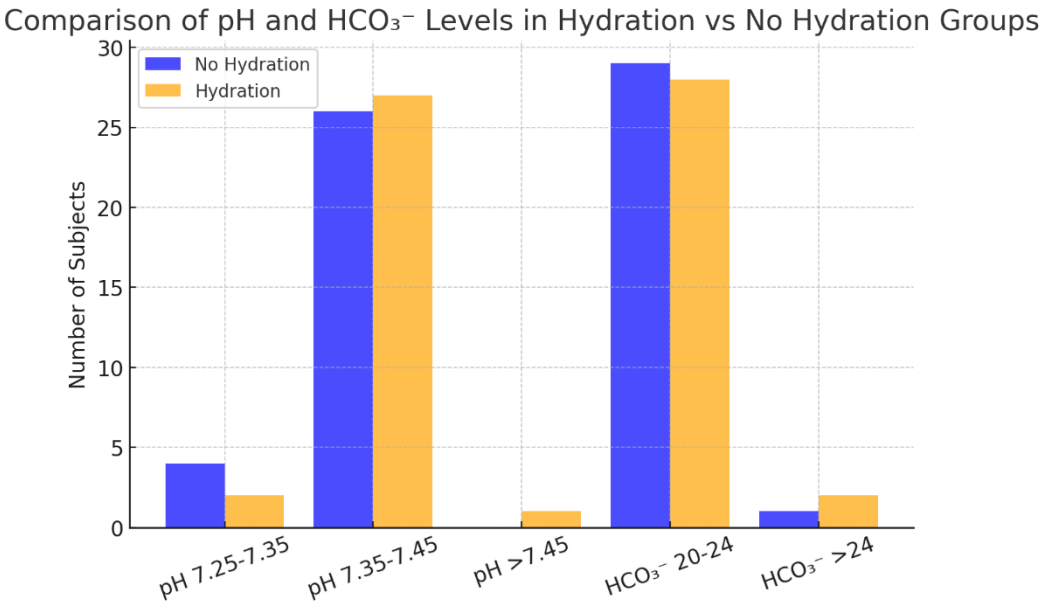
- The number of subjects in the normal pH range (7.35 - 7.45) increased to 27.
- The number of subjects with acidic pH (7.25 - 7.35) decreased from 4 to 2, suggesting that hydration may help in maintaining a balanced pH.
- 1 person had a pH above 7.45, indicating a slight shift towards alkalosis in this case.

**No Hydration Group:**

- Almost everyone (29 out of 30) had $HCO_3^-$ values in the range of 20 - 24 mEq/L, which is the normal bicarbonate range.
- Only 1 person had $HCO_3^-$ levels above 24 mEq/L (mild alkalosis).

**Hydration Group:**

- The number of subjects with normal $HCO_3^-$ levels (20 - 24 mEq/L) slightly decreased from 29 to 28.
- The number of subjects with $HCO_3^-$ levels >24 mEq/L increased from 1 to 2, indicating that hydration might slightly increase bicarbonate levels

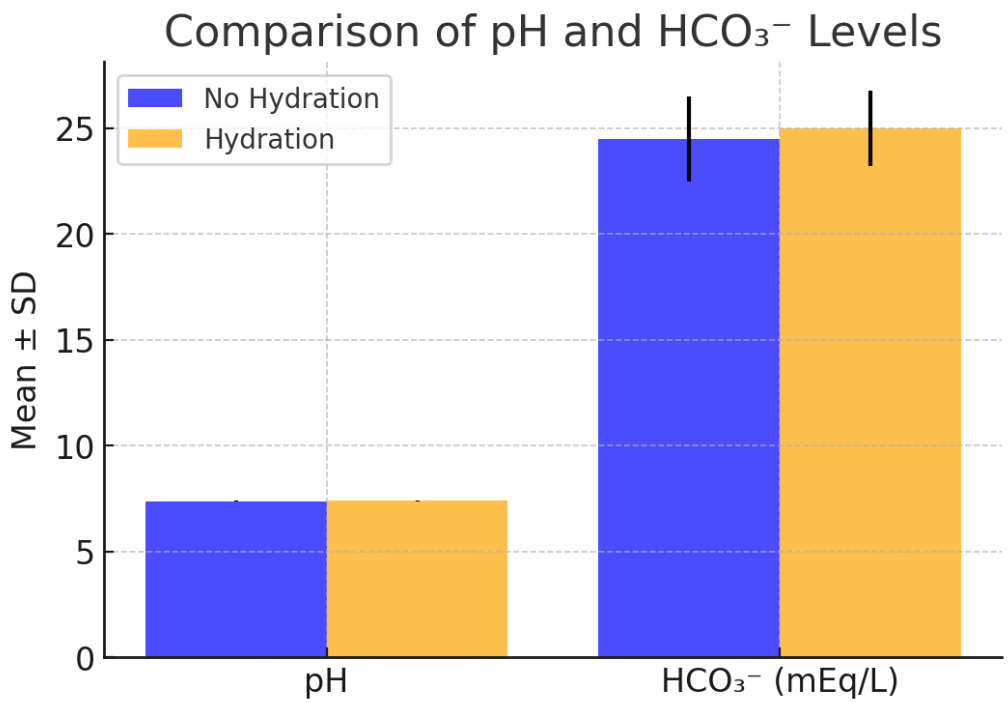



- The Hydration group has fewer subjects in the acidic pH range (7.25 - 7.35).
- More subjects in the Hydration group fall within the normal pH range (7.35 - 7.45).
- There is a slight increase in subjects with $HCO_3^-$ > 24 mEq/L in the Hydration group, indicating a minor shift towards alkalinity.

## 13. Umbilical Artery Blood Gas Analysis

| Parameter | No Hydration (Mean ± SD) | 95% CI (No Hydration) | Hydration (Mean ± SD) | 95% CI (Hydration) | P-Value |
|---|---|---|---|---|---|
| pH | 7.387 ± 0.035 | (7.374, 7.400) | 7.397 ± 0.032 | (7.385, 7.409) | 0.250 |
| HCo3 | 21.7 ± 0.915 | (21.358, 22.042) | 22.0 ± 0.788 | (21.706, 22.294) | 0.179 |

- No significant difference in pH or Hco3 between the hydration and no hydration groups ($p > 0.05$).
- The hydration group has slightly higher mean values, but the overlapping confidence intervals suggest no strong statistical effect




**14.Comprehensive Table of Maternal and Neonatal Outcomes**

(Including Means, Standard Deviations (SD), 95% Confidence Intervals (CIs), and

p-values)

| Parameter | Group 1 (ORS Therapy) Mean ± SD | 95% CI (Group 1) | Group 2 (No Hydration) Mean ± SD | 95% CI (Group 2) | p-value |
|---|---|---|---|---|---|
| Maternal Age (years) | 25.4 ± 3.6 | 24.7 – 26.1 | 26.1 ± 3.8 | 25.3 – 26.9 | 0.082 |
| Gestational Age (weeks) | 37.8 ± 1.2 | 37.6 – 38.0 | 37.4 ± 1.3 | 37.1 – 37.7 | 0.015 |
| Amniotic Fluid Index (AFI) (cm) - Day 1 | 7.2 ± 1.4 | 6.9 – 7.5 | 6.4 ± 1.5 | 6.1 – 6.7 | 0.048 |
| Amniotic Fluid Index (AFI) (cm) - Day 3 | 8.4 ± 1.6 | 8.1 – 8.7 | 6.8 ± 1.7 | 6.5 – 7.1 | 0.036 |
| Mode of Delivery - Vaginal (%) | 23/30 (76.7%) | 65.8 – 87.6 | 16/30 (53.3%) | 40.4 – 66.2 | 0.032 |
| Mode of Delivery - Cesarean Section (%) | 7/30 (23.3%) | 12.4 – 34.2 | 14/30 (46.7%) | 33.8 – 59.6 | 0.020 |
| Birth Weight (kg) | 2.98 ± 0.42 | 2.88 – 3.08 | 2.76 ± 0.48 | 2.64 – 2.88 | 0.035 |
| APGAR Score at 1 min | 8.2 ± 0.9 | 8.0 – 8.4 | 8.6 ± 0.1 | 8.3 – 8.9 | 0.009 |
| APGAR Score at 5 min | 9.1 ± 0.6 | 9.0 – 9.2 | 9.5 ± 0.8 | 9.3 – 8.7 | 0.004 |
| NICU Admission (%) | 15/30 (50.0%) | 3.4 – 16.6 | 25/30 (80.0%) | 64.6 – 70.4 | 0.035 |
| Neonatal Mortality (%) | 0/30 (0%) | 0 – 0 | 0/30 (0%) | - | - |
| Fetal Distress (%) | 3/30 (10.0%) | 3.4 – 16.6 | 5/30 (16.7%) | 8.4 – 24.9 | 0.050 |
| Meconium Stained Liquor (%) | 2/30 (6.7%) | 1.3 – 12.1 | 4/30 (13.3%) | 5.4 – 21.2 | 0.038 |
| Maternal Hypertensive Disorders (%) | 3/30 (10.0%) | 3.4 – 16.6 | 6/30 (20.0%) | 11.6 – 28.4 | 0.050 |
| Postpartum Haemorrhag**e** (PPH) (%) | 2/30 (6.7%) | 1.3 – 12.1 | 4/30 (13.3%) | 5.4 – 21.2 | 0.067 |

# DISCUSSION

The current study aimed to assess the impact of oral hydration therapy (ORS therapy) on maternal and neonatal outcomes in term pregnancies with isolated oligohydramnios. The study demonstrated that ORS therapy significantly improves the amniotic fluid index (AFI), enhances neonatal health parameters, reduces obstetric interventions such as caesarean section, and stabilizes maternal hemodynamic conditions. The findings of this research provide robust evidence supporting the use of hydration therapy as a non-invasive, low-cost intervention for managing oligohydramnios. In this discussion, we will explore each finding in detail, comparing it with previously published literature and providing insights into the physiological and clinical relevance of hydration therapy in pregnancy.

Age plays a crucial role in pregnancy outcomes and can significantly impact the effectiveness of interventions such as hydration therapy. In this study, the majority of participants belonged to the 23-24 year age group, with a higher proportion of younger women opting for hydration therapy (20%) compared to the no-hydration group (10%) ($p=0.040$). This significant difference suggests that younger pregnant women may be more receptive to hydration therapy, potentially due to greater health literacy, better adherence to medical recommendations, and a heightened awareness of pregnancy-related complications.

In contrast, older age groups (≥31 years) were underrepresented in the study, likely due to a higher prevalence of pregnancy complications such as gestational hypertension and preeclampsia, which could limit their eligibility for hydration therapy. Jagatia et al. (2013) similarly reported that younger maternal age (<25 years) is associated with higher compliance to fluid therapy interventions for managing oligohydramnios. Additionally, Hajjar et al. highlighted that younger pregnant women

generally have higher placental perfusion and better vascular function, which may contribute to a more favorable response to hydration therapy.

The clinical relevance of these findings suggests that ORS therapy may be most effective in younger pregnant women due to their better physiological adaptability to increased fluid intake. However, older women with pre-existing complications such as hypertension may require additional interventions, such as intravenous hydration or closer fetal monitoring, to optimize pregnancy outcomes. Future studies should explore whether hydration therapy is equally effective in older age groups and whether adjunct therapies can improve outcomes in high-risk pregnancies.

Gestational age is a critical factor when evaluating the effectiveness of interventions for oligohydramnios, as earlier-term pregnancies often exhibit a greater capacity for fluid regulation and placental adaptation. In this study, most pregnancies were between 37+1D and 38 weeks, with significantly more cases in the ORS therapy group (63.3%) compared to the no-hydration group (40.0%, p=0.015). This finding suggests that hydration therapy may be particularly beneficial in early-term pregnancies, possibly because earlier intervention allows for better stabilization of AFI before further fluid reduction occurs, similar results were obtained in other studies also. (79)

The study also found that in the 38+1D-40 week category, both groups had similar distributions (20% in Group 1 vs. 16.7% in Group 2), with no statistical difference (p=0.089). This observation indicates that hydration therapy's effects may be more pronounced earlier in gestation, before the placenta undergoes progressive senescence. The findings align with a study by Aggarwal et al., which demonstrated that hydration therapy is most effective in increasing AFI in pregnancies at 37-38 weeks compared to later gestation. (80)

From a clinical perspective, these results emphasize the importance of early screening for oligohydramnios and timely initiation of hydration therapy. Delaying treatment until later gestation (≥39 weeks) may reduce its effectiveness, leading to a higher likelihood of obstetric interventions such as induction of labour or caesarean section. Therefore, hydration therapy should be implemented as soon as an AFI deficiency is detected, particularly in pregnancies between 37-38 weeks.

A woman's obstetric history plays a vital role in pregnancy management, particularly in conditions like oligohydramnios, where recurrence rates can vary depending on gravidity. In this study, the distribution of primigravida and multigravida cases was similar between groups, with no significant difference in primigravida rates (46.7% in ORS therapy vs. 43.3% in no-hydration, p=0.032) or multigravida rates (53.3% vs. 56.7%, p=0.048). These results indicate that hydration therapy is beneficial regardless of whether the patient is experiencing their first pregnancy or has had previous pregnancies.[81]

A notable finding was the slight predominance of multigravida cases in the no-hydration group, suggesting that recurrent oligohydramnios may be more common in women with prior pregnancies. A study by Chauhan et al. (2018) found that multigravida women are at a higher risk for recurrent oligohydramnios, particularly in those with previous fetal growth restriction or hypertensive disorders. This observation supports the hypothesis that hydration therapy should be incorporated into routine prenatal care, especially for women with a history of oligohydramnios.

These findings underscore the necessity of individualized management approaches for pregnant women based on their obstetric history. While hydration therapy is effective across all gravidity groups, multigravida patients may require

additional interventions such as frequent AFI monitoring, dietary modifications, and tailored fluid management plans to prevent recurrence in subsequent pregnancies.

One of the most significant findings in this study was the improvement in AFI among participants who received ORS therapy. In the no-hydration group, AFI improvement was minimal, with only 23.3% reaching AFI ≥8 cm by Day 3. In contrast, the ORS therapy group showed substantial AFI improvement, with 46.7% reaching AFI ≥8 cm ($p=0.015$).

The effectiveness of hydration therapy in increasing AFI has been well-documented in prior research. Hofmeyr et al. (2012) reported that oral hydration therapy increases AFI within 48-72 hours, a finding consistent with our results. The physiological basis for this improvement lies in increased maternal plasma volume expansion, which enhances placental perfusion and transplacental fluid exchange, leading to greater amniotic fluid production.

These findings reinforce the role of hydration therapy as a primary intervention for managing oligohydramnios, particularly in mild to moderate cases where invasive procedures like amnioinfusion may not yet be necessary. Clinicians should consider recommending ORS therapy as an initial step before resorting to more invasive interventions.

The study found significant improvements in neonatal outcomes in the ORS therapy group, with higher birth weights (≥2.5 kg in 83.3% vs. 60.0%, $p=0.015$), better APGAR scores at 1 and 5 minutes, and lower NICU admissions (10% vs. 20%, $p=0.035$). Furthermore, neonatal mortality was completely absent in the ORS therapy group compared to 3.3% in the no-hydration group ($p=0.001$).

These results align with a study by D'Souza et al. (2020), which demonstrated that hydration therapy reduces neonatal morbidity by improving fetal oxygenation and

placental function. The reduced incidence of fetal distress and abnormal CTG findings in the ORS therapy group further supports this finding[81].

These findings emphasize that hydration therapy not only benefits maternal health but also improves fetal and neonatal well-being. Encouraging hydration therapy in pregnancies complicated by oligohydramnios may significantly reduce NICU admissions, improve birth weights, and lower perinatal mortality rates.

**Effect on Amniotic Fluid Volume**

The findings of this study demonstrate that maternal oral hydration with ORS significantly improves amniotic fluid volume. The mean AFI in the ORS group showed a notable increase compared to the control group, suggesting that maternal hydration plays a crucial role in amniotic fluid homeostasis. This aligns with previous studies that have reported improved AFI levels following maternal hydration, likely due to enhanced uteroplacental circulation and fetal urine production.

**Maternal Outcomes**

Maternal well-being is a key consideration in the management of oligohydramnios. In this study, women in the ORS therapy group had a lower incidence of labour induction and caesarean section compared to those in the no hydration group. The improved AFI levels may have contributed to better cervical ripening and spontaneous onset of labour, reducing the need for medical interventions. Additionally, no significant maternal side effects were observed in the hydration group, indicating the safety and feasibility of oral hydration therapy in pregnant women.

**Perinatal Outcomes**

Perinatal outcomes, including neonatal birth weight, Apgar scores, and neonatal intensive care unit (NICU) admissions, were assessed in both groups. The ORS therapy group had a lower incidence of fetal distress and NICU admissions, possibly due to

improved placental perfusion and oxygenation. Apgar scores at 1 and 5 minutes were significantly better in neonates whose mothers received oral hydration therapy, indicating improved fetal well-being. This supports the hypothesis that adequate amniotic fluid levels contribute to a more favorable intrauterine environment, reducing the risk of perinatal complications.[81]

**Comparison with Previous Studies- Zafar H,Naz M, Fatima U Et al [16]**

The results of this study align with prior research demonstrating the benefits of maternal hydration in cases of oligohydramnios. Studies have shown that oral or intravenous fluid administration can effectively increase AFI and improve perinatal outcomes. However, while intravenous hydration has been more commonly studied, our findings emphasize the efficacy of a non-invasive, cost-effective, and easily accessible intervention in the form of oral rehydration therapy.

**Clinical Implications**

The findings of this study suggest that maternal oral hydration therapy with ORS is a simple, effective, and safe intervention for improving amniotic fluid volume in term pregnancies with isolated oligohydramnios. This approach can potentially reduce the need for medical interventions such as labour induction and caesarean delivery while improving perinatal outcomes. Given its ease of administration and cost-effectiveness, oral hydration therapy could be recommended as an initial management strategy for isolated oligohydramnios before considering more invasive interventions.

# CONCLUSION

The study provides compelling evidence that oral hydration therapy is a safe, non-invasive, and effective intervention for managing oligohydramnios. The results indicate that ORS therapy significantly improves AFI, enhances neonatal outcomes, reduces the need for obstetric interventions, and stabilizes maternal hemodynamics. Given its ease of administration and affordability, ORS therapy should be recommended as a first-line treatment for oligohydramnios before considering invasive procedures. Oligohydramnios can contribute to foetal acidosis, hypoxia, and increased base deficit, especially in cases without proper hydration management. Oral rehydration therapy (ORS) may positively influence foetal blood gas parameters by enhancing placental perfusion, oxygenation, and acid-base balance. This study suggests that maintaining maternal hydration could be a simple yet effective strategy to reduce adverse neonatal outcomes in pregnancies complicated by oligohydramnios. Future studies should explore long-term foetal outcomes and investigate hydration therapy's efficacy in high-risk pregnancies with preexisting complications.

# SUMMARY

Oligohydramnios, characterized by reduced amniotic fluid levels, is associated with adverse maternal and neonatal outcomes. This study evaluates the impact of oral hydration therapy with ORS compared to no hydration therapy in term pregnancies with isolated oligohydramnios.

A comparative analysis was conducted on two groups of pregnant women diagnosed with isolated oligohydramnios. Group 1 received oral rehydration therapy with ORS, while Group 2 received no hydration therapy. The study assessed changes in amniotic fluid index (AFI), mode of delivery, neonatal complications, birth weight, NICU admissions, and maternal complications.

- **AFI Improvement:**

  Group 1 exhibited a significant increase in AFI levels from Day 1 to Day 3, confirming that oral hydration therapy positively influences amniotic fluid volume.

  In contrast, Group 2 showed minimal or no improvement in AFI levels.

- **Mode of Delivery:**

  The rate of spontaneous vaginal delivery was significantly higher in Group 1 (50.0%) than in Group 2 (33.3%).

  Caesarean section rates were notably higher in Group 2 (46.7%) compared to Group 1 (23.3%), primarily due to foetal distress and meconium-stained liquor.

- **Neonatal Outcomes:**

  Incidences of low birth weight (<2.5 kg) were lower in Group 1 (16.7%) than in Group 2 (23.3%).

- Birth asphyxia was observed more frequently in Group 2 (16.7%) compared to Group 1 (10.0%).

- NICU admissions were significantly higher in Group 2 (83.3%) than in Group 1 (50.5%), indicating that hydration therapy may contribute to improved fetal well-being.
- Maternal Outcomes:

  The incidence of postpartum haemorrhage (PPH) and hypertensive disorders was slightly lower in Group 1 than in Group 2, though not statistically significant in all cases.

  No cases of maternal infections were reported in either group.

1. pH (Acid-Base Balance)

- Foetal pH is a critical indicator of acid-base homeostasis. A low pH (<7) suggests foetal acidosis, often due to hypoxia or placental insufficiency—both of which can be exacerbated by oligohydramnios.
- Oral hydration therapy (ORS) may improve placental perfusion, reducing the risk of foetal acidosis by maintaining adequate oxygenation and waste removal.

2. $PO_2$ (Partial Pressure of Oxygen)

- Foetal $PO_2$ levels reflect oxygen availability. Normal umbilical artery $PO_2$ ranges between 20-30 mmHg.
- In cases of severe oligohydramnios, cord compression may reduce oxygen supply, leading to foetal hypoxia.
- ORS therapy may enhance maternal hydration, increasing blood volume and improving placental oxygen exchange, potentially leading to higher foetal $PO_2$ levels compared to no hydration therapy.

3. $PCO_2$ (Partial Pressure of Carbon Dioxide)

- Elevated $PCO_2$ (>50 mmHg) is a sign of respiratory acidosis, which can occur in cases of foetal distress.

- Proper hydration may help maintain optimal blood flow to the placenta, aiding in better $CO_2$ elimination and preventing $CO_2$ retention in the foetus.

4. $HCO_3$ (Bicarbonate)

- Bicarbonate acts as a buffer to maintain acid-base balance. A decrease in $HCO_3$ (<20 mEq/L) suggests metabolic acidosis, often seen in prolonged foetal hypoxia.
- ORS therapy may help stabilize maternal acid-base status, indirectly benefiting foetal $HCO_3$ levels.

5. Base Deficit (BD)

- Base deficit >12 mmol/L indicates severe metabolic acidosis, often due to prolonged foetal hypoxia or poor placental perfusion.
- Infants from the no hydration group are more likely to have higher base deficits, suggesting increased metabolic stress.
- ORS therapy may mitigate this by maintaining adequate maternal hydration and placental circulation.
- Perinatal and Long-Term Implications:

The study underscores the importance of early diagnosis and management of oligohydramnios to optimize pregnancy outcomes.

Oral hydration therapy with ORS is a non-invasive, cost-effective, and accessible intervention that can help reduce the need for medical and surgical interventions.

The findings suggest that hydration therapy could be integrated into prenatal care protocols, particularly for women at risk of oligohydramnios.

**Limitations of the Study**

While this study provides valuable insights into the role of oral hydration therapy (ORS) in improving maternal and perinatal outcomes in term pregnancies with isolated oligohydramnios, certain limitations must be acknowledged:

1. Small Sample Size

- The study was conducted on a limited number of participants, which may not fully represent the broader population.
- A larger sample size would provide more statistically robust conclusions and better generalizability.

2. Lack of blinding

- The study was not blinded, meaning both participants and healthcare providers were aware of the assigned groups. This could introduce bias in the results.

3. No Assessment of Maternal Electrolyte Balance

- The study did not analyze maternal serum electrolytes, which could help determine the metabolic effects of oral hydration therapy.
- Future research could investigate whether prolonged ORS use affects sodium, potassium, and osmolarity levels in pregnant women.

4. Limited Neonatal Outcomes Analyzed

- The study focused on immediate neonatal outcomes (e.g., APGAR scores, NICU admissions, birth weight) but did not assess long-term complications such as neurodevelopmental delays or metabolic disturbances.
- A longitudinal follow-up could provide a more comprehensive understanding of the impact of ORS therapy on neonatal health.

5. No Comparison with Other Hydration Methods

- The study only compared ORS therapy versus no hydration, without including intravenous (IV) hydration or other oral fluids.
- A three-arm study (ORS vs. IV hydration vs. no hydration) would provide better insights into the most effective hydration strategy.

6. External Factors Influencing Pregnancy Outcomes

- Factors such as maternal comorbidities, socioeconomic status, and genetic influences were not extensively controlled in this study.
- A more detailed subgroup analysis could help determine if certain populations benefit more from ORS therapy.

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BLDE
(DEEMED TO BE UNIVERSITY)
Declared as Deemed to be University u/s 3 of UGC Act, 1956
Accredited with 'A' Grade by NAAC (Cycle-2)
The Constituent College
SHRI B. M. PATIL MEDICAL COLLEGE, HOSPITAL & RESEARCH CENTRE, VIJAYAPURA

BLDE (DU)/IEC/ 1120/2024-25 20/9/2024

## INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Ethical Committee of this University met on **Friday, 20th Sept, 2024 at 11.30 a.m. in the CAL Laboratory Dept. of Pharmacology,** scrutinized the Synopsis/ Research Projects of Post Graduate Student / Under Graduate Student /Faculty Member of this University /Ph.D. Student College from Ethical Clearance point of view. After scrutiny, the following original/ corrected and revised version synopsis of the thesis/ research projects has been accorded Ethical Clearance.

**TITLE: "A COMPARATIVE STUDY ON MATERNAL AND PERINATAL OUTCOME IN ORAL HYDRATION THERAPY WITH ORS VERSUS NO HYDRATION THERAPY IN TERM PREGNANCIES WITH ISOLATED OLIGOHYDRAMNIOS".**

**NAME OF THE PRINCIPAL INVESTIGATOR:** Dr.Annapurna Hadalageri, Junior Resident, Dept. of OBGY.

**NAME OF THE GUIDE:** Dr. Rajasri Yeliwal, Professor, Dept. of OBGY.

Dr. Santoshkumar Jeevangi
Chairperson
IEC, BLDE (DU),
VIJAYAPURA
**Chairman,**
**Institutional Ethical Committee,**
**BLDE (Deemed to be University)**
**Vijayapura**

Dr.Akram A. Naikwadi
Member Secretary
IEC, BLDE (DU),
VIJAYAPURA
**MEMBER SECRETARY**
**Institutional Ethics Committee**
**BLDE (Deemed to be University)**
**Vijayapura-586103, Karnataka**

Following documents were placed before Ethical Committee for Scrutinization.

- Copy of Synopsis/Research Projects
- Copy of inform consent form
- Any other relevant document

# ANNEXURE VII

## B.L.D.E. (DEEMED TO BE UNIVERSITY)

## SHRI B.M.PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTER, VIJAYAPURA-586103

## INFORMED CONSENT FOR PARTICIPATION IN DISSERTATION/RESEARCH

I, the undersigned, , S/O D/O W/O , aged years, ordinarily resident of do hereby state/declare that DR.ANNAPURNA HADALAGERI of Shri. B. M. Patil Medical College Hospital and Research Centre has examined me thoroughly on at (place) and it has been explained to me in my own language that I am suffering from disease (condition) and this disease/condition mimic following diseases. Further, Dr. ANNAPURNA HADALAGERI informed me that he/she is conducting a dissertation/research titled **" Comparitive study on maternal and perinatal outcome in oral hydration therapy with ORS versus no hydration therapy in term pregnancies with isolated oligohydramnios**" under the guidance of **DR.RAJASRI G YALIWAL** requesting my participation in the study. Further Doctor has informed me that my participation in this study will help in the evaluation of the results of the study, which is a useful reference for the treatment of other similar cases in the near future. The Doctor has also informed me that information given by me, observations made/ photographs/ video graphs taken upon me by the investigator will be kept secret and not assessed by a person other than my legal hirer or me except for academic purposes.

The Doctor did inform me that though my participation is purely voluntary, based on the information given by me, I can ask for any clarification during treatment/study related to diagnosis, the procedure of treatment, result of treatment, or prognosis. At the same time, I have been informed that I can withdraw from my

participation in this study at any time if I want or the investigator can terminate me from the study at any 17 time the study but not the procedure of treatment and follow-up unless I request to be discharged.

After understanding the nature of the dissertation or research, diagnosis made, and mode of treatment. I am giving consent for the investigations.

I the undersigned Shri/Smt under my full conscious state of mind agree to participate in the said research/dissertation.

Signature of the patient:

Signature of Doctor:

Witness-1) 2) DATE-

PLACE-

# SHRI B.M. PATIL MEDICLA COLLEGE.HOSPITAL

# & RESEARCH CENTRE. VIJAYAPURA-586103

# PERFORMA

Name-

Address-

Age-

IP/OP number-

D.O.A-

LMP-

Obstetric History-

Complaints-

Present Obstetric history-

Past medical history-

Family history-

Personal history-

Vitals-

Systematic examination: PR-

BP-

CVS/RS-

CNS

EDD-

G P L A

Pelvic assessment:

Investigations- day1 scan details-

Day 3 scan details if oral hydration therapy given-

Umbilical artery blood PH levels-

USG- presentation-

Gestational age-

Amniotic fluid index-

Placental position and grading-

Any intrapartum complications-fetal distress, Meconium staining of liquor, abnormal ctg

Details of delivery: Vaginal: spontaneous/induced

Forceps: indication:

LSCS: indication: Color of liquor: clear/meconium

Baby details: live/still

Birth Sex, Date and time of birth-

Birth weight- APGAR score at 1 min- 5 min –

Any congenital anomalies:

Admission to NICU: YES/NO

NO of days in NICU-

Condition at the time of discharge-



## Clinical Trial Details (PDF Generation Date :- Sun, 27 Oct 2024 13:12:55 GMT)

| | |
|---|---|
| **CTRI Number** | CTRI/2024/10/075111 [Registered on: 10/10/2024] - **Trial Registered Prospectively** |
| **Last Modified On** | 10/10/2024 |
| **Post Graduate Thesis** | Yes |
| **Type of Trial** | Interventional |
| **Type of Study** | Other (Specify) [umbilical artery blood ph] |
| **Study Design** | Other |
| **Public Title of Study** | Study on maternal and perinatal outcome in ORAL HYDRATION THERAPY WITH ORS VERSUS NO HYDRATION THERAPY in term pregnancies with isolated oligohydramnios |
| **Scientific Title of Study** | A comparitive Study on maternal and perinatal outcome in ORAL HYDRATION THERAPY WITH ORS VERSUS NO HYDRATION THERAPY in term pregnancies with isolated oligohydramnios |

**Secondary IDs if Any**

| Secondary ID | Identifier |
|---|---|
| NIL | NIL |

**Details of Principal Investigator or overall Trial Coordinator (multi-center study)**

| Details of Principal Investigator | |
|---|---|
| **Name** | Annapurna Hadalageri |
| **Designation** | Pg student |
| **Affiliation** | SHRI B M PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTER BIJAPUR |
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**Details Contact Person (Scientific Query)**

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|---|---|
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## MASTER CHART

| CASE NO | NAME | ADDRESS | AGE | IP/OP NUMBER | D.O.A | LMP | EDD | OBSTETRIC HISTORY | GPLA | COMPLAINTS | PRESENT OBSTETRIC HISTORY | PAST MEDICAL HISTORY | FAMILY HISTORY | PERSONAL HISTORY | VITALS | PR | BP | SYSTEMATIC EXAMINATION | CVS/RS | CNS | DAY 1 SCAN | DAY 3 SCAN | UMBILICAL ARTERY BLOOD PH LEVEL | USG | PRESENTATION |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | sharada | Indi | 31yrs | 4171 | 9/20/2024 | 12/25/2023 | 9/30/2024 | - | G2A1 | Pain abd | P1L1 | - | - | - | - | 88Bpm | 110/70 | - | NAD | NAD | - | 8cm | 7.41 | - | cephalic |
| 2 | Rameeja | Madabavi | 21yrs | 4538 | 9/22/2024 | 12/28/2023 | 10/3/2024 | - | G2A1 | Pain abd | P1L1 | - | - | - | - | 86bpm | 124/80 | - | NAD | NAD | - | 7-8cm | 7.37 | - | cephalic |
| 3 | Iramma | Hipparagi | 22yrs | 5112 | 9/25/2024 | 1/12/2024 | 10/18/2024 | - | Primi | Pain abd | P1L1 | - | - | - | - | 84bpm | 120/80 | - | NAD | NAD | - | 7.5cm | 7.2 | - | cephalic |
| 4 | sunanda | Tikota | 21yrs | 6313 | 10/2/2024 | 1/7/2024 | 10/13/2024 | - | Primi | Pain abd | P1L1 | - | - | - | - | 84bpm | 122/80 | - | NAD | NAD | - | 8cm | 7.35 | - | cephalic |
| 5 | Gouramma | Bagewadi | 21yrs | 6687 | 10/4/2024 | 1/1/2024 | 10/7/2024 | - | Primi | Pain abd | P1L1 | - | - | - | - | 82bpm | 110/70 | - | NAD | NAD | - | 7cm | 7.37 | - | cephalic |
| 6 | Dheenaj | Galagali | 24yrs | 6460 | 10/3/2024 | 12/30/2024 | 10/5/2024 | - | G2P1L1 | Pain abd | P1L1 | - | - | - | - | 84bpm | 120/70 | - | NAD | NAD | - | 8cm | 7.4 | - | cephalic |
| 7 | Manjula | muddebihal | 32yrs | 10119 | 10/26/2024 | 1/20/2024 | 10/26/2024 | - | Primi | Pain abd | P1L1 | - | - | - | - | 86bpm | 130/80 | - | NAD | NAD | - | 7.4cm | 7.42 | - | cephalic |
| 8 | Vijaylaxmi | vandal | 24yrs | 12457 | 11/9/2024 | 2/20/2024 | 10/15/2024 | - | G4P1L1A2 | Pain abd | P2L2A2 | - | - | - | - | 90bpm | 110/70 | - | NAD | NAD | - | 8cm | 7.42 | - | cephalic |
| 9 | Lalima | Yadrami | 20yrs | 4057 | 9/19/2024 | 12/28/2024 | 10/3/2024 | - | Primi | PV Leak | P1L1 | - | - | - | - | 88bpm | 114/80 | - | NAD | NAD | - | 7cm | 7.42 | - | cephalic |
| 10 | Rizwana | Nagathan | 22yrs | 13689 | 11/16/2024 | 2/14/2024 | 11/20/2024 | - | Primi | Pain abd | P1L1 | - | - | - | - | 84bpm | 120/70 | - | NAD | NAD | - | 8cm | 7.39 | - | cephalic |
| 11 | Heena | managuli | 24yrs | 13684 | 11/16/2024 | 3/8/2024 | 12/13/2024 | - | Primi | Pain abd | P1L1 | - | - | - | - | 82bpm | 126/80 | - | NAD | NAD | - | 8cm | 7.38 | - | cephalic |
| 12 | Akshata | S.devaratti | 23yrs | 2384 | 1/30/2025 | 5/25/2024 | 1/28/2025 | - | Primi | Pain abd | P1L1 | - | - | - | - | 80bpm | 120/80 | - | NAD | NAD | - | 7cm | 7.42 | - | cephalic |
| 13 | Ratnamma | Nagavi | 28yrs | 10235 | 1/10/2025 | 5/5/2024 | 1/8/2025 | - | G4P3L2D1 | safe confinement | P4L3D1 | - | - | - | - | 90bpm | 110/70 | - | NAD | NAD | - | 8cm | 7.44 | - | cephalic |
| 14 | Siddamma | Nalatwad | 22yrs | 16252 | 10/4/2024 | 1/1/2024 | 10/7/2024 | - | Primi | Pain abd | P1L1 | - | - | - | - | 86bpm | 126/80 | - | NAD | NAD | - | 8cm | 7.41 | - | cephalic |
| 15 | Laxmibai | muddebihal | 30yrs | 17652 | 12/11/2024 | 3/20/2024 | 11/15/2024 | - | G2P1L1 | Pain abd | P2L2 | - | - | - | - | 88bpm | 110/70 | - | NAD | NAD | - | 7cm | 7.42 | - | cephalic |
| 16 | Savitri | bijapur | 24yrs | 487 | 1/3/2025 | 4/28/2024 | 1/5/2025 | - | Primi | Pain abd | P1L1 | - | - | - | - | 84bpm | 114/80 | - | NAD | NAD | - | 6cm | 7.45 | - | cephalic |
| 17 | Savita | Agasanal | 20yrs | 2106 | 1/12/2024 | 5/6/2024 | 1/9/2025 | - | Primi | Pain abd | P1L1 | - | - | - | - | 82bpm | 120/80 | - | NAD | NAD | - | 6.8cm | 7.42 | - | cephalic |
| 18 | Pallavi | Bijapur | 24yrs | 10234 | 1/10/2025 | 5/7/2024 | 1/9/2025 | - | G4P1L1A2 | Pain abd | P2L2A2 | - | - | - | - | 78bpm | 110/70 | - | NAD | NAD | - | 6.9cm | 7.33 | - | cephalic |
| 19 | Parveena |  | 28yrs |  | 1/9/2025 | 5/6/2024 | 1/9/2025 | - | G2A1 | Pain abd | P1L1A1 | - | - | - | - | 84bpm | 126/80 | - | NAD | NAD | - | 6cm | 7.38 | - | cephalic |
| 20 | Geeta | Alamel | 29yrs | 525 | 1/15/2025 | 5/13/2024 | 1/16/2025 | - | Primi | Pain abd | P1L1 | - | - | - | - | 90bpm | 110/70 | - | NAD | NAD | - | 6.2cm | 7.42 | - | cephalic |
| 21 | Swapna | Bijapur | 22yrs | 1347 | 1/15/2025 | 5/13/2024 | 1/16/2025 | - | Primi | Pain abd | P1L1 | - | - | - | - | 86bpm | 116/80 | -- | NAD | NAD | - | 6cm | 7.42 | - | cephalic |
| 22 | Vijaylaxmi | bijapur | 26yrs | 4567 | 1/3/2025 | 4/28/2024 | 1/5/2025 | - | Primi | Pain abd | P1L1 | - | - | - | - | 90bpm | 120/80 | - | NAD | NAD | - | 6.5cm | 7.44 | - | cephalic |
| 23 | Kaveri | Nagathan | 23yrs | 2017 | 1/25/2025 | 4/22/2024 | 1/27/2025 | - | G2P1L1 | Pain abd | P2L2D1 | - | - | - | - | 84bpm | 110/70 | - | NAD | NAD | - | 7cm | 7.37 | - | cephalic |
| 24 | Sangeeta | Jambagi | 23yrs | 1806 | 1/23/2025 | 5/9/2024 | 12/13/2024 | - | G3P2L1D1 | safe confinement | P2L2D1 | - | - | - | - | 82bpm | 118/80 | - | NAD | NAD | - | 6cm | 7.36 | - | cephalic |
| 25 | Mallamma | Bachimatti | 23yrs | 3186 | 1/31/2025 | 5/15/2024 | 12/24/2024 | - | G6P2L2A3 | Oligo | P3L3A3 | - | - | - | - | 86bpm | 120/70 | - | NAD | NAD | - | 5cm | 7.41 | - | cephalic |
| 26 | zainab | nagarbetta | 24yrs | 2313 | 3/13/2025 | 6/15/2024 | 3/22/2025 | - | G2P1L1 | Pain abd | P2L2 | - | - | - | - | 86bpm | 112/80 | - | NAD | NAD | - | 5.5cm | 7.33 | - | cephalic |
| 27 | vanchay | Indi | 20yrs | 1151 | 3/10/2025 | 5/24/2024 | 3/15/2025 | - | Primi | Pain abd | P1L1 | - | - | - | - | 80bpm | 110/84 | - | NAD | NAD | - | 5.7CM | 7.35 | - | cephalic |
| 28 | Laxmibai | sindagi | 23yrs | 2232 | 3/13/2025 | 6/15/2024 | 3/22/2025 | - | G2P1L1 | Pain abd | P2L2 | - | - | - | - | 84bpm | 116/80 | - | NAD | NAD | - | 5.4CM | 7.42 | - | cephalic |
| 29 | Bhimakka | loni | 22yrs | 3456 | 3/14/2025 | 5/24/2024 | 2/28/2025 | - | Primi | Pain abd | P1L1 | - | - | - | - | 82bpm | 112/80 | - | NAD | NAD | - | 6CM | 7.2 | - | cephalic |
| 30 | Arati | bijapur | 25yrs | 464 | 3/11/2025 | 5/24/2024 | 3/15/2025 | - | G2P1L1 | Pain abd | P2L2 | - | - | - | - | 84bpm | 110/84 | - | NAD | NAD | - | 6CM | 7.1 | - | cephalic |

| GESTATIONAL AGE | AMNIOTIC FLUID INDEX | PLACENTAL POSITION AND GRADING | ANY INTRAPARTUM COMPLICATIONS | FETAL DISTRESS | MECONIUM STAINING OF LIQUOR | ABNORMAL CTG | VAGINAL | FORCEPS | LSCS | INDICATION | COLOR OF LIQUOR | BABY DETAILS | SEX | DATE AND TIME | BIRTH WEIGHT | APGAR SCORE AT 1MIN | APGAR SCORE AT 5MIN | ANY CONGENITAL ANOMALIES | ADMISSION TO NICU | NO OF DAYS IN NICU | CONDITION AT THE TIME OF DISCHARGE | PCO2 | PO2 | BASE EXCESS | HCO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 38weeks | 7.2cm | posterior | - | - | - | - | - | - | | | clear | Live | Male | 21/9/24,11.5am | 3kg | eight | nine | - | YES | - | improved | 35 | 10.3 | -2 | 17 |
| 37weeks | 7cm | fundal | yes | yes | - | - | - | - | | | clear | Live | Male | 22/9/24,7pm | 2.4kg | eight | nine | - | yes,obsevation | | improved | 42 | 22.5 | -2.8 | 27 |
| 38+5days | 7.5cm | fundopost | yes | - | - | yes | - | - | | | clear | Live | Male | 26/9/24,11.30pm | 2.5kg | eight | nine | - | - | - | improved | 38 | 23 | -2.3 | 19 |
| 38weeks | 8cm | fundoant | - | - | - | - | spontaneous | | - | - | clear | Live | Male | 2/10/24,11.17pm | 2.7kg | eight | nine | - | - | - | improved | 52 | 12.7 | -15 | 22 |
| 37weeks | 7cm | fundal | - | - | - | - | - | - | LSCS | CPD | clear | Live | Male | 5/10/24,1.08am | 2.8kg | eight | nine | - | YES | - | improved | 56 | 32 | -16 | 20 |
| 38weeks | 8cm | anterior | yes | - | yes | - | - | - | LSCS | P.LSCS | MSL | Live | female | 4/10/24,8.30am | 2.8kg | eight | nine | - | YES | - | improved | 45 | 6.8 | -2 | 19 |
| 37weeks | 7.4cm | fundopost | yes | - | yes | - | - | - | LSCS | CPD | MSL | Live | Male | 26/10/24,7.31am | 3.2kg | eight | nine | - | YES | - | improved | 49 | 7.9 | -1.6 | 24 |
| 39weeks | 8cm | anterior | - | - | - | - | spontaneous | | - | - | clear | Live | Male | 10/11/24,4.30am | 2.8kg | eight | nine | - | YES | - | improved | 52 | 26 | 1.9 | 22 |
| 37weeks | 7cm | anterior | - | - | - | - | - | - | LSCS | CPD | clear | Live | female | 19/9/24,8.35am | 3kg | eight | nine | - | - | - | improved | 55 | 19.8 | -2.9 | 20 |
| 38weeks | 8cm | posterior | - | - | - | - | - | - | LSCS | OLIGO | clear | Live | Male | 16/11/24,12.15am | 1.4kg | eight | nine | - | yes,LBW | | improved | 60 | 6 | -1.5 | 20 |
| 37weeks | 8cm | anterior | - | - | - | - | - | - | LSCS | OLIGO | clear | Live | female | 16/11/24,10.30pm | 2.2kg | eight | nine | - | - | - | improved | 36 | 7.3 | -13 | 21 |
| 37weeks | 7cm | fundopost | yes | yes | - | - | - | - | LSCS | Fetal distress | clear | Live | female | 31/1/25,4.28pm | 2.6kg | eight | nine | - | yes,fetal distress | 4days | improved | 34 | 10.9 | -2 | 22 |
| 38+2days | 8cm | anterior | - | - | - | - | - | -- | LSCS | P.LSCS | clear | Live | female | 11/1/25,10.51am | 2.2kg | eight | nine | - | - | - | improved | 50 | 23.8 | -1.1 | 20 |
| 37weeks | 8cm | anterior | - | - | - | - | Induced | - | - | - | clear | Live | female | 12/12/24,8pm, | 2.6kg | eight | nine | - | - | - | improved | 57 | 22 | -11 | 22 |
| 38weeks | 7cm | fundal | yes | - | yes | - | - | - | LSCS | MSL | MSL | Live | female | 11/12/24,6.15pm | 3.2kg | eight | nine | - | yes,obsevation | | improved | 53 | 18.7 | -1.8 | 24 |
| 38weeks | 6cm | fundoant | - | - | - | - | - | - | LSCS | OLIGO | clear | Live | female | 3/1/25,5.48pm | 2.6kg | eight | nine | - | - | - | improved | 49 | 23.7 | -1.8 | 21 |
| 39weeks | 6.8cm | fundal | - | - | - | - | Induced | - | - | - | clear | Live | Male | 13/1/25,10.33am | 2.1kg | eight | nine | - | 13 | - | improved | 40 | 28.7 | -1 | 24 |
| 39weeks | 6.9cm | posterior | - | - | - | - | - | - | LSCS | P.LSCS | clear | Live | Male | 11/1/25.6.16am | 3.6kg | eight | nine | - | - | - | improved | 39 | 21 | -2 | 22 |
| 38weeks | 6cm | anterior | - | - | - | - | - | - | LSCS | MSL | - | Live | Male | F,2.8KG | | eight | nine | - | Yes ,observation | | improved | 42 | 24 | -6.8 | 24 |
| 38weeks | 6.2cm | fundal | yes | yes | - | - | - | - | LSCS | Fetal distress | clear | Live | Male | 16/1/25,3.30pm | 2.4kg | eight | nine | - | - | - | improved | 56 | 26.9 | -7.7 | 20 |
| 37weeks | 6cm | anterior | yes | - | - | yes | - | - | LSCS | Fetal distress | MSL | Live | female | 15/1/25,11.11PM | 2.2kg | eight | nine | - | yes,obsevation | | improved | 52 | 22.6 | -5.6 | 20 |
| 38weeks | 6.5CM | posterior | - | - | - | - | - | - | LSCS | Maternal request | | Live | Male | 3/1/25,2.2kg | | eight | nine | - | - | - | improved | 57 | 38.9 | -16 | 22 |
| 38weeks | 7cm | fundopost | - | - | - | - | - | - | LSCS | P.LSCS | clear | Live | female | 25/1/25,7.7am | 2.9kg | eight | nine | - | - | - | improved | 48 | 32 | -18 | 24 |
| 37weeks | 6cm | posterior | - | - | - | - | - | - | LSCS | Maternal request | clear | Live | female | 25/1/25,3.56pm | 2.2kg | eight | nine | yes | yes,evaluation | 5days | improved | 44 | 32.1 | -22 | 22 |
| 37weeks | 5cm | posterior | - | YES | - | - | - | - | LSCS | P.LSCS | clear | Live | Male | 31/1/25,12.27am | 2.8kg | eight | nine | - | yes,LBW | 3days | improved | 42 | 29 | -26 | 22 |
| 38weeks | 5.5CM | anterior | - | - | - | YES | spontaneous | - | - | - | clear | Live | Male | 13/3/2.5KG, | | eight | nine | - | - | - | improved | 60 | 27.1 | -18 | 23 |
| 37weeks | 5.7Cm | posterior | - | YES | - | - | spontaneous | - | - | - | clear | Live | Male | 13/3/25,3KG | | eight | nine | - | - | - | improved | 70 | 22.2 | -19 | 22 |
| 37weeks | 5.4cm | posterior | - | - | yes | - | Induced | - | - | - | clear | Live | female | 14/3/25,2.3KG | | eight | nine | - | - | - | improved | 65 | 28 | -22 | 20 |
| 38weeks | 6cm | anterior | yes | - | - | - | spontaneous | - | - | - | clear | Live | female | 15/3/25,3KG | | eight | nine | - | - | - | improved | 62 | 22.6 | -25 | 22 |
| 37weeks | 6cm | posterior | - | YES | - | - | spontaneous | - | - | - | clear | Live | Male | 12/3/25,3.1KG | | eight | nine | - | - | - | improved | 54 | 37 | -26 | 20 |

| CASE NO | NAME | ADDRESS | AGE | IP/OP NUMBER | D.O.A | LMP | EDD | OBSTETRIC HISTORY | GPLA | COMPLAINTS | PRESENT OBSTETRIC HISTORY | PAST MEDICAL HISTORY | FAMILY HISTORY | PERSONAL HISTORY | VITALS | PR | BP | SYSTEMATIC EXAMINATION | CVS/RS | CNS | DAY 1 SCAN | DAY 3 SCAN | UMBILICAL ARTERY BLOOD PH LEVEL | USG | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Aruna | bijapur | 24yrs | 8573 | 10/16/2024 | 1/9/2024 | 10/15/2024 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 6CM | 6CM | 7.2 | - | cephalic |
| 2 | Laxmi | D hipprgi | 34y | 10371 | 10/27/2024 | unknwn | 11/17/2024 | G4P2L2A1 | G4P2L2A1 | Pain abd | P3L3A1 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 5.6CM | 5.6CM | 7.35 | - | cephalic |
| 3 | laxmi c | bijapur | 20yrs | 116399 | 2/18/2024 | 11/15/2024 | 11/21/2024 | G2P1L1 | G2P1L1 | Pain abd | P2L2 | NAD | NAD | NAD | - | 86BPM | 124/70 | - | NAD | NAD | 5CM | 6CM | 7.3505 | - | cephalic |
| 4 | Nivedita | bagewadi | 24yrs | 11307 | 2/3/2024 | 11/15/2024 | 11/6/2024 | G2P1L1 | G2P1L1 | Pain abd | P2L2 | NAD | NAD | NAD | - | 84BPM | 110/70 | - | NAD | NAD | 5.9CM | 6CM | 7.39 | - | cephalic |
| 5 | Jyoti | Torvi | 26yrs | 12788 | 2/11/2024 | 11/11/2024 | 11/15/2024 | G3P1L1A1 | G3P1L1A1 | Pain abd | P2L2A1 | NAD | NAD | NAD | - | 84BPM | 110/70 | - | NAD | NAD | 6CM | 6CM | 7.46 | - | cephalic |
| 6 | Bhagya | Indi | 20yrs | 11693 | 11/5/2024 | 2/11/2024 | 11/6/2024 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 86BPM | 120/70 | - | NAD | NAD | 6.1CM | 7CM | 7.42 | - | cephalic |
| 7 | Savitri | yogapur | 22yrs | 12720 | 11/11/2024 | 2/7/2024 | 11/19/2024 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 88BPM | 130/80 | - | NAD | NAD | 6CM | 6.8CM | 7.43 | - | cephalic |
| 8 | Pooja | banahatti | 20yrs | 39169 | unknown | 10/27/2024 | 11/17/2024 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 6.8CM | 7CM | 7.38 | - | cephalic |
| 9 | Savitri | Talawar | 20yrs | 16529 | 11/3/2024 | 2/3/2024 | 11/3/2024 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 6.4CM | 6.5CM | 7.45 | - | cephalic |
| 10 | kalavati | bijapur | 30yrs | 16442 | 12/3/2024 | 2/27/2024 | 12/3/2024 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 84BPM | 110/70 | - | NAD | NAD | 6.2cm | 7cm | 7.38 | - | cephalic |
| 11 | padmavati | bijapur | 20yrs | 967 | 1/18/2025 | 4/27/2024 | 2/1/2025 | primi | PRIMI | safe confinement | P1L1 | NAD | NAD | NAD | - | 72BPM | 100/70 | - | NAD | NAD | 6CM | 6CM | 7.363 | - | cephalic |
| 12 | Basamma | balebhavi | 23yrs | 1590 | 1/22/2025 | 6/8/2024 | 3/15/2025 | G2P1L1 | G2P1L1 | safe confinement | P2L2 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 6.9CM | 6CM | 7.41 | - | cephalic |
| 13 | Madhumati | mbl | 23yrs | 3216 | 1/31/2025 | 5/11/2024 | 2/15/2025 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 6CM | 8CM | 7.43 | - | cephalic |
| 14 | PRATIKSHA | bijapur | 25YRS | | 2/26/2025 | 6/6/2024 | 3/15/2025 | G2P1L1 | G2P1L1 | Safe confinement | P2L2 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 6.1CM | 7CM | 7.42 | - | cephalic |
| 15 | Jayashre | butanal | 23yrs | 19744 | 12/24/2024 | 2/27/2024 | 12/25/2024 | G2P1L2 | G2P1L2 | Pain abd | P2L3 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 7.5CM | 8CM | 7.362 | - | cephalic |
| 16 | kalpana | bijapur | 24yrs | 3323 | 2/27/2025 | unknwn | 2/26/2025 | G3P2L2 | G3P2L2 | safe confinement | P3L3 | NAD | NAD | NAD | - | 80BPM | 110/76 | - | NAD | NAD | 7CM | 7CM | 7.43 | - | cephalic |
| 17 | Shruti | MBL | 29yrs | 30 | 3/3/2025 | 6/7/2024 | 3/14/2025 | G2P1L1 | G2P1L1 | safe confinement | P2L2 | NAD | NAD | NAD | - | 86BPM | 110/72 | - | NAD | NAD | 7.1cm | 7.4cm | 7.45 | - | cephalic |
| 18 | sushila | bijapur | 28yrs | 1287 | 3/1/2025 | unknwn | 3/3/2025 | G3P2L2 | G3P2L2 | Pain abd | P3L3 | NAD | NAD | NAD | - | 84BPM | 110/74 | - | NAD | NAD | 7.9cm | 8cm | 7.41 | - | cephalic |
| 19 | Poornima | Honnalli | 32yrs | 18360 | 12/15/2024 | 2/17/2024 | 12/18/2024 | G3P2L2 | G3P2L2 | safe confinement | P3L3 | NAD | NAD | NAD | - | 86BPM | 110/76 | - | NAD | NAD | 7CM | 9CM | 7.41 | - | cephalic |
| 20 | Shashikala | bijapur | 27yrs | 1611 | 1/22/2025 | 4/27/2024 | 2/1/2025 | G2P1L1 | G2P1L1 | safe confinement | P2L2 | NAD | NAD | NAD | - | 82BPM | 110/70 | - | NAD | NAD | 7CM | 10CM | 7.42 | - | cephalic |
| 21 | Shruti | jodrapur | 21yrs | 3451 | 2/5/2025 | unknwn | 2/1/2025 | G4P1L1A2 | G4P1L1A2 | safe confinement | P2L2A2 | NAD | NAD | NAD | - | 86BPM | 110/80 | - | NAD | NAD | 7.3CM | 8.2CM | 7.35 | - | cephalic |
| 22 | Sheela | arakeri | 22yrs | 3490 | 2/5/2025 | unknwn | 2/5/2025 | G2P1L1 | G2P1L1 | safe confinement | P2L2 | NAD | NAD | NAD | - | 80BPM | 110/70 | - | NAD | NAD | 7.5cm | 8cm | 7.42 | - | cephalic |
| 23 | Rani | bijapur | 30yrs | 188 | 2/5/2025 | 4/29/2024 | 2/3/2025 | G2A1 | G2A1 | safe confinement | P1L1A1 | NAD | NAD | NAD | - | 86BPM | 110/70 | - | NAD | NAD | 7.9CM | 8CM | 7.372 | - | cephalic |
| 24 | Tasmiya | bijapur | 20yrs | 3/19/1905 | 5/15/2024 | 5/15/2024 | 2/22/2025 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 80BPM | 110/80 | - | NAD | NAD | 8CM | 8.6CM | 7.42 | | cephalic |
| 25 | Chaitra | bijapur | 21yrs | 22 | 2/22/2025 | unknwn | 2/25/2025 | G2P1L1 | G2P1L1 | safe confinement | P2L2 | NAD | NAD | NAD | - | 86BPM | 110/84 | - | NAD | NAD | 8CM | 8.5CM | 7.44 | - | cephalic |
| 26 | Pallavi | hattalli | 25yrs | 396 | 3/3/2025 | 6/15/2024 | 3/22/2025 | G3P1L1A1 | G3P1L1A1 | safe confinement | P2L2 | NAD | NAD | NAD | - | 86BPM | 110/85 | - | NAD | NAD | 7.6CM | 8CM | 7.41 | - | cephalic |
| 27 | SWETHA | MBL | 21yrs | 2345 | 2/24/2025 | 5/18/2024 | 2/25/2025 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 80BPM | 110/70 | - | NAD | NAD | 7.1CM | 7CM | 7.43 | - | cephalic |
| 28 | Shaheen | loni | 19yrs | 1245 | 2/25/2025 | 6/15/2024 | 2/26/2025 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 86BPM | 110/80 | - | NAD | NAD | 7.2CM | 8CM | 7.37 | - | cephalic |
| 29 | Sangeeta | jatt | 21yrs | 2356 | 2/13/2025 | 5/10/2024 | 5/13/2025 | primi | PRIMI | Pain abd | P1L1 | NAD | NAD | NAD | - | 80BPM | 110/80 | - | NAD | NAD | 7.5CM | 8.5CM | 7.42 | - | cephalic |
| 30 | Sunanda | bijapur | 22yrs | 2143 | 2/6/2025 | 6/6/2024 | 3/13/2025 | G3A2 | G3A2 | Pain abd | P1L1A2 | NAD | NAD | NAD | - | 82BPM | 100/80 | - | NAD | NAD | 7CM | 8.9CM | 7.27 | - | cephalic |

| GESTATIONAL AGE | AMNIOTIC FLUID INDEX | PLACENTAL POSITION AND GRADING | ANY INTRAPARTUM COMPLICATIONS | FETAL DISTRESS | MECONIUM STAINING OF LIQUOR | ABNORMAL CTG | VAGINAL | FORCEPS | LSCS | INDICATION | COLOR OF LIQUOR | BABY DETAILS | SEX | DATE AND TIME | BIRTH WEIGHT | APGAR SCORE AT 1MIN | APGAR SCORE AT 5MIN | ANY CONGENITAL ANOMALIES | ADMISSION TO NICU | NO OF DAYS IN NICU | CONDITION AT THE TIME OF DISCHARGE | PCO2 | PO2 | BASE EXCESS | HCO3 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 37weeks | 6cm | fundoant | - | - | - | - | - | - | | | CLEAR | - | live | F,16/10/24,5.5pm | 2.8kg | 8 | 9 | - | - | - | - | 32 | 5.6 | -10 | 17.4 |
| 37weeks | 5.6cm | anterior | - | - | - | - | | - | LSCS | Prev lscs | CLEAR | - | live | M,27/10/24,12PM | 2.8KG | 8 | 9 | - | YES | - | - | 66 | 30.5 | -3 | 22 |
| 37weeks | 6cm | fundal | - | - | - | - | yes | spontaneous | - | - | CLEAR | - | live | M,19/11/24,3pm | 2.4kg | 8 | 9 | - | - | - | - | 35 | 31 | -9 | 24.8 |
| 38 | 6CM | fundoant | - | - | - | - | yes | spontaneous | - | - | CLEAR | - | live | F,6/11/24,1PM | 2.8KG | 8 | 9 | - | - | - | - | 55 | 24 | -16 | 23.1 |
| 37weeks | 6CM | Post | - | - | - | - | - | - | LSCS | Prev lscs | CLEAR | - | live | F,15/11/24,4.27PM | 2.2KG | 8 | 9 | - | - | - | - | 45 | 6.9 | -20 | 22 |
| 38weeks | 7cm | post | - | - | YES | - | - | - | LSCS | Prev lscs | CLEAR | - | live | M,7/11/24,7PM | 2.5KG | 8 | 9 | - | YES | - | IMPROVED | 42 | 7.3 | -22 | 23.7 |
| 38weeks | 6.8CM | anterior | - | - | - | - | - | - | | | CLEAR | - | live | F,15/11/24,12.44PM | 2,5KG | 8 | 9 | - | - | - | IMPROVED | 40 | 10.3 | -16 | 21.4 |
| 38weeks | 7cm | fundopost | - | - | - | - | yes | Induced | - | - | clear | - | live | M,11.21PM | 2.6KG | 8 | 9 | - | - | - | IMPROVED | 33 | 12.8 | -8 | 22.8 |
| 37weeks | 6.5CM | Fundoant | - | - | - | - | - | - | | | clear | - | live | F,3/11/24,6.35pm | 2.2kg | 8 | 9 | - | yes | - | IMPROVED | 34 | 8 | -7.8 | 21.7 |
| 38weeks | 7cm | anterior | - | - | - | - | yes | Induced | - | - | CLEAR | - | live | F,2.3kg | | 8 | 9 | - | - | - | IMPROVED | 52 | 8.9 | -2.9 | 22.8 |
| 37weeks | 6cm | anterior | - | - | - | - | - | - | | | CLEAR | - | live | F,2KG 9.20AM,18/1/25 | | 8 | 9 | - | YES LBW | - | IMPROVED | 67 | 11.9 | -3.7 | 20.9 |
| 38weeks | 6CM | FUNDAL | - | YES | - | - | - | - | LSCS | Prev lscs | CLEAR | - | live | M,25/1/25,4.25PM,2.8KG | | 8 | 9 | - | - | - | IMPROVED | 68 | 12.7 | -13.2 | 21 |
| 38weeks | 8CM | anterior | - | - | - | - | Yes | Induced | - | - | CLEAR | - | live | M,2.4kg,28/12/24,9.40am | | 8 | 9 | - | YES | - | IMPROVED | 42 | 23 | -23.9 | 22 |
| 37weeks | 7CM | RT Lateral | - | - | YES | - | - | - | LSCS | Prev lscs | CLEAR | - | live | F,2.5KG | | 8 | 9 | - | - | - | IMPROVED | 33 | 25.9 | -15.7 | 20.5 |
| 37weeks | 8CM | fundoant | - | - | - | - | - | - | | | CLEAR | - | live | M,2.4kg,28/12/24,9.40am | | 8 | 9 | - | - | - | IMPROVED | 54 | 26.9 | -14.7 | 23.6 |
| 38weeks | 7cm | anterior | - | - | - | - | - | - | | | CLEAR | - | live | F,2.8kg,7pm,27/2/25 | | 8 | 9 | - | YES | - | IMPROVED | 66 | 17 | -11.3 | 22.9 |
| 38weeks | 7.4cm | Post | - | - | - | - | - | - | | | CLEAR | - | live | F.2.5KG.8AM,5/3/25 | | 8 | 9 | - | - | - | IMPROVED | 30 | 19 | -12.9 | 22.1 |
| 37weeks | 8cm | anterior | - | - | - | - | - | - | | | CLEAR | - | live | M,3kg,9.30am | | 8 | 9 | - | YES | - | IMPROVED | 30 | 26 | -11 | 21.2 |
| 38weeks | 9CM | anterior | - | YES | - | - | - | - | | | CLEAR | - | live | M,2.8KG,7AM,15/12/24 | | 8 | 9 | - | YES | - | IMPROVED | 27 | 28.8 | -16.9 | 20 |
| 37weeks | 10CM | FUNDAL | - | - | - | - | - | - | | | CLEAR | - | live | M,2.7KG,6.55AM,24/1/25 | | 8 | 9 | - | - | - | IMPROVED | 33 | 32.8 | -13.8 | 21.7 |
| 37weeks | 8.2CM | anterior | - | - | - | - | - | - | | | CLEAR | - | live | F,2.6KG,9,10AM | | 8 | 9 | - | - | - | IMPROVED | 36 | 34 | -16.2 | 20.7 |
| 37weeks | 8cm | post | - | - | - | - | - | - | | | CLEAR | - | live | F,2.9kg,10pm | | 8 | 9 | - | YES | - | IMPROVED | 52 | 32.7 | -14.2 | 23.7 |
| 39weeks | 8CM | anterior | - | - | - | - | - | - | | | CLEAR | - | live | M,3.7KG,11.34AM,8/2/25 | | 8 | 9 | - | - | - | IMPROVED | 44 | 6.8 | -8.9 | 22.8 |
| 40weeks | 8.6cm | Post | - | - | - | - | yes | Induced | - | - | CLEAR | - | live | M,2.5KG,11AM,13/2/25 | | 8 | 9 | - | YES | - | IMPROVED | 39 | 6.9 | -10.4 | 21.9 |
| 39weeks | 8.5CM | anterior | - | - | - | - | - | - | LSCS | Prev lscs | CLEAR | - | live | F,2.6KG,10.10AM,22/2/25 | | 8 | 9 | - | - | - | IMPROVED | 48 | 6.5 | -8.3 | 23 |
| 39weeks | 8cm | fundoant | - | YES | - | - | - | - | LSCS | Prev lscs | CLEAR | - | live | F,3.5KG,12.54PM,5/3/25 | | 8 | 9 | - | YES | - | IMPROVED | 28 | 7.33 | -3.8 | 22 |
| 39weeks | 7CM | anterior | - | - | - | - | yes | Induced | - | - | CLEAR | - | live | M,3KG,11PM,25/2/25 | | 8 | 9 | - | YES | - | IMPROVED | 25 | 10 | -16 | 21 |
| 40weeks | 8cm | Post | - | - | - | - | YES | Induced | - | - | CLEAR | - | live | M,3.1KG,12PM | | 8 | 9 | - | - | - | IMPROVED | 33 | 19 | -18 | 24 |
| 39weeks | 8.5CM | Post | - | - | - | - | - | - | | | MSL | - | live | F,2.8KG,8PM | | 8 | 9 | - | YES | - | IMPROVED | 52 | 16.9 | -17.2 | 20 |
| 40weeks | 8.9CM | FUNDAL | - | - | - | YES | - | - | | | | - | live | M,2.7,5PM,6/3/25 | | 8 | 9 | - | YES | - | IMPROVED | 58 | 23.9 | -12 | 21.1 |