A CROSS-SECTIONAL STUDY TO ANALYSES THE CHANGING TRENDS IN FRIEDMAN'S CURVE IN PRIMARY VAGINAL DELIVERY

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LIST OF ABBREVIATIONS

EDD	EXPECTED DATE OF DELIVERY
POG	PERIOD OF GESTATION
FHR	FETAL HEART RATE
NST	NON-STRESS TEST
WHO	WORLD HEALTH ORGANISATION
NICU	NEONATAL INTENSIVE CARE UNIT
LSCS	LOWER SEGMENT CAESARIAN SECTION
PIH	PREGNANCY INDUCED HYPERTENSION
FGR	FETAL GROWTH RESTRICTION
ACOG	AMERICAN COLLEGE OF OBSTETRICIANS AND GYNECOLOGISTS
LBW	LOW BIRTH WEIGHT
EFW	ESTIMATED FETAL WEIGHT
UTI	URINARY TRACT INFECTION
PPH	POSTPARTUM HEMORRHAGE
IP	IN-PATIENT
IUD	INTRA UTERINE FETAL DEMISE
FSB	FRESH STILL BORN
DOA	DATE OF ADMISSION
DOD	DATE OF DISCHARGE

DAMA	DISCHARGE AGAINST MEDICAL ADVICE
USG	ULTRA SONOGRAPHY
Hb	HEMOGLOBIN
CPP	COLLABORATIVE PERINATAL PROJECT
CSL	CONSORTIUM ON SAFE LABOUR
LMP	LAST MENSTRUAL PERIOD

ABSTRACT

BACKGROUND

Vaginal delivery is safest method of mode of delivery to fetus & mother. With the occurrence of operative delivery modalities and surgical modalities the number of patients, who reach spontaneous labor is decreasing over time due to changes in maternal characteristics like ageat first pregnancy, obesity, BMI, in modern obstetrics.

AIMS & OBJECTIVES OF STUDY

1. To study the progression of labor in patients labouring for the first time.
2. To monitor the progression of labor and analyse the feto-maternal outcome using partogram as a tool

RESULTS

Total of 150 patients enrolled in our study who fulfilled inclusion criteria were considered into the study with their consent and Statistical analysis was done. The mean age in study was 22.4, and mean gestational age was 38.3weeks. The mean duration of latent phase is 8.9hours, active phase is 5.2 hours, total duration is 14hours.And the labour progression is slower then Friedman's study. The labour curve which is obtained in present study showing active phase starts from 6cm.

CONCLUSION

Partograh is an inexpensive and easily accessible tool that can be used effectively in monitoring the progress of labor. The WHO modified or simplified partograph is useful in identifying when to intervene and also helps to reduce the feto maternal complications. The main essence and purpose of partogram is to identify the normal labor progress and the appropriate treatment should began only when the labor is in action line. The health care personnels especially in the peripheral areas should be trained to use this simple and effective tool for aiding timely refferal to higher centers and in term decreasing the fetal and maternal morbidity and mortality.

Key Words: Labor, Labor Curve, Active Phase, Friedman's Curve, Partograph

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BACKGROUND:

When the baby is fully developed at the stage of pregnancy of 37 to 42 weeks, vaginal birth is the safest method of delivery for both the mother and the infant. Given the increased morbidity and mortality linked to operational caesarean deliveries over time, vaginal birth is recommended. In addition to reviewing the interprofessional team's role in managing labour and providing care for patients who choose to give birth vaginally, this exercise describes the process of natural birth, the method, and planning needed to successfully complete a vaginal delivery[1].

Cervical dilatation curves are used as a clinical guide for managing labour progression effectively. Inappropriate obstetric procedures, such as caesarean section (CS) births, may result from improper diagnosis of delayed or stalled labour. Initial CS should really be avoided as much as feasible in light of its hazards and the negative effects it may have on subsequent pregnancies. The preliminary labour curve and two important labour contours for primiparas and multiparas were initially presented by Friedman and demonstrated clear guidelines for the course and duration of labour. However, these earlier, more often used cervical dilatation curves contained aberrant labour progression and obstetric interventions.[2].

Friedman evaluated 500 primiparous women an hour in 1954 in order to plot a curve depicting the typical time it took for each cervix to enlarge by one centimetre. The Friedman curve is typically regarded as the benchmark for measuring labour productivity. The Friedman curve, however, has reportedly diverged from labour productivity in recent years.[3]

It's possible that modern obstetric practise precludes the continued use of old notions about the course and length of labour. Friedman created mean labour curves that took into account a variety of endogenous and exogenous maternal and foetal variables. Along with improvements in obstetric methods and statistical techniques, mother and foetal features have changed.

For effective control of labour progression, reference labour curves for spontaneous births must be established. Numerous variables, such as the race and age of the mother, the size of the mother and the foetus, the maternal age at delivery, the presence of twins, the use of oxytocin and obstetric anaesthesia, as well as obstetric complications and complicated pregnancies, could influence the course and length of the labour. During spontaneous births, oxytocin and obstetric anaesthesia are frequently viewed as optional obstetric treatments. Based on typical mother and foetal populations, reference labour curves for normal labour progression and duration were created using the accidental cervical dilatation curves.[4]

The Zhang curve, which was developed in 2002 after 1329 primiparous women were studied, differs greatly from the Friedman curve. This curve indicates that during the active period, cervical dilation was noticeably slower and that the Zhang curve was just not present. It's interesting to note that 8% of the patients in Friedman's research had neuraxial labour analgesia. Similar to this, 48% of the patients in the research that formed the Zhang curve was founded experienced neuraxial labour analgesia.

The partograph or partogram has become the de facto standard for labour monitoring systems worldwide.The World Health Organization (WHO) has advised against using it during active labour. Monitoring the progression of labour and spotting atypical labour patterns allows the partograph to be used. Although the partograph has been in use in obstetric practise for more than 40 years, tales of obstructed labour and its significant mother and foetal consequences have occasionally called into doubt its effectiveness.

There are many studies done on the Friedman's curve, but no studies has explained about the recent concepts or changes included in the Friedman's curve which helps for the safest method of delivery. Thus the present study has been undertaken for the progression of the labour and also analysis of the feto-maternal outcome by partogram, and to analyse the changing trends in Friedman curve[5].

AIMS & OBJECTIVES OF STUDY

1. To study the progression of labour in patients labouring for the first time.
2. To monitor the progression of labour and analyse the feto-maternal outcome using partogram as a tool.

INTRODUCTION

Introduction to vaginal delivery:

When the infant is at the completion of weeks of 37 to 42 weeks of gestation, vaginal birth is the safest option for both the mother and the foetus. Given the increased morbidity and mortality linked to operational caesarean deliveries over time, vaginal birth is recommended. Nearly 80% of all spontaneous vaginal births of singletons occur at full-term, whereas 11% occur preterm and 10% occur post-term. Notably, the proportion in people who experience labour which is sudden in onset has reduced at later time and rate at which labour induction grown as a result of the development of surgical and operational delivery techniques.[1]

Definition: Labor is a physiological process through which viable products of conception they are fetus, placenta, membranes are expelled out of uterus in to the external world.[7]

There are three phases of labour before birth, and each phase needs special management. Each one of the three phases might experience complications that force a planned vaginal birth to become an operational caesarean delivery. According to the most recent data available, there were 3,855,500 births in the USA in 2017; 68% (2,621,010) among them were vaginal births. The population's number of births was 11.8 per 1000 people, while the premature birth rate was 9.9%.[7]

Forceful, uncomfortable uterine contractions that result in cervical dilation and lead the foetus to pass through the birth canal are the hallmarks of labour. The uterus naturally contracts on its own, and during pregnancy, progesterone released from the placenta mostly controls this action to maintain the foetus inside the uterus. Additionally, the cervix continues to be rigid and inflexible. At term, the cervix changes, becoming thinner, and uterine contractions increase with frequency and regularity.[8]

It is known as preterm labour when it happens before 37 full weeks. The physiological mechanisms that control labor's beginning and parturition are still being understood. However, it is obvious that the beginning of labour is the result of a number of biochemical modifications to the uterine and cervix. Both the mother and the foetus send out endocrine and paracrine chemicals that cause these.[7]

Phases of parturition:

The uterine and cervical functions change as a result of this. Parturition may be arbitrarily broken down into four phases that overlap and correlate to the key physiologica changes that the cervix and myometrium go through throughout pregnancy.

The phases of labor labor include

1. A prelude to it
2. The preparation for it
3. The process it self
4. recovery

Phase 1 of Parturition: Uterine Quiescence and Cervical Softening

The stages of labor the first ,second and third stages which makeup the final phase of parturition should not be confused only with phases of parturition.[8]

This period, which typically makes up 95% of pregnancy, is characterized by peaceful uterine smooth muscle and preservation of cervix cellular structure. The myometrium innate predisposition to contract is suppressed, and the uterine muscle becomes receptive to environmental cues. The uterus must simultaneously undergo significant modifications in order to tolerate the pregnancy and get ready for uterine contractions. Phase 1's myometrial non-

responsiveness lasts until almost the end of the pregnancy. During the quiescent period, some mild myometrial contractions are felt, although they often do not result in cervical dilatation.[8]

Cervical softening

The cervix has various kind of functions in pregnancy are :

(1) Preservation of membrane permeability to keep the reproductive tract safe and clean

(2) Maintenance of cervical competence despite of of high gravitational forces,

(3) Changes in extracellular matrix composition that allow progressive increases in tissue compliance.

Second phase of Parturition: Preparation for Labor

Phase 1 of parturition's myometrial serenity must be stopped, a process known as uterine waking or activation, in order to get ready for labour. During the final six to eight weeks of pregnancy, there is a development of uterine alterations known as phase 2.

Myometrial Changes:

1. Myometrial modifications during phase two get it ready for labour contractions. This change is most likely the result of changes in the levels of important proteins that regulate contractility. The development of the lower uterine segment from the isthmus is a crucial alteration in phase 2. The foetal head frequently drops to or even passes through into the pelvic inlet during early development, a condition known as lightning.

Cervical Ripening During in second phase :

The cervix must go through more substantial remodelling prior to contractions. When strong uterine contractions begin, this eventually leads to cervical giving and dilation. The main connective tissue changes that occur in the cervical region throughout this second phase are referred to as cervical ripening.

Phase 3 of Parturition: Labor

Active labour, which is often separated into three stages, is the same as this period.

First Stage of Labor: Clinical Onset of Labor

First stage: starts with unpleasant regular uterine contractions and progresses to complete cervical dilation. Phases are separated into latent and active ones. The acceleration phase, the maximum slope phase, and the deceleration phase are further divisions of the active phase (Friedman, 1978). The latent phase's length is more erratic and susceptible to alterations caused by unrelated variables. For instance, myometrial stimulation shortens the latent period whereas sedation lengthens it. While the features of the increased pace are often predicative of labour result, the duration of the latent phase has minimal impact on the path of labour that follows. Cervical retraction and descent of the presenting component allow cervical dilatation to be completed during the active period. When cervical dilatation is finished, the first stage is over.[9-12]

Physiological muscular contractions

(1) Decreased blood supply to the contracting myometrium such as that with angina pectoris;
(2) Pressure of nerve ganglia in cervix and lower uterine segment by interlocking muscle bundles,
(3) Cervical stretch,
(4) Stretching of the peritoneum by overlying the fundus.

A little quantity of blood-mixed mucus that spontaneously releases from the vagina ,signals the beginning of labor. Show or "bloody show" refers to the expulsion of the mucus plug mixed with the blood that covers cervical canal in pregnancy.

Blood levels of the prostaglandin F2 metabolite rise after cervical manipulation and "stripping" the embryonic membranes (PGFM).

The time between contractions gets shorter during the course of labour, from around 10 minutes at the beginning of the first stage to as little as one min or less in the second. However, rest periods in between contractions are crucial for the wellbeing of the foetus. Constant contractions seriously impair uteroplacental blood flow, leading to hypoxemia in the foetus. Each contraction lasts between 30 and 45 seconds during the active phase of labour, lasting an average of one minute. During typical labour, there is a noticeable range in contraction intensity. More specifically, during spontaneous labour, amnionic fluid pressures produced by contractions range from 20 to 60 mm Hg, with an average of 40 mm Hg.

Distinct Lower and Upper Uterine Segments

The anatomical division of uterus that started during second phase of parturition become more noticeable during active labour. Even before the membrane ruptures, the two segments can occasionally be distinguished by abdominal palpation. During contractions, the top portion is rigid, but the lower segment is passive distended and soft. This technique is necessary because the net expulsive force would be significantly reduced if the whole myometrium, alongwith the lower uterine segment and cervix, contracted simultaneously and to the same extent. To evacuate the foetus, the top segment contracts, retracts, and does so. The cervix and softened lower uterine segment widen in response to these contractions, creating a considerably enlarged, thinned-out canal through which the foetus can pass.

the order in which the uterine segments and rings grow before and during childbirth. Compare the uterus of a woman who is not pregnant with the uteri at term and the uteri during childbirth. The isthmus gives rise to the passive lower uterine segment, and the physiological retraction ring forms where the upper and lower uterine segments meet. a woman's uterus during a vaginal birth. As the foetus passes through the birth canal, the active top segment retracts around the presenting section. There is a markedly reduced myometrial tone in the inactive lower section.

After contractions, the myometrium of the upper segment does not return to its initial length. Instead, at a lower length, it becomes comparatively fixed.

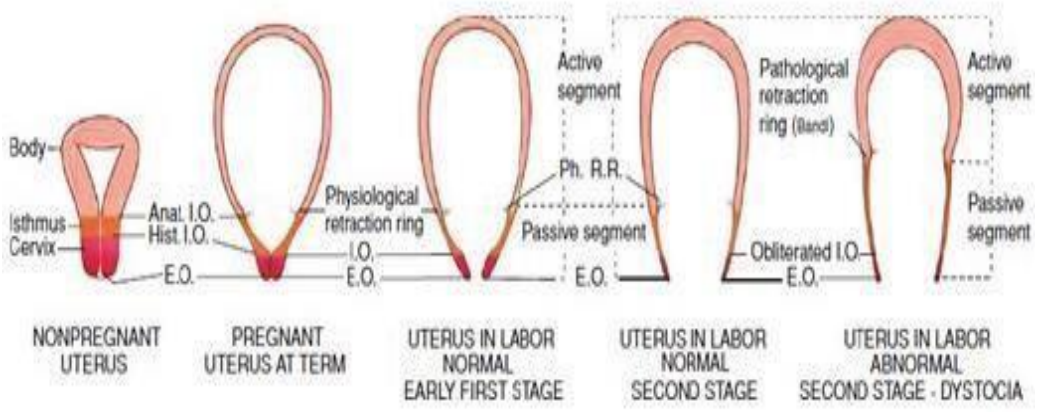
The myometrial tension does not change when the higher active uterine segment compresses downward on its dwindling contents. Overall, the advantage obtained by the fetus's evacuation is maintained as a result of picking up the slack. The uterine musculature and uterine contents are kept in close touch at the same time. Each subsequent contraction starts where the previous one left off as a result of retraction. With each subsequent contraction, the top portion of the uterine cavity so slightly shrinks. Throughout the first and second stages of labour, the upper active segment gradually thickens as a result of the muscle fibres being gradually shortened.

The phenomena of upper segment retraction depends on a reduction in the volume of its contents, which is crucial to comprehend clinically. The musculature of the lower segment must extend for this to occur, especially early in labour when the entire uterus is essentially a closed sac with relatively slight cervical dilation. This enables the lower section to become more occupied by the uterine contents. Only after the lower segment distends and the cervix dilates does the top segment retract. The lower uterine segment relaxing mimics the retraction's progressive development. The muscles do not extend back to their original length following each contraction of the upper segment, but tension generally stays the same. At contrast, when the fibres are laboriously lengthened, they thin in the lowest section, typically only reaching a few millimetres in the narrowest region. The physiological retraction ring, a ridge on the inner

uterine surface, indicates the border between the two segments as the lower segment thins and the upper segment thickens concurrently.[8]

Changes in Uterine Shape During Labor

Each contraction results in an extension of the uterus' ovoid shape and a corresponding reduction in its horizontal diameter. The work process is significantly impacted by this form shift. The foetal spinal column is first straightened by the decreasing horizontal diameter, which causes a rise in foetal axis pressure. The lower pole of the foetus is forced farther below while the top pole is firmly pressed into the fundus.Estimates of the extension of the ovoid form range between 5 and 10 cm. Second, the longitudinal muscle fibres are pulled taut as the uterus



lengthens. Because of this, the uterus's only flexible sections—the lower segment and cervix—are dragged up and around the fetus's lower pole.[8]

Figure 1: Shape of the Uterus in various stages

Ancillary Forces in Labor

The most significant force in foetal evacuation once the cervix has fully dilates is that generated by maternal intraabdominal pressure. Pushing is the tightening of the abdominal muscles together with forceful breathing while the glottis is closed. Although the force is comparable to that of faeces, the intensity is typically significantly higher. Additionally, pushing makes

little progress during the first stage of labour even though increasing intraabdominal pressure is required to finish the second stage. It exhausts the mother, and the elevated intrauterine pressures it causes may be detrimental to the developing foetus.[8]

Cervical Changes

The previously ripened cervix undergoes two essential modifications as a result of contraction forces: effacement and dilatation. The cervix must widen to a dimension of around 10 cm for a foetus head of typical size to pass through. The cervix is considered totally or completely dilated at this point. The presenting foetal component often drops a little when the cervix enlarges, however there may be no foetal descent during cervical effacement. In nulliparas, the exhibiting portion usually descends gradually and steadily throughout the second stage of labour. However, in multiparas, especially ones with high parity, decline can happen quickly. The cervix is "obliterated" or "taken up" in cervical effacement. Clinically, it appears as a cervical canal that has shrunk from a length of around 2 cm to a tiny circular orifice with nearly paper-thin borders. The lower uterine segment is "picked up" by the muscular fibres that are located at the inside cervical os level. The external OS continues to be in its current state.[8]

The mucous plug is expelled during effacement because the cervical canal is condensed.

Cervical dilatation results from a centrifugal pull being applied to the cervix as a result of the lower segment and cervix experiencing reduced resistance during a contraction.

The hydrostatic force of the amniotic sac expands the cervical canal like a wedge when uterine contractions press on the membranes. The pressure of the presenting foetal component against the cervix and lower uterine segment is nevertheless effective in the absence of intact membranes. Early membrane rupture has little effect on cervical dilatation as long as the part of the foetus that is present is positioned to press against the cervix and lower segment. The creation of the amniotic fluid-filled forebag is a result of the cervical effacement and dilatation

process. This is the fluid-filled and amniotic sac's leading component, which is placed in front of the presenting part.

Second Stage of Labor: Fetal Descent and delivery of fetus

In many nulliparas, the head is engaged before labour even starts. However, until labour is advanced, the head may not descend any farther. When the station of the foetal head is shown as a function of labour length, a typical hyperbolic curve forms in the descent pattern of regular labour. According to a line established between the maternal ischial spines, station depicts the fetal biparietal diameter's decline. Usually, active descent begins after dilatation has advanced for a while. Increased rates of descent are typically seen in nulliparas during the cervical dilatation phase of the maximum slope. The rate of fall likewise achieves its maximum speed at this point and is continued until the presenting section reaches the perineal floor.(Friedman, 1978).

Three functional divisions were created for the labor course based on the anticipated progression of the dilatation and descending curves. The latent and accelerated stages are part of the preparatory division. The period with greatest slope of dilatation is known as the dilatational division. The second stage, which coincides with the phase of greatest slope of foetal descent, and the deceleration phase are both included in the pelvic division.(Redrawn from Friedman, 1978.) [13-20]

Pelvic Floor Changes During Labor

The pelvic floor is made up of numerous layers of tissues that support and effectively shut the birth canal. The levator ani muscle and the fibromuscular soft tissue that covers both of its upper and lower surfaces are the most significant. The biomechanical characteristics of these components, as well as the vaginal wall, noticeably change during parturition. These are the outcome of changed extracellular matrix composition or structure. The pubovisceral,

puborectalis, and iliococcygeus muscles make up the levator ani, which acts as a diaphragm to shut the lower end of the pelvic cavity. This results in the presentation of an upper and lower surface that are concave. The piriformis and coccygeus muscles are bilaterally positioned on each side of the posterior and lateral parts of the pelvic floor, which are not covered by the levator ani. The levator ani muscle has a range of 3 to 5 mm in thickness, although its borders around the rectum and vagina are somewhat thicker. The levator ani often experiences hypertrophy during pregnancy, generating a broad band that wraps around the vagina approximately 2 cm above the plane of the hymen and extends backward from the pubis. The levator ani acts to shut the vagina when it contracts by pulling the rectum and vagina up and forward in the direction of the symphysis pubis.

The foetal presenting portion and the membranes, while still intact, help to dilate the upper vagina during the early stage of labour. The levator ani muscle fibres' stretching is the most obvious alteration. Along with it, the perineum's core region thins, changing from a wedge-shaped, 5 cm thick muscle tissue to a thin, nearly translucent membranous structure that is less than 1 cm thick. The anus dilates noticeably and develops an aperture that is between 2 and 3 cm in diameter through which the anterior wall of the rectum protrudes when the perineum is maximum inflated. Fetal presentation, foetal station, and foetal position are the three clinical factors that are crucial to be aware of at this point. The foetal body portion that enters the birth canal first—often the vertex or occiput which is part of head—determines the foetal presentation. The position of the foetal head in respect to the maternal ischial spines determines the foetal station, which ranges from minus five to plus five, with 0 denoting the head foetus is at the same level as the foetal ischial spines. The foetal position refers to the vertex of a fetus's head in relation to a mother's ischial spines at delivery. During internal rotation phase cardinal motions during labour, the vertex, or foetus' head top, often turns in both directions.[21-27]

Mechanism of labour: The term "cardinal motions" refers to the sequence of adjustments made by the foetal head as it moves through the birth canal. These are listed below. Expulsion is the result of involvement, descent, flexion, internal rotation, extention, and external rotation. All of these six cardinal birthing motions take place during the second stage of labour. When the fetus's head penetrates the lower pelvis, the first of these motions, engagement, takes place. The occiput of the fetus's head might therefore be in a presentation position thanks to the head's bending. Following this bending, the foetus falls through the pelvis and into the delivery canal. Internal rotation occurs when descent is complete, allowing the foetal head's vertex to turn away from the lateral ischial spines. The foetal head is next extended, allowing it to pass through the mother's pubic symphysis. Finally, the head is externally rotated, allowing the posterior shoulder to be given. Once the foetus is born, the second stage of labour is over.[28-30]

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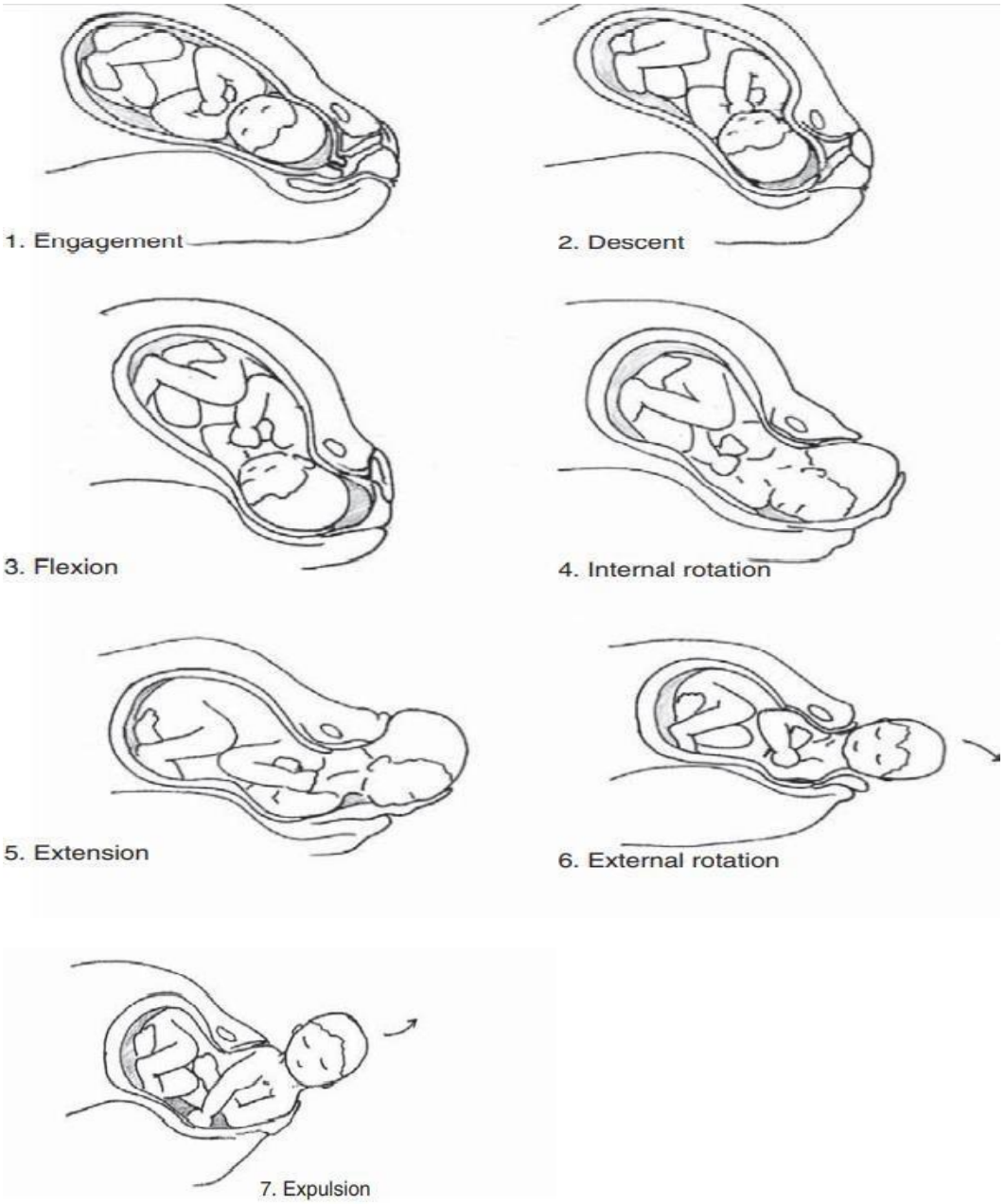


Figure 2: Mechanism of Labour

Third Stage of Labor: Delivery of Placenta and Membranes

Placenta and membranes are separated and expelled during this stage, which starts just after foetal birth. The uterus naturally contracts around its shrinking contents when the baby is delivered. The uterine cavity is typically all but gone by the time the baby is fully delivered. Above the narrower bottom portion is almost solid mass which is formed by muscle that is many centimetres thick. Right now, umbilicus is level with the uterine fundus.[31]

The region of the placental implantation site must unavoidably shrink along with this abrupt reduction in uterine size. The placenta thickens in order to adapt to the smaller region, but due to the placenta's limited flexibility, and then compelled to buckle. Decidua spongiosa, the weakest layer, is removed from that location by the ensuing stress. Placental separation therefore results from the imbalance between the essentially unaltered placental size and the smaller implantation location. The spongy decidua's flexible structure, which is comparable to the row of holes between postage stamps, considerably facilitates placenta cleavage. A hematoma develops as the placenta and decidua separate from the decidua that is still connected to the myometrium. Because bleeding might occasionally be little, the hematoma is typically the outcome of the separation rather than its cause.[32]

Fetal Membrane Separation and Placental Extrusion

The placenta may be ejected after it has detached if abdominal pressure is raised. A modest amount of traction is applied to the umbilical cord while alternately compressing and raising the fundus to complete the third stage. The retroplacental hematoma either accompanies the placenta or is discovered inside the membrane-filled sac that is inverted. Blood from the placental location seeps into the membrane sac during this procedure, also known as the Schultze mechanism of placental ejection, and does not leave the body until the placenta has

been expelled. In this circumstance, the placenta descends sideways, and its maternal surface appears first.

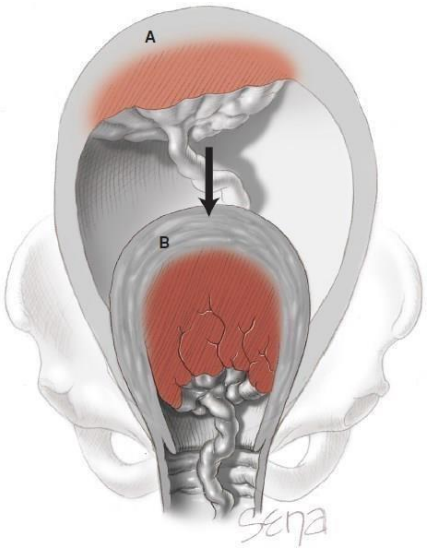


Figure 3: The picture depicts stage 3, expulsion of placenta and membranes

Phase 4 of Parturition: The Puerperium

The myometrium continues in a condition of hard and continuous contraction and retraction for the first hour or two following birth. Large uterine arteries are immediately compressed as a result, allowing thrombosis of main lumens to stop bleeding. Uterotronics frequently augments this. This is swiftly followed by cervical repair and uterine involution, two remodelling processes that return these organs to their pre-pregnancy form. These restore endometrial receptivity to regular hormonal cyclicity and shield the reproductive tract against commensal microbial invasion.[8]

This is swiftly followed by cervical repair and uterine involution, two remodelling processes that return these organs to their pre-pregnancy form. These restore endometrial receptivity to

regular hormonal cyclicity and shield the reproductive tract against commensal microbial invasion.[33]

ACOG guidelines for the avoiding caesarean deliveries :

First and second stage of labour:

• A lengthy latent period (>20 hours nullipara; >14 hours multipara) is not a sign that the baby will be delivered by Caesarean.

• initial stage of labour is gradual yet progressive – Not a sign that a Caesarean section is necessary.

• 6 cm of cervical dilatation is considered the beginning of the active stage of labour.

• Caesarean section is advised in cases of active first stage labour arrest, which is defined as cervical dilatation of less than 6 cm, ruptured membranes, and inability to advance despite 4 hours of sufficient ventricular contraction or 6 hours of oxytocin administering with insufficient contractions and no cervical change.

• There is no set time limit for the phase of labor for surgical vaginal delivery.

• Only after 2 hours of pushing in multipara and 3 hours of pushing in nullipara with a positive maternofoetal condition is the stage 2 arrest of descent defined. (Malpresentation and spinal analgesia may both use longer duration.)- An indication for Caesarean section.

• An suitable alternative to a caesarean section is operative vaginal delivery performed by a qualified medical professional.

• To be encouraged: training in surgical vaginal deliveries.

• Before doing surgical vaginal births, manual foetal head rotation may be explored.

FHR monitoring

• Repetitive fluctuating foetal deceleration may be treated by amnioinfusion.

• Scalp stimulation is used to determine the acid-base status of foetuses with unusual or ambiguous cardiac rhythms.

Labour induction

• At 41 weeks, inductions should be performed. prior to it, depending on the maternal and foetal health.

• Use cervical ripening when the cervix is unfavourable.

• Failure to induce labour in the latent phase is defined as less than 24 hours of latent phase and the administration of oxytocin for at least 12 to 18 hours following membrane rupture, which is a sign of a caesarean section.[8]

WHO guidelines to avoid caesarean delivery:

First stage of labour-

• Latent initial stage is marked by uncomfortable uterine contractions and erratic cervix alterations.

• associated with some effacement and a more gradual increase in dilatation of up to 5 cm.

• The painful uterine contractions that occur on a regular basis, the significant degree of cervical effacement, and the quicker cervix dilatation from 5 cm to complete dilation are all characteristics of the active first stage.

The latent initial stage does not have a set duration and can last for a variety of lengths. First stage activity lasts for no more than 12 hours in primipara and 10 hours in multipara.

• For normal pregnant women desiring pain treatment during labour, an epidural analgesia is advised. Other suggested alternatives include parenteral opioids (such as fentanyl, diamorphine, and pethidine). For pain management, physical methods like massage or the use of warm packs are advised, as well as relaxation techniques including gradual muscle relaxation, breathing exercises, music, and mindfulness.

• In low-risk pregnancies, it is advised that the mother remain upright and mobile.

Second stage of labour-

• The stage two is the moment between the full cervical dilation and the baby's delivery, when the woman feels an uncontrollable impulse to bear down as a result of the uterus' expulsive contractions.

• Each woman experiences the second stage for a different length of time. Primipara typically lasts 3 hours, whereas nullipara lasts 2 hours.

• It is advised for women without or with epidural analgesia to select the delivery position they like.[34-38]

Complications:

IMMEDIATE COMPLICATIONS

Prolonged labor:

Dystocia, or prolonged labour, is a common birth problem and the main reason for assisted births and emergency Caesarean sections. Since Friedman published the graphic assessment of labor, a research based on 100 women, the diagnosis of protracted labour has been a contentious topic that has been debated. A protracted labour affects around 8% of all deliveries, and in Western nations, primipara experience the complication three times more frequently than multipara. Primiparity and total maternal weight gain or a high body mass index are maternal

risk factors that raise the likelihood of a protracted labour. Heavy birth weight, a big head size, and occiput posterior presentation are all foetal risk factors. A longer labour is also linked to more painful labour than anticipated, increasing the need for epidural analgesia and raising the possibility of surgical procedures. Using a partogram, the progression of labour is tracked with the goal of detecting sluggish progress early and preventing the transition from a regular labour to a protracted labour. Protraction disease is the most used term or diagnostic standard for protracted labour. Early amniotomy and early oxytocin augmentation are frequent procedures used to hasten sluggish development and promote dilatation. If the dilation rates fall below the acceptable minimum rate as determined by the diagnostic criteria, the current oxytocin augmentation tactics can be utilised to either avoid sluggish progress from happening or to hasten labour if necessary. commands (slower than usual) or disorders of arrest (complete cessation of progress). According to research by Bugg (2013), while using oxytocin may shorten labour, it does not enhance the likelihood of normal deliveries in women who are labouring slowly.[39]

Obstructed labor:

Obstructed labour is characterised by the failure of the foetal portion that is present to descend in the birth canal for mechanical reasons, adequate, and strong uterine contraction, which results in a variety of mother and foetal outcomes. Not obtaining enough oxygen is one of the baby's complications, which might lead to death. It raises the mother's chance of contracting an infection, suffering a uterine rupture, or experiencing postpartum haemorrhage. A big or improperly positioned baby, a narrow pelvis, and issues with the delivery canal are the major reasons of labour obstruction. Shoulder dystocia, in which the anterior shoulder cannot readily slide below the pubic bone, is an example of abnormal placement. Malnutrition and a deficit in vitamin D from a lack of sunshine are risk factors for having a tiny pelvis. Due to the possibility that the pelvis may still be expanding when they give birth, it occurs more frequently in

adolescents. A narrow vagina and perineum, which may be caused by female genital mutilation or tumours, are birth canal issues. A partograph is frequently used to monitor labour progress and identify issues. This, together with a physical examination, may help find labour obstructions. In order to manage obstructed labour, a caesarean section or vacuum extraction may be necessary, along with potential symphysis pubis surgery.[39]

Shoulder dystocia:

By definition, shoulder dystocia is a mechanical issue that arises during a vaginal delivery and is indicated by either of the following: inability to deliver the foetal shoulders using only gentle downward traction, or the need for additional delivery manoeuvres in order to deliver the baby successfully. a head-to-body gap that has been measured to be longer than one minute. Obstetric brachial plexopathies like Erb's or Klumpke's palsies can result from shoulder dystocia.[8]

Precipitate labor:

Precipitous labour and delivery are quite quick. It is the ejection of the foetus fewer than three hours after the start of regular contractions. The general consensus has been that too quick labour can harm the mother and put the unborn child at risk for traumatic or asphyxial injuries.For instance, if the uterus contracts with extraordinary energy before birth, it may be hypotonic after delivery, which might lead to bleeding after placental implantation. In the clinical situation, postpartum haemorrhage linked with uterine atony followed brief labour in multiparous women seems to occur often. In addition, it has been shown that rapid labour is linked to a greater risk of placental abruption. However, there is little data available on the maternal and perinatal outcome following a quick delivery, particularly in nulliparous women. For instance, Mahon et al. found that multiparous women were more likely than other women

to experience precipitous labour in an earlier research involving 99 preterm births. Only nine nulliparous women (9.1% of all precipitous deliveries) were included in their research. [8]

Rupture of uterus:

One of the most risky obstetric conditions is uterine rupture (UR), which is linked to poorly managed labour and carries a higher risk of maternal and perinatal morbidity and mortality. Patients who survive UR along with certain immediate consequences, such shock, anaemia, and a burst bladder, may develop long-term issues like vesico vaginal fistula and be unable to give birth. Grand multiparity, inappropriate (medically not advised at this stage but prescribed) use of oxytocin, neglected labour, prior CS and myomectomy, uterine instrumentation and manipulation, labour induction, genetic defects of the uterus and uterine distension due to polyhydramnios, multiple pregnancies, and foetal macrosomia are causes of uterine rupture in unscarred uteri. According to the timing, location, and severity of the uterine defect, the signs and symptoms of uterine rupture include severe haemorrhage, palpable foetal parts, recession of the presenting foetal parts, loss of uterine contractility, infrequently blood-stained urine, appearance of the placenta at the vulva, and prolapse of gut loops into the vagina. Due to the limited time available to identify uterine rupture, time-consuming diagnostic procedures, and advanced imaging modalities have a limited value. The uterine rupture is most properly identified based on the usual signs and symptoms. Once diagnosed, management must include

(i) supportive therapy for mother until surgical intervention can arrest life threatening haemorrhage

delivery of fetus 10-37 minutes after uterine rupture- necessary to prevent serious fatal morbidity and mortality. Repeat c/section is done at 36 weeks of gestation in patients with previous uterine repair. [40]

Mal position, mal presentation:

An aberrant presentation, also known as a malpresentation, occurs when the baby appears in the mother's pelvis in a position other than the vertex presentation. Because it has a far higher risk of obstruction and other delivery problems than the vertex presentation, this is referred to as "abnormal." Breech, shoulder, face, and brow malpresentations are the most typical forms.[41,]

Causes:

- An unusually high or low level of amniotic fluid
- A uterine tumour (abnormal tissue development) impeding a late-pregnancy spontaneous foetal inversion from breech to vertex presentation
- Abnormal shape of the pelvis
- Laxity (slackness) of muscular layer in the walls of the uterus
- Multiple pregnancy (more than one baby in the uterus)
- Placenta previa (placenta partly or completely covering the cervical opening.

Retained placenta:

A somewhat frequent cause of obstetrical morbidity is placenta which is retained following delivery through the vagina, which happens in one to three percent of births. This is often identified whenever the placenta does not naturally detach even during third trimester of

pregnancy, when a woman bleeds excessively without placenta detachment, or when there is verification of placenta tissue remaining after the rest of the placenta has released naturally. Placentas that don't split on their own can cause major surgical and hemorrhagic morbidity. If left untreated, retained placenta is considered to be the second most prevalent cause of maternal haemorrhage (PPH).[8]

Risk factors:

uterine contraction risks in some situations

large parity

Oxytocin use

risk elements for an irregular placentation

Surgery on the uterus before

IVF pregnancy

premature birth

uterine abnormality present at birth

history of placenta retention

After the infant is born and prior to a retained placenta diagnosis is determined, active therapy like as oxytocin, controlled cord extraction, and uterine stimulation is suggested to facilitate spontaneous placental separation. The active care would stop placenta which is retained, these techniques have been found to reduce the risk of postpartum haemorrhage. The placenta is often physically removed from the uterus after being diagnosed.[8]

Injuries to birth canal:

Birth injuries are physical harm suffered by a mother or her unborn child during childbirth. A birth injury (commonly referred to as "neonatal delivery trauma") in a newborn baby might involve anything from bruises to a shattered bone.

Birth injuries in moms can vary from pelvic floor injury to vaginal tears.

Birth injuries in mothers typically fall into 2 main categories:

Injuriestotheperinealarea

- Around 3 out of 4 women who give birth vaginally have "perineal trauma," including perineal rips and episiotomies (a tear or surgical cut to the area between the vagina and anus).
- Damage to the nerves — On occasion, delivery can cause damage to the nerves in the perineal region, which can result in pudendal neuralgia, a painful disease.
- Haemorrhoids (piles) are enlarged veins that might feel like lumps around the anus. Although they can hurt or itch, they are often not dangerous.[8]

Injuriestothepelvicfloor

Damage to the muscles that keep the uterus, bladder, and intestine in place in the pelvis is referred to as the "pelvic floor." Up to 50% of women who give birth vaginally experience lasting pelvic floor alterations as a result of straining or tears (avulsion).

Pelvic organ prolapse: If the pelvic muscles are weak or injured, the pelvic organs may prolapse and cause bladder and bowel issues.

These birth injuries are physical, many mothers can experience emotional and psychological distress before, during or after the birth. This is known as birth trauma. There are many ways to decrease the risk of birth trauma, and both treatment and support are available.

Prevention:

- Regular exercise and yoga.
- Strengthening of pelvic muscles with daily exercises.
- Avoid conditions which increase intra abdominal pressure like cough, difficulty in passing stools, or straining on the toilets.
- Giving birth by LSCS could prevent some birth injuries, but this is major surgery so carries health risks of its own

Treatment:

A small perineal tear or graze can be an example of a birth injury that may be minor and resolve on its own. Deeper injuries that need stitches are among the injuries that demand emergency care. You could also need to take painkillers.

If you have a more serious birth injury, such as a significant rip in or impairment to your pelvic floor muscles, you may be treated with physiotherapy and workouts to restore your pelvic floor muscles. To treat a prolapse, some women may need vaginal pessaries or surgery.[8]

Post partum hemorrheage:

The most frequent and deadly consequence of delivery is obstetric haemorrhage. Greater than 500 mL of expected blood loss with a vaginal birth or more than 1000 mL of anticipated blood loss during a caesarean delivery is the traditional definition of postpartum haemorrhage (PPH). Regardless of the method of delivery, this was defined by the American College of Obstetrics and Gynecology in 2017 as a total blood loss higher than 1000 mL with signs and symptoms of hypovolemia within 24 hours of the birth process. Although this update was made with the understanding that blood loss during birth is frequently overestimated, blood loss during vaginal delivery of more than 500 mL should be regarded as abnormal and may require

intervention. The first 24 hours following birth are considered to be the primary postpartum haemorrhage, whereas the next 24 hours to 12 weeks are considered to be the secondary postpartum haemorrhage. The goal of postpartum haemorrhage therapy and management is to revive the patient while determining and addressing the underlying cause. To guarantee sustained perfusion of the patient's essential organs, it is crucial to maintain the hemodynamic stability of the patient. There should be ample intravenous (IV) access. A emphasis should be placed on the early implementation of protocols for the release of blood products and major transfusion protocols. Careful direct measurement of cumulative blood loss is crucial. It is important to quickly determine the source of postpartum haemorrhage and start therapy at the same time. Transfer to a surgical area with anaesthetic support may be necessary to aid with a difficult laceration repair, to correct uterine inversion, to help administer analgesia if necessary for the evacuation of retained products, or if surgical exploration is necessary. Treatment options for postpartum haemorrhage caused by uterine atony include surgical surgery, uterine tamponade, pelvic artery embolization, and medicinal therapy using uterotonic medications.[40]

LATE COMPLICATIONS

Infections:

Puerperal infections that are caused during pregnancy, trauma during delivery, or caesarean surgery often affect the genital tract, with the uterus and vagina being the primary sites of involvement. Vulvitis, vaginitis, cervicitis, and endometritis are genital tract diseases that may not be seen on imaging. If it is not treated properly, genital tract infections can spread to other areas through the lymphatic channels, blood,(such as metritis, parametritis, or peritonitis), venous circulation, or contiguity (such as pelvic inflammatory disease and its consequences) (eg, septic thrombophlebitis, embolic thrombophlebitis, and sepsis). Other causes of postpartum infection include wound infection at episiotomy site, mastitis, urinary tract infection, and septic thrombophlebitis, in addition to genital tract infections.

Postpartum endometritis, which affects 1%–3% of vaginal births and up to 27% of caesarean deliveries, is an infection of the uterine decidua or uterine lining and one of the main causes of maternal infection following delivery or loss.

Maternal pyrexia, a clinical diagnostic for postpartum endometritis, is the most typical cause of postpartum fever.

Endometrial infection symptoms such as abnormal vaginal discharge, uterine pain, and prolonged uterine enlargement accompany its manifestation.[41]

Amniotic fluid embolism:

One in 8000–80 000 pregnancies have amniotic fluid embolism, an uncommon but serious labour complication that is associated with a high maternal fatality rate of over 80%. A little tear in the uterine veins causes amniotic fluid to enter the circulation, which causes it to happen. 70% of the time, the symptoms start during spontaneous labour, and 30% of the time, they start less often in the postpartum period. Rapid onset of shock and respiratory collapse (abrupt dyspnea, cyanosis) are the clinical manifestations, which soon proceed to cardiopulmonary collapse and severe pulmonary edoema.[41]

Thromboembolic complications:

Pregnancy is a prothrombotic condition that significantly worsens during the course of gestation, peaking in the postpartum period. A protective strategy to lessen blood loss during delivery, thephysiological prothrombotic state during and after pregnancy is linked to elevated levels of fibrin and other regulatory factors, as well as systemic overexpression of plasma prothrombotic mediators. Due to the gravid uterus the pressure on the vena cava in the third trimester of pregnancy, there are increases in plasma volume and decreases in venous return flow, which result in venous stasis and a higher risk of thrombosis.[41]

Labor pain: Initial Evaluation and Presentation of Labor

Women frequently identity to obstetrical triage because they are worried about the beginning of labour. Contractions that hurt, vaginal bleeding or a bloody discharge, and vaginal fluid leaks are common primary complaints. If the patient has regular, clinically meaningful contractions and an observable change in cervical dilatation and/or effacement, it is the clinician's responsibility to decide if the woman is in labour. Vital indicators like temperature, heart rate, blood oxygen, breathing rate, and blood pressure should be taken and checked for any anomalies when women first arrive at the labour and delivery unit. To guarantee the health of the foetus, the individual should be placed on regular cardiotocographic monitoring. The patient's prenatal file should be reviewed, including the obstetric histories, surgical history, health information, test results, and imaging data. Finally, a review of systems, physical examination, along with a sterile small piece of tissue exam, and a history of any recent illnesses are required.[41-45]

During a speculum exam, doctors will see for signs of membrane rupture, such as amniotic fluid collecting in the posterior vaginal canal. If the doctor is unsure whether or not a rupture of walls has occurred, further testing, such as pH monitoring, microscopic examinationto look for ferning of the fluid, or laboratory tests of the fluid, can be the next step. Amniotic fluid has a more basic pH than vaginal fluid, which ranges from 7.0 to 7.5. A sanitary gloved exam should be carried out in order to determine the degree of cervical dilation and effacement. Cervical dilation can be determined by locating the external cervical os, making a "V" with one's fingers, and measuring the distance in centimetres between the two fingers. Calculating effacement involves comparing the quantity of the thin cervix that is still visible to the uneffaced cervix. During the cervical examination, it is also necessary to confirm the displaying foetal component. Bedside ultrasonography may be performed to confirm the shape and placement of the foetal presenting part. Given the greater risks for morbidity and mortality to

the foetus that breech presentation presents compared to cephalic presentation, it warrants special care.[46, 47]

Control of Regular Work

Despite being a normal procedure, labour can occasionally be impeded by complicating factors, prompting therapeutic intervention. A careful balance must be struck between allowing nature to run its course and averting any potential problems in order to handle low-risk labour. During labour, cardiotocographic monitoring is routinely used to monitor the development of uterine contractions and the heart rate of the foetus. Clinicians evaluate the sufficiency or inadequacy of contractions while monitoring for any signs of pregnancy complications that might need action. Vital signs are taken periodically and if there is reason to be concerned about a change in the mother's clinical condition. The haemoglobin, hematocrit, and platelet count are usually checked in the event that there is significant blood loss after delivery. Cervical examinations are normally performed each 2 to 3 hours, unless conditions arise that necessitate more frequent checks. The chance of infection increases with routine cervical exams, especially when a membrane has ruptured. Women should be allowed to walk around and switch positions whenever they choose. If that occurs, an intravascular catheter is ordinarily inserted.

It's necessary to provide medication or fluids. No oral consumption ought to be limited. Although they are not always essential for all labouring women, intravenous fluids could be investigated to help rebuild loss if the patient goes without food or beverages for a lengthy period of time. Analgesia is given to eligible applicants in the form of neuraxial analgesia, inhaled nitrous oxide, and intravenous opioids. Amniotomies are occasionally considered for labour induction or foetal scalp monitoring, but their routine use should be avoided. Increasing contractions may be achieved by giving oxytocin if they are regarded inadequate.[25-30]

FRIEDMAN CURVE AND SIGNIFICANCE:

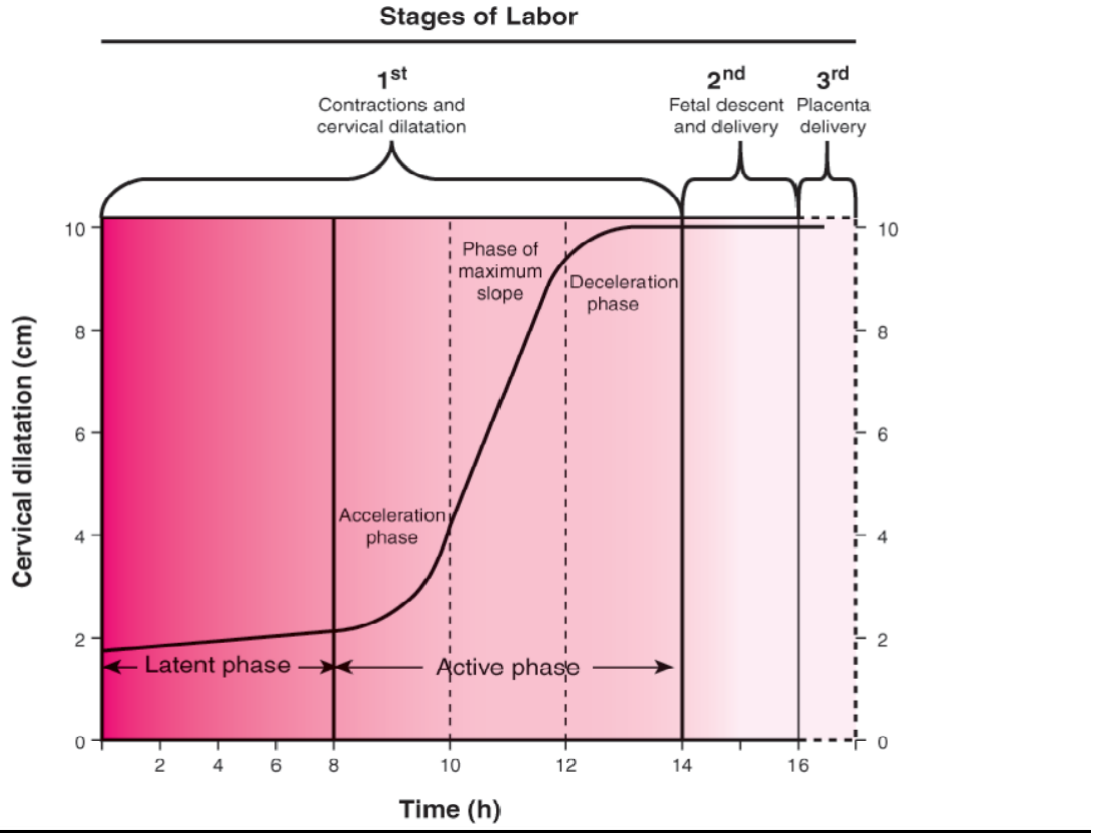


Figure No 4: Friedman's curve

Clinicians have been able to examine labour patterns and build labour curves because to the definition of the phases of labour with a clear beginning and finish. Using actual clinical data, Dr. Friedman developed a chart in the 1950s that illustrates the pace of normal labour throughout latent and active labour. These, in turn, can be used to diagnose atypical labour and assess if a woman is moving through her labour as predicted. Friedman noted that when cervical dilation is tracked over time, labour often has a sigmoidal form. Cervical dilatation happens at a pace of 1 centimetre or more per hour during the active stage of labour. The person may be at threat for atypical labour or labour arrest if dilation happens considerably more slowly.[30-35]

When a woman is not making the expected progress through the initial stage of labour, the diagnosis of arrest of dilation or descent may be made, which may need a caesarean birth. Dr. Friedman's results have lately come under scrutiny, and the general agreement is that the usual

latent phase of labour lasts longer than previously noted. Healthcare practitioners may correctly communicate with one another regarding patient care because to the common language created by the phases of labour criterion. In an effort to improve patient outcomes, specialised therapies are often targeted to different labour phases. In the third stage of labour, for instance, rapid tension on the umbilical cord and intravenous oxytocin administration are used in active management, which is associated with a decreased risk of postpartum haemorrhage. Clinicians will continue to examine labour patterns to enhance patient care and use the phases of labour to direct labour management.[36-43]

Changes in the labor curve:

Friedman developed the first labour curve in the 1950s. 1,2 Using information from the National Collaborative Perinatal Project, Zhang et al. created a labour curve from a much larger cohort of women born in the 1960s (CPP). The nulliparous women in the CPP showed amore gradual transition to active phase, while active phase labour in the multiparous women started around 5 cm cervical dilation, and women in the CPP lacked the deceleration phase described by Friedman. These are the most notable differences between these 2 labourcurves.[44- 53]

The Consortium on Safe Labor (CSL) most recently evaluated the development of labour in a sizable, modern cohort of women who presented with spontaneous labour. With an acceleration point suggesting an active phase that occurred significantly later, the CSL analysis discovered that the rate of cervical dilation was slower in all parities compared to that indicated by Friedman, notably from 4 to 6 cm (around 6 cm). [54]

But mother traits and obstetric procedures have undergone significant change since the 1960s. Currently, more women are having their labours induced, oxytocin and epidural usage is more prevalent, and women are older and have higher body mass indices (BMI). Progressively

prolonged labours are related to both rising maternal age and BMI. It has also been demonstrated that induction and epidurals are linked to lengthier labour. It is crucial to understand the influence of contemporary obstetric practise on the changes in labour patterns since mother characteristics might be less changed. [55]

Comparing current CSL practise to CPP practise around 50 years ago reveals different labour patterns. With a generally slower latent phase, a less evident inflection point in nulliparas, and a later inflection point in multiparas, the first and second phases of labour were longer in the CSL. Compared to the CPP, the female population of modern obstetrics in the United States has altered. Women in the CSL were older, more racially diverse, and had higher BMIs. Furthermore, their newborns weighed more. The usage of episiotomy and operative vaginal birth decreased significantly, the use of oxytocin and epidurals increased, and the caesarean section rate was 4 times greater in the CSL than in the CPP, independent of parity. Even after correcting for the variations in mother and pregnancy factors, the current CSL cohort's labour was noticeably longer than the earlier CPP cohort's. When compared to the earlier CPP cohort, the current CSL cohort's lengthier median first stage of labour (from 4 to 10 cm cervical dilation) appears to have been mostly caused by changes in obstetric practise. Changes in obstetric practise were largely responsible for the lengthier median first stage of labour in secundagravidas and multiparous women (from 5 cm to fully dilated). For both spontaneous and surgical vaginal deliveries, nulliparous women in the CSL had a longer median second stage, and the relative contributions of mother factors, newborn birthweight, and practise patterns were fairly equal. The median variations in the length of the second stage for secundagravidas and multiparas, for both spontaneous and surgical vaginal birth, were somewhat longer in the CSL, but the difference was of little clinical significance. Given the high incidence of surgical vaginal delivery and episiotomies in the CPP group, comparisons of the second stage of labour should be read with care. It's possible that the women who were let

to give birth naturally or with no episiotomy in the CPP were different, with observed quicker progression or smaller neonates, which would bias the delivery time to be shorter.[56-59]

One obstetric procedure known to be linked to labours lasting 40 to 90 minutes or more is the administration of an epidural, which is highly recommended for mother's pain management. The rate of prelabor caesarean surgery was 15.6%, while the rate of labour induction was 36.2% in the entire CSL cohort. 5 Only around half of the women in the entire CSL cohort went into labour naturally due to the increased widespread use of labour induction and prelabor caesarean procedures. It's possible that the modern cohort's women experienced unmeasured variations that prolonged labour. But even when we restricted the labour curves to a certain low-risk group with comparable traits, the CSL cohort's labour was still longer. It would seem, then, that additional modifications to obstetrical procedures were probably significant. It is vital to realise that labour is longer in modern obstetrics, even though the causes of this may not entirely understood. Routine procedures like the usage of oxytocin and the scheduling of caesarean deliveries may also need to be properly examined. According to research by Rouse et al, 61% of women whose labour was arrested in the active phase after two hours were able to give birth vaginally. The preceding studies from the same CSL cohort that indicated a high number of women having a caesarean birth during labour prior to 6 cm dilation support the idea that caesarean delivery may also be conducted before the active period.[60]

The Partograph:

The World Health Organization (WHO) and many medical experts endorse the use of the partograph (or partogram) as the most popular labour monitoring tool during active labour. The partograph's goal is to give medical personnel the tools they need to keep an eye on a labouring woman's health and development, and to act quickly if necessary. Despite being in use for more than 40 years, the partograph's ability to identify deviation from the norm and prompt action has not yet been fully realised, which has raised concerns. [61]

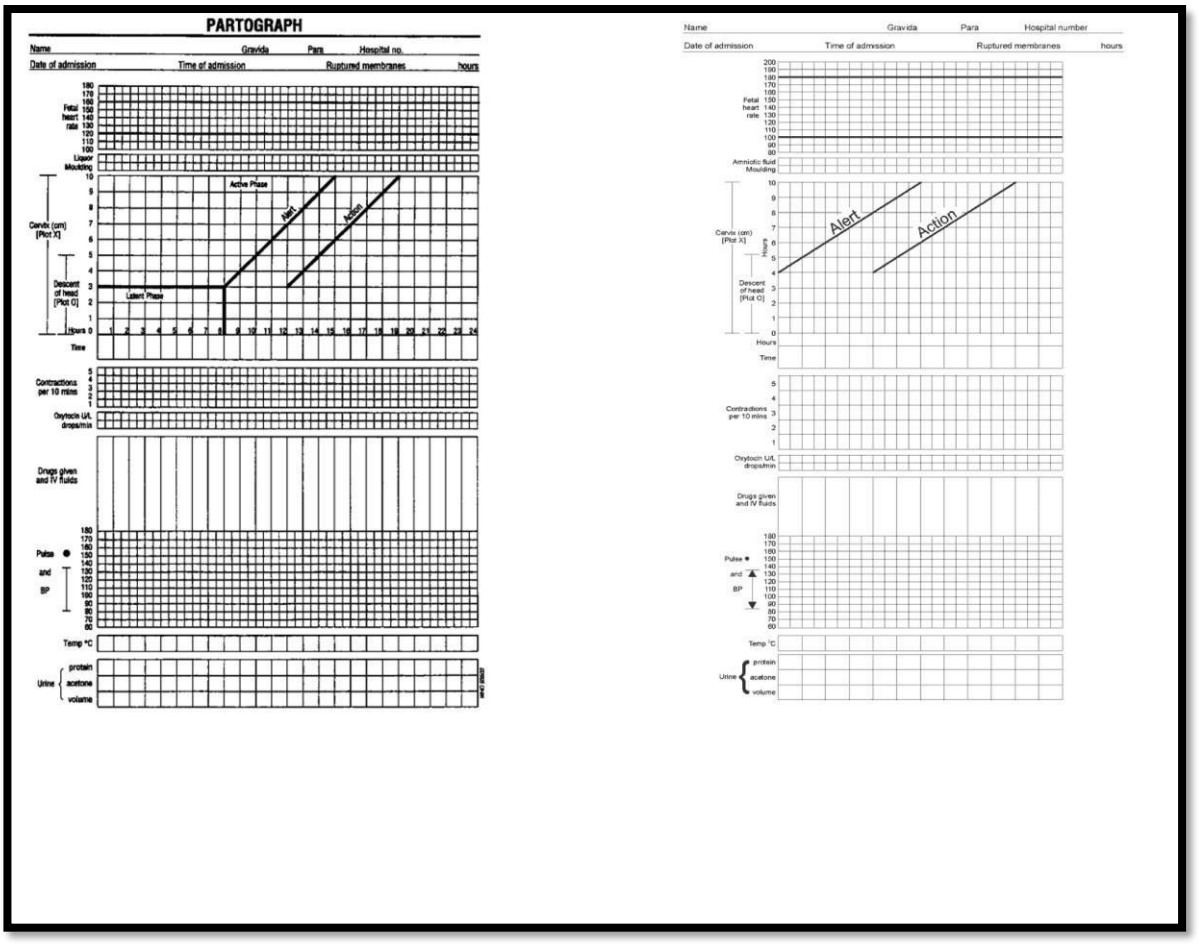


Figure 5: Figure showing both composite pantograph (WHO 1994) and modified pantograph (WHO 2000

Evolution of the Partograph

Health professionals now have a visual representation of labour that can diagnose abnormal labour and enable early intervention thanks to the creation of partograph. Friedman's clinical observations of women in labour serve as the foundation for the majority of guidelines for normal human labour progression. By visually graphing cervical dilatation against time in 1954, he established the idea of a partogram. A sigmoid curve was the one that was discovered. He separated the latent and active phases of the first stage of work. The labour curve was enhanced by further dividing the active period into acceleration and maximum Philpott's

partograph. The alert line and action line were introduced by him. The safe motherhood programme was started by WHO in 1987, and since then, three distinct types of partographs have been released. The first of these partograms, often referred to as a composite partogram, has an active phase that begins after 3-cm cervical dilatation after an 8-hour latent period. The action line is 4 h to the right and parallel to the alert line, and the alert line has a slope of 1 cm/h. Additionally, room is provided for noting the foetal head descent, mother health, foetal health, and medications used. The latent phase was removed from the partograph when it was redesigned by the WHO in 2000, and the active phase started at a 4-cm cervical dilation.It has an alert line with a slope of 1 cm/h and an action line that is parallel to the alert line and 4 h to the right. Additionally, room is provided for noting the foetal head descent, the condition of the mother, the status of the foetus, and the medications taken. The latent phase was eliminated when the WHO changed the partograph in 2000, and the active phase started at a 4-cm cervical dilation. [62]

When a woman is in labour, every observation is recorded on a partogram. It includes the following information.

1. The cervical dilatation, head descent, and uterine contractions are used to track the progress of labour.

2. Cervical dilatation, head descent, and uterine contractions serve as indicators of how far along labour is.

3. Pulse, blood pressure, temperature, urine output, and urine for protein and acetone are used to gauge the health of the mother.

4. A separate space is given to enter drugs, IV fluids and oxytocin.[63]

Progress of Labor

Cervical Dilatation

The cervical dilatation is plotted on a graph, which is the partogram's main characteristic. Each of the squares from 0 to 10 along the left side represents a 1-cm dilatation. The bottom of the graph has numerals 0 to 24 that represent one hour each.

The latent and active phases of the first stage of work are separated. The latent phase lasts up to 8 hours and ranges from 0 to 3 cm. There are 3 to 10 cm of the active phase (full cervical dilatation). The cervical dilation is shown with a "x."

The cervical dilatation is plotted on the alert line when a woman is hospitalised during the active phase. The charting of cervical dilatation will continue to be on the left of the alert line if labour progress is favourable.

When a lady is admitted during the latent phase, latent phase dilatation of 0 to 3 cm should be charted. However, as the broken line indicates, when a woman enters her active phase, the recording must be switched to the alert line.[64, 65]

Descent of Fetal Head

Before doing a vaginal examination, the descent of the head should always be evaluated by abdominal examination since the big caput may provide an inaccurate assessment of the station. Abdominal palpitation is measured in fifths above the brims, the level of the unborn head. The term "descent" is displayed on the graph's left side along with numbers from 5 to 0. On the cervicograph (Uterine Contractions), the descent is marked with a "O." There is a spot for noting the number of uterine contractions per 10 minutes below the cervical dilation. The scale ranges from 1 to 5. One contraction is shown by each square. Therefore, two squares are darkened if two contractions are felt in 10 minutes.[66]

Use of Partogram in Different Resource Settings

One of the most significant developments in contemporary obstetric treatment has been hailed as the partogram. WHO encourages its usage as a crucial instrument in labour management and suggests its universal application across work. Negative obstetric outcomes sometimes result from protracted labour and delays in decision-making in situations with limited resources. In these circumstances, it is typically impossible to continually monitor each woman during the course of labour due to resource limitations. The partogram is a straightforward, low-cost instrument that may be used in these situations to track labour in an economical manner. But some medical professionals, particularly in high-income nations, have questioned its efficacy. For instance, Walraven has stated that using the partogram during therapeutic work may be an unneeded distraction. According to the current Cochrane analysis, using a partogram as part of normal treatment is not linked to changes in caesarean section rates, instrumental vaginal deliveries, or Apgar ratings. Utilizing partograms might be useful in environments with limited resources. The effectiveness of partogram usage has to be determined definitively by more research. [67]

Abnormal Labor Patterns

Abnormal labor includes the following patterns.

1. Prolonged latent phase

2. Protraction disorders

3. Arrest disorders

4. Precipitate labor

Prolonged Latent Phase In primiparas and multiparas, the latent phase lasts, respectively, 6.4 and 4.8 hours. 20 hours for nulliparous patients and 14 hours for multiparous patients is

considered an excessively extended latent period. Therapeutic rest, oxytocin, an amniotomy, and cervical ripening are all part of the therapy.[67]

Protraction Disorders Prolonged active phase dilatation and extended decline are two examples of phenomena that are referred to be prolonged diseases. Protracted cervical dilation is defined as 1.2 cm/h for primiparas and 1.5 cm/h for multiparas. Protracted descent is defined as a decline of 1 cm/h for primiparas and 2 cm/h for multiparas.

Arrest Disorders They include secondary arrest of dilatation, which is the absence of cervical dilatation progress for more than two hours, and arrest of descent, which is the absence of foetal head descent for longer than one hour. Failure of descent is the result if there is no decline in the second stage.

Precipitate Labor Precipitate labour is defined as labour that is finished within three hours.[67]

Efficacy of the Partograph

The Cochrane evaluation of the partograph appears to have come to the conclusion that the use of the partograph during labour has a limited impact on the improvement of clinical outcomes. In contrast, several studies have found that using a partograph shortens labours and improves mother and foetal outcomes.[67]

Comparing the modified partograph to the composite partograph, which they found more challenging to complete during the latent period, healthcare professionals in labour wards considered the modified partograph to be significantly more user-friendly. In comparison to the composite partograph, the modified partograph was found to considerably enhance a number of intrapartum outcomes in settings with particularly limited resources, including a lower rate of caesarean sections, an increase in labour, and admissions to neonatal units.[67]

The partograph was not completed to the required standards overall, which has an impact on how it is used in clinical practise. When compared to mother well-being findings, analysis of

partographs that have been completed reveals that the cervical dilatation and foetal heart rate are often properly filled. This is because, rather than the tool itself, some portions are simpler to finish because equipment is available or because the partograph is understood better. The partograph is perceived as being difficult or time-consuming to do by some obstetricians, although data suggests that other staff members can perform the partograph efficiently. There is no denying that partograph continues to function as a referral and transfer trigger, as intended by its creators, and so achieves its main goals. Unfortunately, there is little evidence supporting labour augmentation based on partograph findings, and it happens frequently that clear findings on partographs go unacted upon. One fact is that the partograph's usefulness as a document of communication during the "handover of care" is modest and that transfers to tertiary units are made without the partograph; as a result, important information on the current state of labour is not available.[67]

Studies in low-resource contexts imply that the partograph may have a good influence, although there is contradictory evidence about its overall usefulness. It goes without saying that partograph usage has no negative effects on results. According to several studies, using a partograph led to fewer vaginal exams, shorter labours, and referrals, all of which improved the quality of care provided to women during labour and delivery.[67]

In general, midwives and physicians have been supportive of using the partograph. Positive views may not necessarily result in the actual usage of partographs in clinical settings; this could be because of things like availability, time, workload, and hospital policy.

We want to present the very important idea that by using the partograph, health workers may assume personal responsibility for labour management. Better collaboration and communication will undoubtedly follow, allowing for rapid and accurate decision-making and better outcomes. The usage of partographs will be made more widespread and uniform with the help of training and monitoring. As a result, partograph usage ought to be covered in great

detail in any curriculum for midwives or residents in obstetrics. Although there is no proof in the literature for the partograph's cost-effectiveness. Due to the low expenses required, the partograph is a cost-effective instrument in any resource scenario. Even though the partograph is widely recognised, its actual application varies from country to country. Numerous factors contribute to this heterogeneity, including a lack of or restricted availability, busy obstetric units with fewer staff members, and, lastly, the lack of a standard policy or guideline for its required execution. Since these settings have sufficient human resources and financing, the partograph is mostly employed at urban tertiary public health-care institutions byprofessionally certified and trained professionals. More significantly, these facilities have a procedure requiring its use in all deliveries. The use of partographs will be improved with ongoing supervision and guidance. Additionally, frequent audits will improve labour monitoring accuracy and utilisation. [68]

Partograph: Challenges and Solutions

Increasing the effectiveness of partograph usage in the management of all labours globally is the biggest problem. Unfortunately, the partograph is still not seen as essential or required for all labouring women's regular care. This can be due to a lack of dedication and varying levels of acceptance for the use of the partograph in labour rooms. Although the majority of healthcare professionals already have good views regarding the partograph, there are still several issues that need to be resolved in order to create a welcoming atmosphere. Support for these issues comes from the healthcare system, the availability of resources, user competency, and monitoring and evaluation of the partograph in actual usage. [68]

The usefulness of the partograph in clinical practise will be increased by positive validation, facility-level counselling, review, and audit of partographs by experienced seniors and supervisors. Completion, which is crucial to guaranteeing continuous usage, will arise from adequate resource availability (i.e., the partograph and supplementary equipment), but

unhappily this is currently missing. Individualized training increases partograph knowledge, but the utilisation of interdisciplinary training techniques fosters coordinated teamwork and results in understanding of responsibilities. Patient outcomes are improved by practical training techniques. All staff members who assist women in labour should have partograph usage training and frequent updates. Decision-making skills such as when to begin the partograph, when to act, and the proper referral sources should be included in training.

The failure to assess the technology on an outcomes level at the institution is a drawback of partograph usage in present practise. This is crucial for assessing the degree to which partograph usage affects care delivery, referrals, and particular labour outcomes. As a result, if partograph usage produces favourable results that are noted and shared with everyone engaged in the delivery process, it will undoubtedly become a standard practise in labour and delivery facilities. [69]

Literature review:

Marcia Jones, CNM, ND, and Elaine Larson, et al (2003) conducted a study in Hispanic women with sample size of 240, They have taken 240 low risk women with spontaneous on set of labour and observed latent and active phases of labour. They were observed that significant change in the mean duration of active phase of first stage and no difference in second stage of labor. They also concluded that active phase starts from 4cm of dilatation, they also conclude that the labor progression was different from friedman's study which was started from 3cm.[47]

JEREMY. NEAL et al. (2014), conducted a study at three large hospitals in the Midwest witha sample size of 216 to estimate the proportion of low-risk, nulliparous women at term who are admitted to labour units prior to active labour and to evaluate the consequences of the timing of admission (i.e., pre-active versus active labour) on labour interventions and mode of birth. The relevant Fisher's exact and Mann-Whitney U tests were used to compare results between groups. Logistic regression was used to evaluate the likelihoods of oxytocin augmentation, amniotomy, and caesarean birth. Results showed that 114 (52.8%) among 216 low- risk nulliparous women who hospitalised in pre-active labour and 102 (47.2%) were admittedin active labour. When compared to women admitted in active labour, women admitted in pre-active labour had a higher likelihood of receiving oxytocin augmentation. Women hospitalisedbefore the commencement of active labour had a greater chance of having a caesarean section(15.8% and 6.9%, respectively; OR 2.6, 95% CI 1.02-6.37).[70]

Dr V. Selvanayaki (2015) undertook a research to evaluate primi moms' understanding of the labour and delivery process. This research involved 50 primigravida moms. It is established that the primi moms had little understanding of the labour and delivery procedure.[71]

Stine Bernitz et al (2017), For all nulliparous women with a singleton foetus in a cephalic presentation and spontaneous commencement of labour at term, a multicenter cluster randomised study including 14 birth care institutions in Norway is done. The groups' results are compared. Based on a power estimate of the intrapartum caesarean section rate, which is 9.2% in the population of interest, the sample size (number of clusters and people) is chosen (p1).[72]

Pitchaimuthu1 N, Bhaskaran S (2018) conducted a unique study with the aim of customising labour curves by examining the labour pattern among primigravidas and comparing the

cervicograph with Zhang's and Suzuki's curves. Thus, the study may serve as a catalyst for further investigation into developing labour standards specifically for our Indian community, which may aid in lowering the prevalence of caesarean sections, particularly in primigravidas. A total of 156 primi gravidas with an uncomplicated term singleton pregnancy, spontaneous commencement and progression of labour, a normal vaginal birth, and favourable mother and newborn outcomes were included in this prospective observational research. They concluded that this study's labour curve had a form that was comparable to slower-progressing curves for Zhang and Suzuki-Horiuchi. Similar to Suzuki-curve, Horiuchi's the active phase began at 5 to 6 cm of cervical dilatation and continued thereafter. In contrast to Friedman's study, which had a mean rate of cervical dilatation of 3 cm/hour with a lower limit of 1.2 cm/hour as the 5th centile, the current study's mean rate of cervical dilatation in the active phase was 1.5 cm/hour. Following Friedman's labour criteria might lead to an increase in c-sections since it was determined that the mean rate of cervical dilatation in the active phase in Indian women was about comparable to the lowest allowable rate of cervical dilatation in his research. Therefore, it would be wise to develop a unique labour curve based on the local population's unique qualities and attributes.[74]

Inde Y. et al. (2018) In a research, pregnant Japanese women without aberrant labour progression or obstetric interventions were asked to characterise the cervical dilatation curves of normal labour progression. They discovered that at 6 cm (for primiparas) and 5 cm (for multiparas) of dilatation, the quickest cervical alterations took place. Primiparas: From 6 cm to 7 cm, the 95%tile of labour advancement took more than 3 hours, and from 5 cm to 6 cm, it took more than 2 hours (multiparas). During the active phase, the 5%tile of traversal time to the complete dilatation was between 0.5 and less than 1 hour (primiparas) (multiparas). Since there was no deceleration phase at the conclusion of the active phase, it was determined that active labour might not begin until 5 cm of dilatation. Cervical dilatation was slower at the start

of the active phase than previously mentioned. These findings could limit the potential for obstetric interventions as labour progresses.[75]

T. Oladapo1 *, Joao Paulo Souza1 , et al(2018) conducted a sudy in ,multicentre, with a sample of 5,606 women with singleton, vertex, term gestation who presented at 6 cm of cervical dilatation following a spontaneous labour onset that resulted in a vaginal birth with good birth outcomes in Nigeria and Uganda. They were Concluded that Cervical dilatation during labour in the slowest-yet-normal women can progress more slowly than the widely accepted benchmark of 1 cm/hour, irrespective of parity. Interventions to expedite labour to conform to a cervical dilatation threshold of 1 cm/hour may be inappropriate, especially whenapplied before 5 cm in nulliparous and multiparous women. Averaged labour curves may not truly reflect the variability associated with labour progression, and their use for decision- making in labour management should be de-emphasized.[79]

Sasitorn Phumdoung*, Sununta et al (2018) . conducted a study in Thai women. In this study included 350 women, The study was done to know the sensitivity prediction of the Friedman Curve. The results were showed that the Friedman Curve has moderate sensitivity in predicting the progress of labor throughout the first stage of labor: latent, acceleration, and maximum slope phases (correction of prediction 72%, 79%, 78%, respectively) but the deceleration phase has a high sensitivity (85%). Thus, Friedman Curve to monitor the progress of labor is still reliable in Thai women.[81]

M Bonet et al. (2019) conducted a systematic analysis of observational and other research designs reporting information on the relationship between the occurrence of unfavourable birth outcomes and the alert line status of women in labour. concluded that the use of cervical dilatation over time (at a rate of 1 cm/h during active first stage) to identify women at risk of poor delivery outcomes is not supported by this systematic study.[73]

Divyesh V. Shukla1*, Shilpi D. Shukla1, et al(2020) conducted a study at multi speciality hospital, with a total of 640 patients with low risk profile with more than 34 weeks of gestation.they examined all patients in regular intervals ,and parameters monitored were cervical dilatation effacement ,fetal decent .all were noted on partograph and the results were analysed.they observed that cervaical dilatationmean in the study population was significant statistically between 4-6cm and 6-10cm with p value >0.0001 Finally they concluded that active stage begin from 6cm.in majority of participants. [77]

MATERIALS AND METHODS

SOURCE OF DATA: This study was conducted at B.L.D.E (DEEMED TO BE UNIVERSITY) SHRI B.M. PATIL MEDICAL COLLEGE AND RESEARCH CENTRE. In Department of OBG.

STUDY DESIGN:

Is a cross-sectional observational study.

STUDY PERIOD: JANUARY 2021 TO APRIL 2022

METHOD OF COLLECTION OF DATA

INCLUSION CRITERIA

- Singleton pregnancies
- Patients labouring for the first time
- Spontaneous onset of labour
- Low-risk patients
- Vertex Presentation

EXCLUSION CRITERIA

- All medical disorders.
- Any obstetric complication like PIH, Gestational diabetics, Severe Anaemia/ Placenta previa/ Abruptio Placenta
- Any life-threatening anomalies
- Multiple gestations
- Any signs of foetal distress at the time of enrolment.
- Advance stage of labour (>6 cms of cervical dilatation)
- Non-vertex presentation

Sample size calculation

- To do A CROSS-SECTIONAL STUDY TO ANALYSE THE CHANGING TRENDS IN FRIEDMAN'S CURVEIN PRIMARY VAGINAL DELIVERY Systematic random sampling method will be used to collect the mothers.[15]

  With anticipated Proportion of poor knowledge scores of primi 32.24%, the study would require a sample size of a minimum of 145 patients with 99**%** level of confidence and 10% absolute precision**.**[15]

  Formula used

- **$n=\frac{z^2\ p*q}{d^2}$**

  Where Z= Z statistic at α level of significance

  d^2= Absolute error

  P= Proportion rate

  q= 100-p

Statistical analysis

- The data obtained will be entered in a Microsoft Excel sheet, and statistical analysis will be performed using statistical package for the social sciences (Version 20).
- Results will be presented as Mean (Median) ±SD, counts and percentages and diagrams.
- For normally distributed continuous variables between two groups will be compared using Independent t-test for not normally distributed variables Mann Whitney U-test will have used.

METHODOLOGY

This is a cross-sectional observational study. This study was conducted at SHRI B.M. PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTRE, B L D E(DEEMED TO BE UNIVERSITY) at Department of OBG.

This study involving all the patients admitted to the labour ward at SHRI B.M. PATIL MEDICAL COLLEGE HOSPITAL AND RESEARCH CENTRE, B L D E who fulfil inclusive criteria and gave consent for the study in accordance with the declaration of Helsinki are enrolled and progression of labour is assessed using partogram, the feto-maternal outcome

will be analysed. After enrolment, detailed history is taken, the general physical examination is done and details documented. Partogram is plotted and the progression of labour is monitored with documentation of cervical dilation; the descent of head; uterine contractions.

The fetal condition is assessed by documentation of fetal heart rate, the colour of amniotic fluid and the moulding of the head.

Maternal vitals, i.e., Pulse rate, Blood Pressure, the temperature is documented. Use of uterotonics, i.e., Oxytocin and the dose are also documented. All these parameters are plotted and documented in the partogram and analysed.

Selection of Study Population:

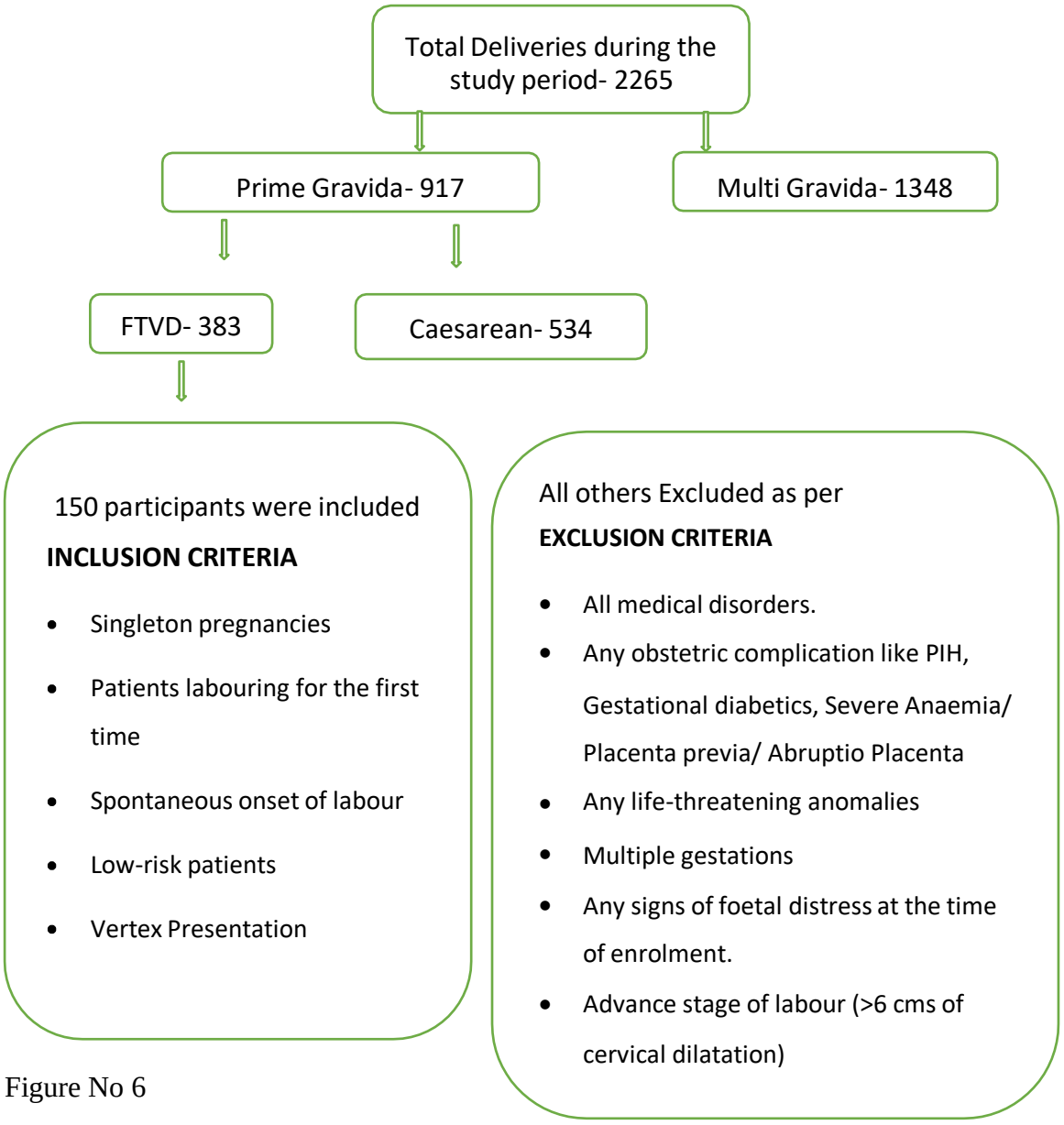


Figure No 6

RESULTS

Table1.Demographic data of study population

Age Distribution				
Age Group	**No. of Patients**	**Percent**	**Mean**	**Range**
18-23	103	69%	22.29	15.00
24-29	45	30%		
30-35	2	1%		
Total	150			
Residential Data				
Category			**No. of Patients**	**Percent**
Rural			82	54.6%
Urban			68	45.4%
		Total	150	

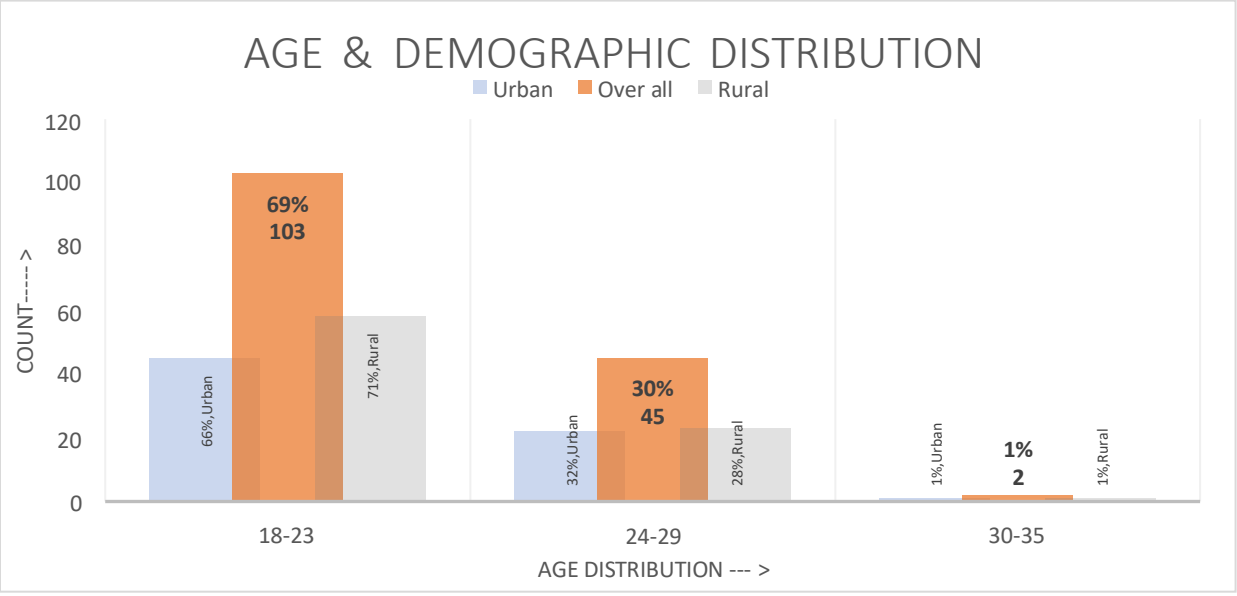


Figure 7 shows the graphical representation of the table1 of age distribution.

Table1 shows 54.6% (i.e., 82 out of 150) of participants belong to rural area. 45.4% (i.e., 68 out of 150) belongs to urban area.

Age distribution shows majority of the participants belonged to the age 18-23 years with 69%, 30% belonged to the age 24-29 years and 1% of the participants belonged to the age 30-35 years.

Table 2. Gravida status in study population

Gravida	Number	Percentage
Primigravida	**131**	**87.3**
Multigravida With primary vaginal delivery	**19**	**12.7**

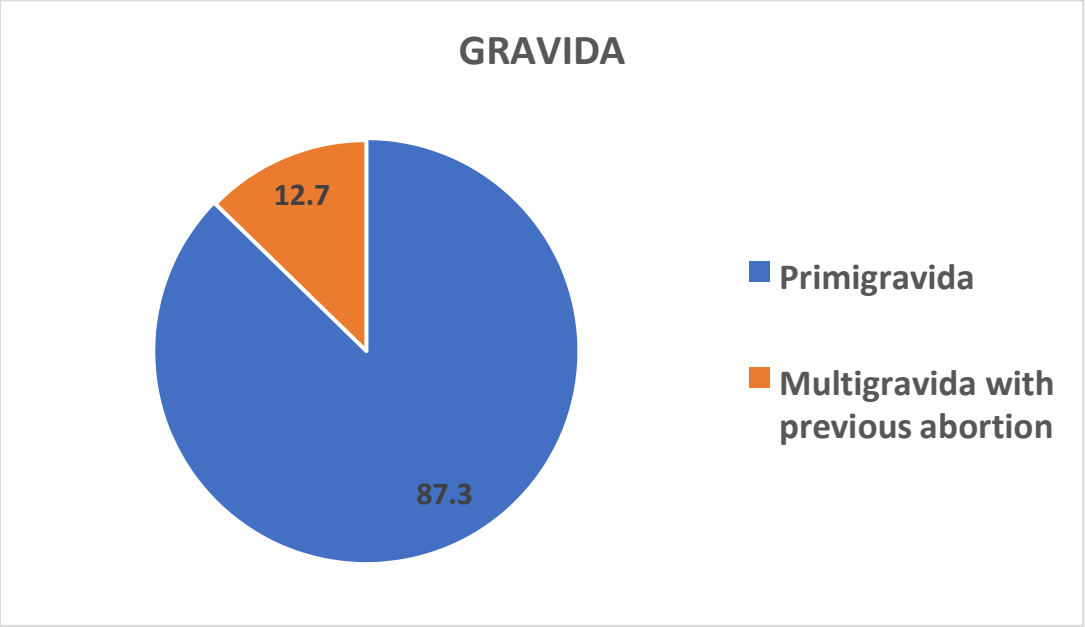


FIGURE 8: 87.3% of the participants were Primigravida and 12.7% of the participants had multigravida with who delivered a live baby for the first time.

Table 3. Gestational age of the study population

Gestational Age	Number	Percentage	Mean	Range
37-39 weeks	100	66.7	38.82	5
39 to 41 weeks	50	33.3		

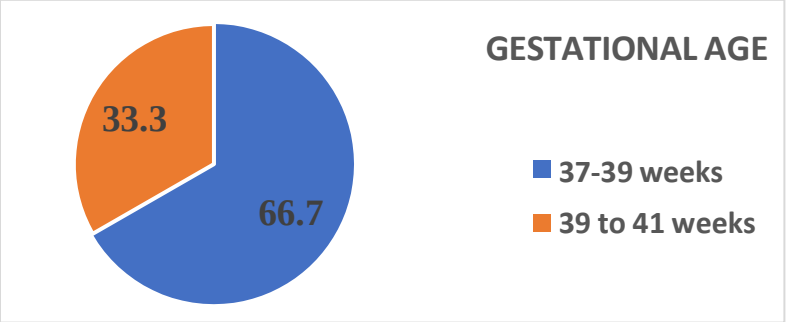


FIGURE 9: 66.7% of the participants had a gestational age between 37-39 weeks and 33.3% of the participants had gestational age between 39-41 weeks.

Table 4. Mode of delivery in study population

Mode of Delivery	Number	Percentage
Vaginal	142	94.6
LSCS	8	5.4

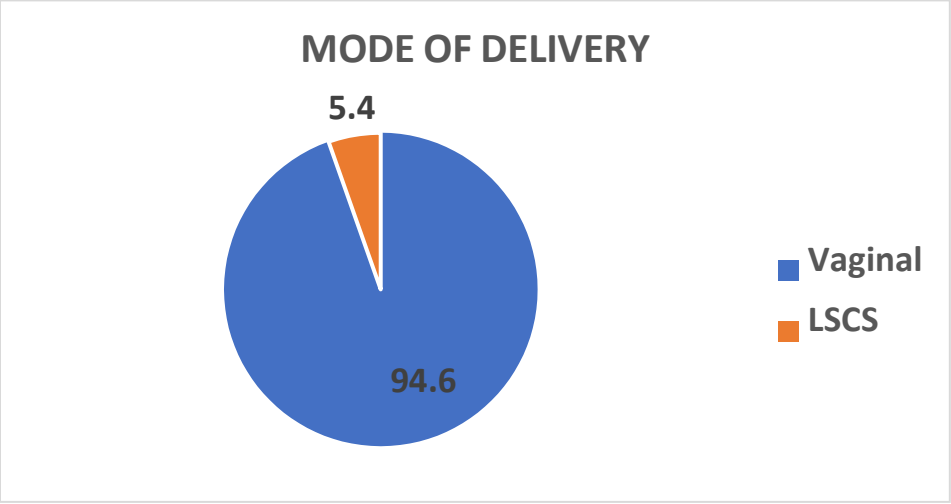


FIGURE 10: 94.6% of participants had Vaginal delivery and 5.4% of the participants had LSCS delivery.

Table 5. Neonatal weight in study population

Neonatal Birth Weight (in Kgs)	**Female**	**%**	**Mean**	**Range**	**Male**	**%**	**Mean**	**Range**	**Total**	**%**	**Mean**	**Range**
<1.5	0	0%	2.74	1.9	0	0%	2.75	1.8	0	0%	2.7	1.9
1.6-2	2	3%			1	1%			3	2%		
2.1-2.5	21	31 %			24	29%			45	30%		
2.6-3	34	50 %			42	51%			76	51%		
>3	11	16 %			15	18%			26	17%		
Total	**68**				**82**				**150**			

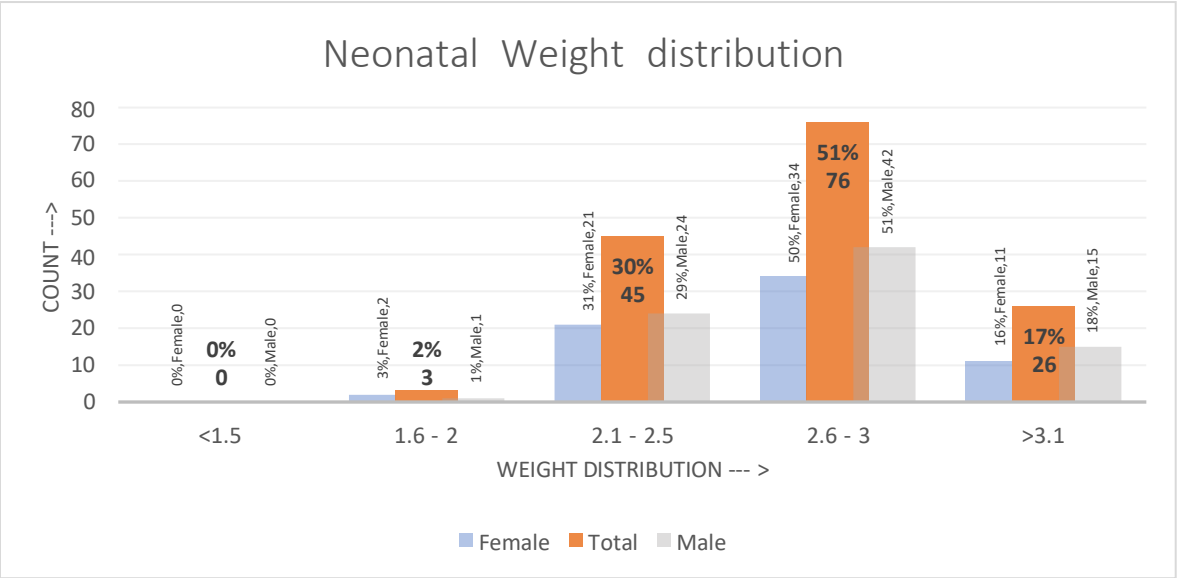


FIGURE 11: Out of 150 births, Male babies are 82 with 54.3% and Female babies are 68 with 45.7%.

Their weight distribution is major 51% are in 2.6 – 3 Kgs group with 42 male babies and 34 female babies, over 30 % are 2.1 to 2.5 Kgs group with 24 male babies and 21 female babies, over 17 % are above 3.1 Kgs group with 15 male babies and 11 female babies, 2 % are 1.6 to 2 Kgs group with 1 male baby and 2 female babies and No babies are less than 1.5 Kgs group.

Table 6. Duration of Phases of labor in study population

Phases of labor	**Mean Duration in hrs**	**Min duration**	**Max duration**	**Std Deviation**
Latent phase	8.9	2	22	3.8
Active phase	5.2	2	10	1.75
Total duration	14.1	5	29	4.29

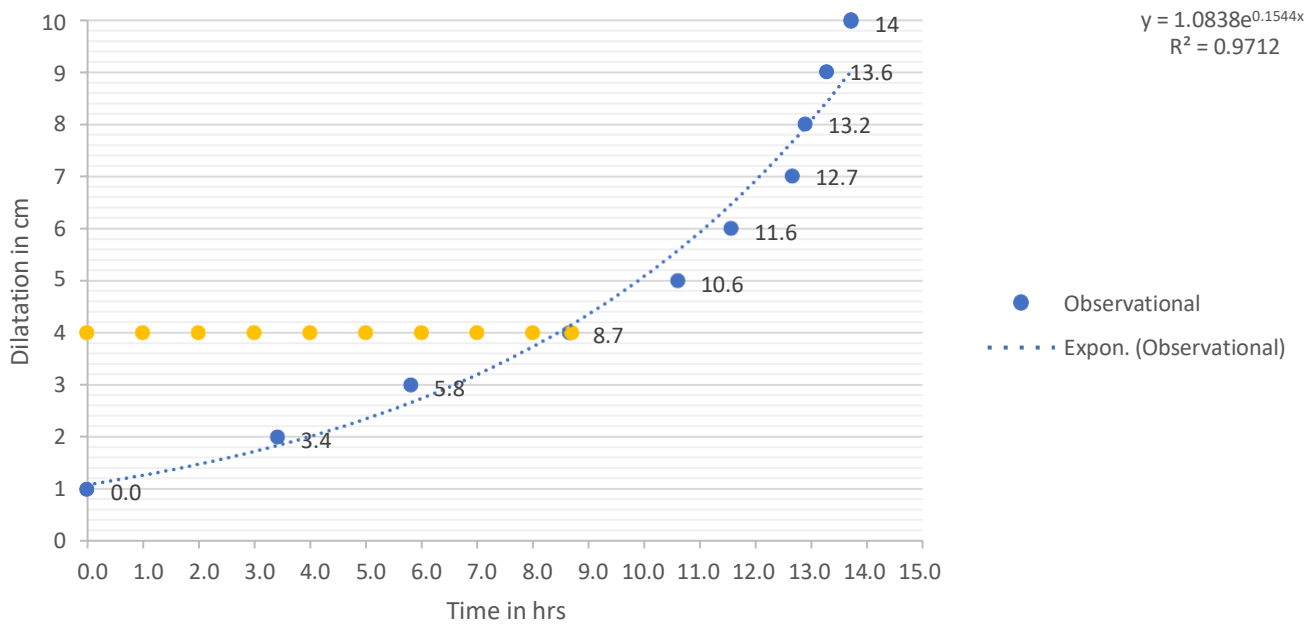


Figure 12 In this graph time has been put in hours and cervical dilatation has been put in centimeter. The graph represents there is slow in cervical dilatation initially and in the active phase the rate of the dilatation is increased.

In the labour curve at 1-2cm of dialatation 3.4hrs time duration with the rate of 0.29cm/sec, at 2-3cm of dilatation, it is 2.4 hrs of duration with rate of 0.41cm/hr, at 3-4cm of dilatation it is 2.9 hrs of duration with the rate of 0.34cm/hr, at 4-5cms of dilatation in 1.9hrs at the rate of 0.5cm/hr, 5-6cm of dilatation in 1.0hr at the rate of 1cm/sec, 6-7cm of dilatation in 1.1hrs at the rate of 0.9cm/hr, 7-8cm of dilatation in 0.5 hrs at the rate of 2cm/hr, This indicating the active phase of labour starts from 6cm according to this study. 8-9cm of dilatation in 0.4hrs at the rate of 2.5cm/hr, 9-10cm of dilatation in 0.4hrs at the rate of 2.5cm/hr.

Derivation of the Labour Curve of the Present Study

The labour curve was created by scatter charting the mean cervical dilatation on the Y-axis and the time in hours on the X-axis. (Fig.12). Through the use of regression analysis, the curve was fitted. The exponential version of the function, which has an R2 value of 0.8096 and a F value of 110.585, provided the best fit to the data.** (significant at 99% confidence level [p\0.01]).

The fit form of the exponential curve was Y = 1.8659e0.13086

Y= dilatation in cm

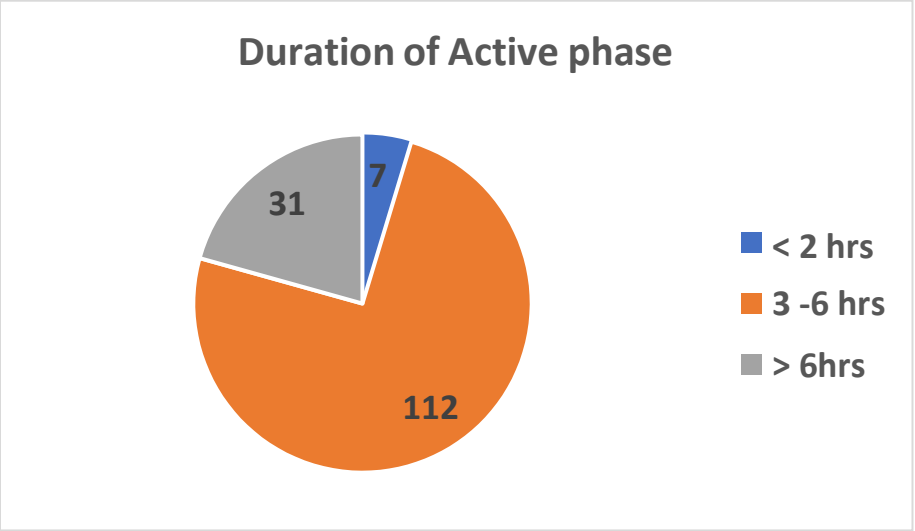
X=duration in hours

In the early centimetres, the transition period between each cervical dilatation was more gradual. The labour curve lacked a clear inflection point. For each centimetre of cervical dilation, the mean anticipated time was calculated. From there, the rate of dilatation for each hour was calculated. From 6 to 7 cm of cervical dilatation onward, the rate of dilation quadrupled (Table 7). Therefore, the active phase's duration started to be taken into account from 6 cm of dilatation. With an SD of 0.23, the average percentage of cervical dilatation during the active period was 1.5 cm/hour. The latent phase's mean duration was 8.98 hours, with a standard deviation of 3.8 hours, while the active phase's mean duration was 5.2 hours, with a standard deviation of 1.7 hours, with a minimum value of 2 hours and a maximum valueof 10 hours.

Table 7. Distribution of active phase of labour in study population

Active phase hours	**No. of participants**	**Percent**
< 2hrs	7	4.6%
3-6 hrs	112	74.6%
>6hrs	31	20.8%
Total	150	

FIGURE 13. Active phase of labour in study population



The maximum number of participants(n=112) had an active phase of labour for 3-6 hours and the minimum number of participants(n=7) had an active phase of labour for 2 hours**.**

Table 8. Factors affecting cervical dilatation in study population

FACTORS	**CATEGORY**	**p-value**
AGE	18-26	0.522
	27-35	
Neonatal Weight	1.5-2.5kg	0.482
	2.6-3.5	
Gestational Age	37-39 weeks	0.114
	39-41 weeks	
Parity	P0-P1	0.342
	More than P1	

Inference

All above mentioned parameters are having p value >0.05 which is insignificant.

MATERNAL OUTCOMES

Table 9. Distribution of Mode of delivery in the study population

TOTAL DELIVERIES	NUMBER	PERCENTAGE (%)
Normal delivery	124	82.6
Instrumental delivery	18	12
LSCS	8	5.4
TOTAL	**150**	**100**

Figure 14. Mode of delivery

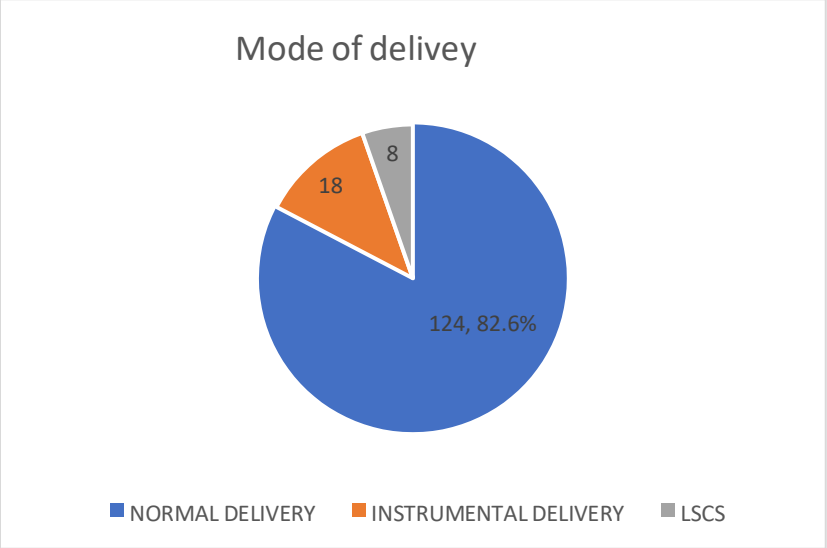


Table 10. Indication for LSCS in study population

TOTAL NO OF LSCS	ARRESTED IN LATENT PHASE	ARRESTED IN ACTIVE PHASE	INDICATION FOR LSCS
1	No	7 cm	Non progression of labour
2	No	6cm	Non progression of labour
3	No	7cm	Non progression of labour
4	No	7cm	Non progression of labour
5	No	7cm	Obstructed labour
6	No	5cm	Non progression of labour
7	No	6cm	Fetal distress
8	No	10	Fetal distress

Among total of 150 members 142 patients delivered by vaginal. Among 150,8 patients were taken up for emergency LSCS due to above mentioned various indications listed in table 10.

Table11.Postpartum complications in study population

COMPLICATIONS	YES	NO	PERCENTAGE (%)
PPH	18	124	12.7
Postpartum psychosis	0	142	0
Episiotomy wound infection	3	139	2
UTI	4	138	2.7
Puerperal pyerexia	19	123	13

Among 150 participants in the study 44 patients had various postpartum complications ,they are 18 (12.7%) have PPH ,3 (2%) participants have episiotomy wound infection, 4 (2.7%) have UTI,19 (13%)were have puerperal pyerexia.

FIGURE 15. Post partum complications

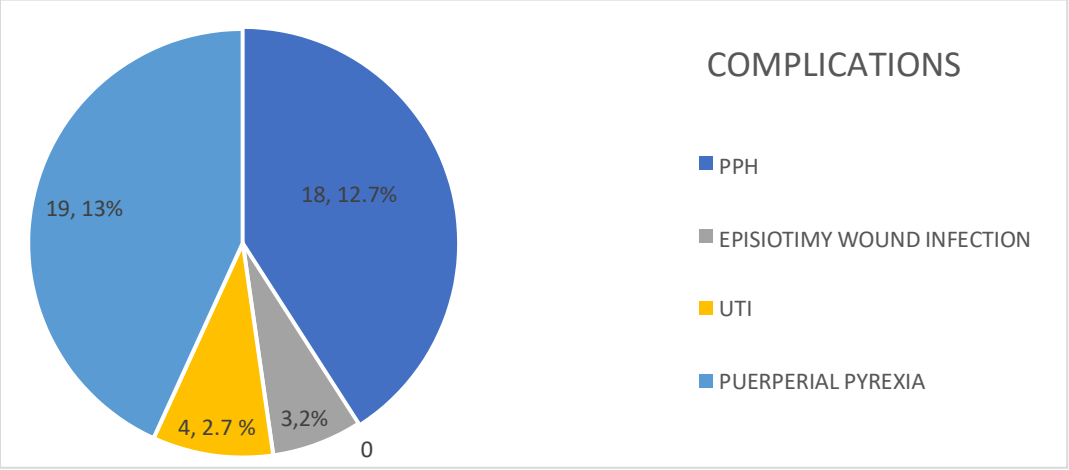
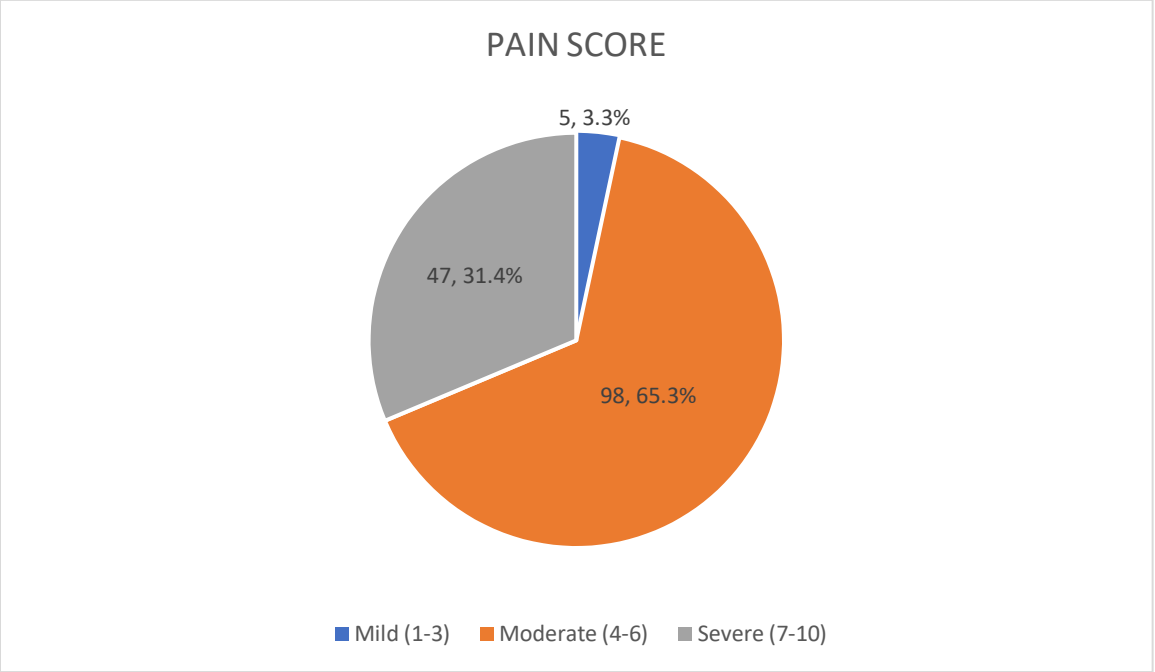


Table12.Pain score in study population

Is calculated according to visual analogue scale pain assessment tool.

Score	Frequency	Percentage (5)
Mild (1- 3)	5	3.3
Moderate (4-6)	98	65.3
Severe (7-10)	47	31.4
TOTAL	150	100

Figure 16. Pain score



According to visual analogue pain scale (VAS) assessment tool most of the woman having moderate to severe pain.

Table13. Distribution of fetal outcome in study population

NICU admission	Frequency	Percentage (%)
Admitted in NICU	41	27
Not admitted in NICU	109	73
TOTAL	150	100

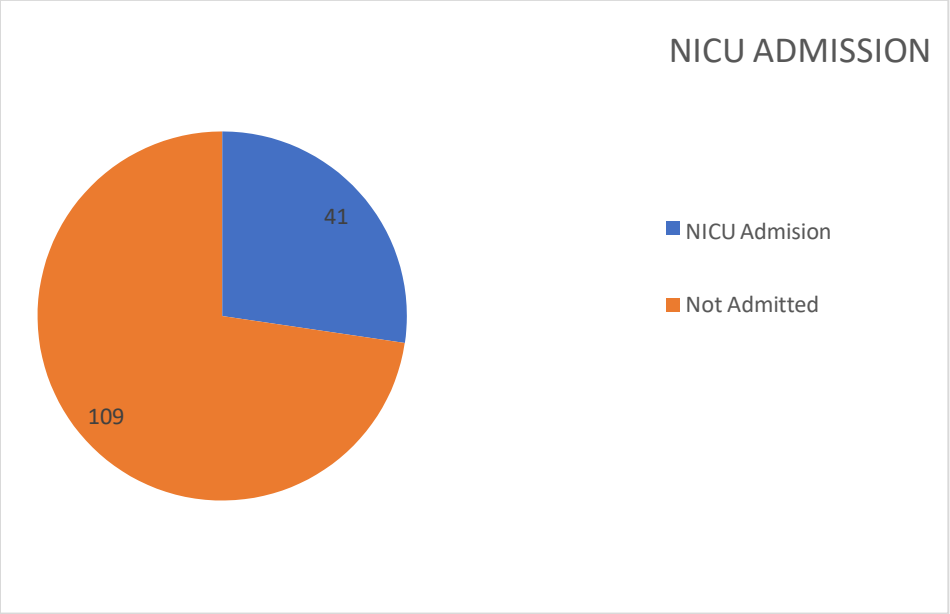


Figure 17.NICU admissions

Among total 150 newborns delivered in present study 41(27%) were admitted in NICU. Remaining 109(73%) babies are not admitted in NICU. Indicating neonatal morbidity is less in vaginal delivery.

Table 14. Indication of the NICU admission in study

Indication for NICU admission	Frequency	Percent	Cumulative Percent
Birth asphyxia	6	4	4
Respiratory distress	31	20.7	24.7
LBW	4	2.7	27.3
Not admitted	109	72.7	100.0
Total	150	100.0	

Figure 18. Various indications for NICU admissions

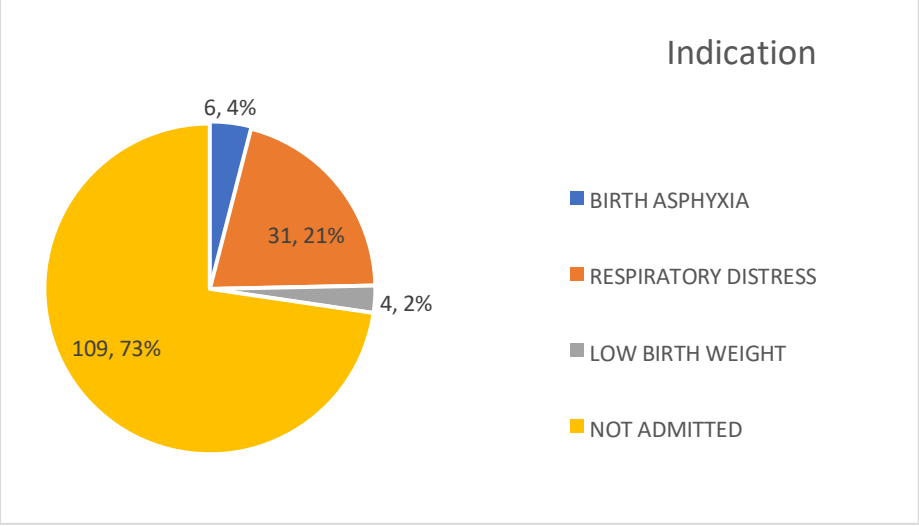


Table 13 showing. Among 41 newborns the major cause was RDS, with 20%. Other causes were LBW with2.7%, Birth asphyxia 4%.

Table15. Perinatal mortality among NICU admission

OUTCOME	FREQUENCY	PERCENTAGE (%)
Improved	39	95
Death	2	5
TOTAL	41	100

Among NICU out of 41, 39 (95%) was recovered, and perinatal mortality is 2(5%).

And the cause of perinatal mortality was Birth asphyxia and MAS.

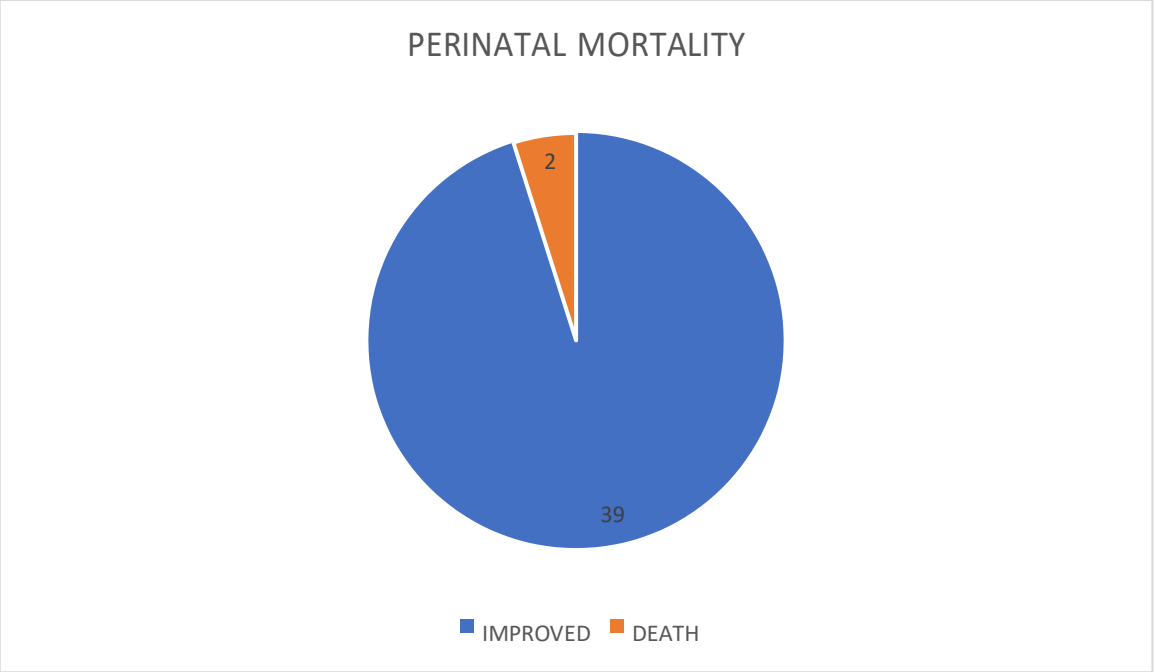


Figure 19 Perinatal Mortality

Table16. APGAR SCORES

APGAR AT 1 MIN	**FREQUENCY**	**PERCENTAGE (%)**
< 5	3	2
> 5	147	98
TOTAL	150	100
APGAR AT 5 MIN	FREQUENCY	PERCENTAGE (%)
< 7	4	2.6
> 7	146	97.4
TOTAL	150	100

Among 150 newborn babies, APGAR score at 1minute >5 were 147(98%), and 3(2%) have <5.And APAGAR at 5minute >7 were 146(97%) and <7 were 4(2.6%), Indicating good neonatal outcome.

DISCUSSION:

In the present study we examined pregnant ladies at a tertiary care center. Total of 150 females were included in the study in which 54.6 % were from rural area and 45.4% were from urban place as shown in table 1. The mean age was 22.7 in the present study, we found that 69%, maximum number of the participants belonged to the age 18-23 years.

In the present study most of the participants were from primigravida (table 2), 87.3% of the participants were primigravida and 12.7% of the participants were multigravida who delivered a live baby for the first time.

The mean gestational age was 38.3 weeks, 66.7% of the participants had a gestational age between 37-39 weeks. In the present study 66.7% had the spontaneous labor before completion of 39 week, and 94.6% of participants had Vaginal delivery (table 4). Even though spontaneous labor is seen more in the present study and most of the neonates has shown the good birth weight and only few had shown the and very LBW (table 5) and in the present study. Among them 54.3% were male children and 45.7% were from female children.

According to Friedman's research, 1 cm/hour was determined to be the lowest permissible cervical dilatation rate at the phase of the highest slope. Philpott and Castle used this criterion as the foundation for the warning and action lines they developed to identify irregularities in labour progression.The partograph, created by the WHO [World Health Organization] for labour management, is quite similar to the one created by Philpott and Castle. However, if the one cm/hour rule used more, there would be a greater chance of misdiagnosing dystocia, and there by more chance of primary LSCS rate. Thus we need to revise the traditional labor curves, to reduce the primary cesarean section rate .[76]

When the present study is compared with the Friedman’s study, it showed that in the present study, the duration of the active phase of labor is 5.2 hours as compared to Friedman’s study

which was 4.4 hours. And the duration of the latent phase in Friedman's study was 7.3 hours and in the present study, it is 8.9 hours. The total duration is 14 hours where as Friedman study total duration is 11.7 hours. But the mean of the cervical dilatation phase is 2 in Fried man study and 4 in the present study.[47]

When the labor curve of the study population which is depicted in figure12 shows the cervical dilatation is increasing slowly that is at the latent phase, and in the active phase the dilatation is faster withthe time. In the labor curve the cervical dilatation ,time taken for progression of labor by each hour and rate of cervical dilatation was caliculated. For first 1-2cm of dilatation 3.4hrs time duration taken with the rate of 0.29cm/hour, at 2-3cm of dilatation, it is 2.4 hours of duration with rate of 0.41cm/hour, at 3-4cm of dilatation it is 2.9 hours of duration with the rate of 0.34cm/hour,at 4-5cms of dilatation in 1.9hrs at the rate of 0.5cm/hour, 5-6cm of dilatation in 1.0hr at the rate of 1cm/hour, 6-7cm of dilatation in 1.1hrs at the rate of 0.9cm/hour, 7-8cm of dilatation in 0.5 hours at the rate of 2cm/hr. 8-9cm of dilatation in 0.4hrs at the rate of 2.5cm/hour, 9-10cm of dilatation in 0.4hrs at the rate of 2.5cm/hour.

Even in the graph it is showing that initially the cervical dilatation is increasing slowly and in the later phase it is fast. And total duration of hours is 14hrs with the mean of dilatationis 4cm. Thus, the present has similar finding with the other studies. According to Shukla DV et al[77] and there was published data showing that cervix dilatation is at slower rate in early hours of labour. The risk of misdiagnosing dystocia and the overuse of labour accelerative interventions was found when Friedman's criteria of 1 or >1 cm/hour, of cervical dilatation in active stage of labor if we consider . This may add unnecessary risk of intervention in mother and fetus.

One study conducted by Jeremy O Neal et al[78] in primi gravidas, women who have spontaneous on set of labor, the minimal slowest linear cervical dilation rate is approximately 0.5 cm/hour.. In the present study also the rate of cervical dilatation is in latent phase is 0.29cm/hour to 0.41cm/hour indicating that rate of cervical dilatation slow in latent phase. As per the latest studies the latent phase of labor as it can be prolonged up to 54 hours and in present study the

total duration of extends up to maximum hours is 29hours . This might be due to many factors affecting the labor and sample size, there can be the common blind errors which might have happened in the study. [78]

Another study conducted by O.T. Odalap et al[79] , concluded that in both primigravida and multi gravida women, labor acceleration is more (i.e. more than 1 cm/hour) between 5 - 6 cm of cervical dilatation. Among the nulliparous women assessed, as compared to the accepted minimum threshold, 50% of them had a much slower cervical dilatation rate of 0.5 cm/hour when cervical dilation was between 3 - 4 cm. This rate of cervical dilation accelerated to a much faster rate of 2.04 cm/hour between 9 - 10 cm dilatation.[79] In the present study rate of cervical dilatation is 2.5 cm/hour between 9-10cm dilatation which is similar to previous studies.Hence the present study is in accordance with the previous studies in active phase.

One more study done by Tilde B. Ostorg et al[80] , in Norway Iy was an observational cohort study, prime gravida with spontaneous on set labor were had a shorter active phase of labor than in induction done patients. However, in induced cases of parous women, active phase of labor lasted for a short period of time before 6 hours while it was longer after 6 hours of labor. Overall, But the present study only spontaneouslabors were considered and no induced labors were counted.

During latent phase of labour it was not possible to calculate the the time of initiation of labor pains and calculate the duration of the latent phase. This is totally depend on the history of the patient. In the previous studies, this was seen as prolongation of duration at the latent phase, in the present study also there is prolongation of the duration. The total duration of the labor is 14hrs. This may be due to the slow cervical dilatation changes in the latent phase in this study. In the study conducted by Yusuke Inde in Japanese females, it was observed that the cervical changes were faster in active stage of labour at 6 cm in nulliparous women and 5 cm in multiparous. They concluded that active labour may not start at 5 cm of cervical dilatation and at the beginning of active stage the cervix dilates at slower rate than previously described. Thus

our

results are in accordance with the Japanese studies. Labour progression is different at different degree of progression.[75]

Thus labour curve of our study population is comparable with that given by Friedman years ago in terms of duration of active phase of labour. But in the preset study there is difference in the labour characteristics in comparison to other studies. This might be due to the multiple factors which are affecting the labour progression.[76]

In the present study fig 8 shows the active phase of the labour which was 5.2 hours. In this study the maximum number of participants(n=112) had an active phase of labour for 3-6 hours and the minimum number of participants(n=7) had an active phase of labour for 2 hours. Very less participants had active phase of labour as more than 6hours. In the present study mean duration of active phase of labour was between 3-6hrs but when we compare our study result with the friedmens mean duration study it is 2.5hrs which is less than our study. The recent studies have found that mean duration of active phase similar to our study. As per Zhang et al mean duration of active phase is 5.5 hours. As per recent Japanese study done by Chen HF mean duration of active phase is 5 hours. A study done by Lugie B et al in Filipino women also found mean duration of active phase as 5 hr.[76]

The factors affecting the cervical dilatation (table 8) shows age, gravida, neonatal weight, gravida, gestational age, parity. In the present study showed that there is no significant result ($p>0.05$) for the factors associated with the labour progression. These differences in labour characteristics may be due to various changes in demographic characteristics of different study population. Greenberg et al [84] also observed that black women had shorter duration of second stage of labour and concluded that ethnicity effects progression of labour. Jones M et al [83] also found that in Hispanic women length of active phase of first stage of labour is longer than that of Friedman's group that concluded that this variation is due to difference in race and ethnicity ofstudy population. Diegmann et al [84] also found that african and american women have shorter

duration of second stage of labour than that of Puerto Rican women and concluded that labour progresses differently in different ethnic groups.

According to guidelines given by ACOG, the data from consortium for safe labor support updated the definitions for latent and active phases of labor. In contrast to prior suggested threshold of 4cm,the onset of active labor may not occur 5-6 cm .These data suggest that expectant management is considered till 4-6cm. Cervical dilation of 6 cm as threshold of active first stage of labor. Active first stage of labor arrest defined at ≥ 6cm of cervical dilatation with ruptured membranes and failure to progress despite 4 hours of adequate uterine contractions or 6 hours of oxytocin administration with inadequate contraction and no cervical change Caesarean section recommended.[8]

According to WHO new labor guidelines the active phase starts from 5cm, our study is also active phase starts from ≥6cm which near to WHO guidelines.[85]

In the present study, we found that slow progression in the latent phase and the mean of the cervical dilatation is 4cm which is a good indication for the further progression of the labour for the normal vaginal delivery. Thus the present study is in accordance with the guidelines done at the ACOG and WHO.

In the present study table 10 shows the total number of LSCS performed in the present study. No cases were operated in the latent phase of the duration.

When perinatal outcome was compared in table 13 only 41% neonates had the NICU admission due to various indications, but overall neonatal outcome is good in vaginal delivery.Table 14 shows most common the indications for the NICU admission in our study which weremainly low birth weight, birth asphaxia, respiratory distress.

CONCLUSION:

Partograph is an inexpensive and easily accessible tool that can be used effectively in monitoring the progress of labor. The WHO modified or simplified partograph is useful in identifying when to intervene and also helps to reduce the feto maternal complications. The main essence and purpose of partogram is to identify the normal labor progress and the appropriate treatment should began only when the labor is in action line. As we all know that labor is a complex process it depends on several factors affecting its progression like parity, gestational age, cervical dilatation and effacement, contractile force of uterine muscle tone, st membranes status ,neonatal weight ,race and ethnicity. In the present study we have tried to consider as many of them as possible. Present study is done prospectively in a single institute for duration of one and half year period of time to assess labor progression in our population and its deviation from Friedman's labor curve in order to derive Indian population based labor curve. We finally concluded that some more multicentric studies required to support our findings for validation of outcomes of this study. The health care personnels especially in the peripheral areas should be trained to use this simple and effective tool for aiding timely referral to higher centers and in then decreasing the fetal and maternal mortality and morbidity.

LIMITATIONS:

The present study has limitations like there might be the blind errors in observing the details from the partogram. The present study has been done in single institute for duration from January 2021 to April 2022 to assess labor progression. There might be many factors which may influence on the progression of the labor based on the individual’s aspect which may influence the rate of the progression of the labor. In our present study we could not assess the initiation of the latent phase properly as many patients came to our to the institute for the delivery after the onset of the labor several hours before and mainly in active phase of labor.

SUMMARY:

The present study has been conducted at Shri B.M. Patil medical college and research Centre, in Department of obstetrics and gynaecology, Vijayapura with objective to study the progression of labor in patients laboring for the first time and also to monitor the progression of labor and analyse the feto-maternal outcome using Partogram as a tool. In the present study, we enrolled total 150 females who fulfil inclusive criteria and gave consent for the study in accordance with the declaration of Helsinki. The progression of labor was assessed using partogram ,and the feto-maternal outcome will be analysed. After enrolment, detailed history was taken, the general physical examination was done and details documented. Partogram was plotted and the progression of labor was monitored with documentation of cervical dilation; the descent of head; uterine contractions. The fetal condition is assessed by documentation of fetal heart rate, the colour of amniotic fluid and the moulding of the head. The maternal vitals, i.e., Pulse rate, Blood Pressure, the temperature were documented. Use of uterotonics, i.e., Oxytocin and the dose were also documented. All these parameters were plotted and documented in the partograph and analysed.

In the present study, we considered many factors like patients age, gestational age, gravida and mode of delivery. We found that mean age is 22.29years,most of the patients were from primigravida. Most of the patients had a gestational age between 37-39 weeks. When the present study is compared with the Friedman's study, it showed that in the present study, the duration of the active phase of labor is 5.2 hours as compared to Friedman's study which was 4.4 hours. And the duration of the latent phase in Friedman's study was 7.3 hours and in the present study, it is 8.9 hours. The total duration is 14 hours as compared to Friedman study it is 11.7 hours. But the mean of the cervical dilatation phase is 2cm in Fried man study and 4cm in the present study. Thus the present study showed that the cervical dilatation is much slower in the latent phase of the labor and it gradually progress to enter in the active phase after the

cervical dilatation of of 6cm or more. Thus keeping all this in mind we concluded that the latent phase and active phase may prolong many hours, before considering the all the factors the surgical interventions should not be done until unless there is complication in the delivery.Thus there should not be any interventions done like use of uterotonics, instrumentation etc, until there is any alarm or necessary to hasten the delivery in terms of better feto maternal outcome.

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ANNEXURE I

CONSENT FORM

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,_____, D/O W/O_____, aged___years, ordinarily resident of_____do hereby state/declare that DR LAVANYA VODNALA ofShri. B. M. Patil Medical College and Research Centre have 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 LAVANYA VODNALA informed me that she is conducting dissertation/research titled "A CROSS-SECTIONAL STUDY TO ANALYSE THE CHANGING TRENDS IN FRIEDMAN'S CURVE IN PRIMARY VAGINAL DELIVERY" under the guidance of DR ARUNA BIRADAR requesting my participation in the study. Apart from routinetreatment procedure, the pre-operative, operative, post-operative and follow-up observations will be utilized for the study as reference data. The doctor has also informed me that during the conduct of this procedure like adverse results may be encountered. Among the above complications, most of them are treatable but are not anticipated hence there is chance of aggravation of my condition and in rare circumstances, it may prove fatal despite the anticipated diagnosis and best treatment made available. Further Doctor has informed me that my participation in this study would help in the evaluation of the results of the studywhich is a useful reference to the treatment of other similar cases in near future, and also I may be benefited in getting relieved of suffering or cure of the disease I am suffering. 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 the person other than me or my legal hirer 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 any clarification during the course of treatment/study related to diagnosis, the procedure of treatment, result of treatment or prognosis. At that 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 time from the study but not the procedure of treatment and follow-up unless I request to be discharged.

After understanding the nature of dissertation or research, diagnosis made, mode of treatment, I the undersigned Smt_____under my full conscious state of mind agree to participate in the said research/dissertation.

Signature of the patient: Signature of doctor:

Date:

Place:

ANNEXURE II

PROFORMA

"A CROSS-SECTIONAL STUDY TO ANALYZE THE CHANGING TREENDS IN FRIEDMAN'SCURVE IN PRIMARY VAGINAL DELIVERY"

NAME: **AGE:**

IP NUMBER: **DATE OF ADMISSION:**

ADDRESS: **PHONE NUMBER:**

CHIEF COMPLAINTS:

ANTENATAL HISTORY: Booked / Unbooked; Immunised / Not immunised.

First trimester:

Second trimester:

Third trimester:

OBSTETRIC HISTORY: Gravida Para Living Abortion

Marital History:

Active Marital

life:

MENSTRUAL HISTORY:

L.M.P: E.D.D: P.O.G:

PAST HISTORY:

PERSONAL HISTORY:

GENERAL PHYSICAL EXAMINATION:

Height: Weight:

Pallor:

VITAL SIGNS:

PR: BP: Temperature:

Thyroid: Breast: Spine:

CVS: RS:

PER ABDOMEN:

INVESTIGATIONS:

Hb:

Blood Group& Rh typing:

HIV:

HBsAg:

ULTRASOUND REPORT:

MODE OF DELIVERY:

Full-term / Pre-term

Vaginal delivery /

LSCS:

If LSCS: Elective /

EmergencyINDICATION:

FETAL OUTCOME: Live/IUD/FSB/Neonatal Death

Sex: Birth weight:

Time of delivery:

APGAR Score at 1 min:

5min:NICU Admission: YES/NO

If YES

Indication:

DOD(NICU):

POSTPARTUM COMPLICATIONS:

Postpartum haemorrhage

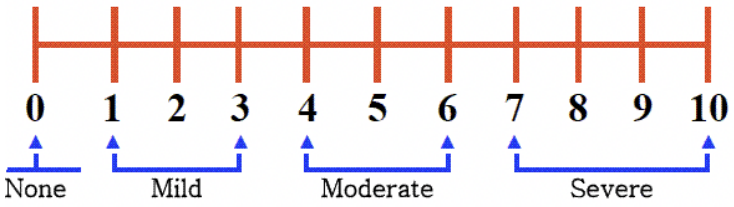
Postpartum psychosis

Puerperal pyrexia

UTI

Wound complications

SCORING OF PAIN:



NUMERIC PAIN INTENSITY SCALE

REMARKS:

Mother: Duration of Stay: DOD:

Foetus: Duration of NICU

Admission:Improved/

DAMA/Death

ANNEXURE III

MASTER CHART

S.no	IP Number	Age	DOA	obstetric score			Menstrual History		General Physical Examination		Mode of Delivery			Total Duration of Labour (in hours)	Duration of latent phase (in hours)	Duration of Active phase (in hours)	Fetal Outcome														Remarks			
				Gravida	Parity	Abortion	Wks	P.O.G Days	Height (in mts)	Weight (in kgs)	BMI	Full- Term/ Pre-Term	Vaginal / LSCS	if LSCS, Elective/ Emergency	Indication			Live/IUD/FSB/ Neonatal Death	Sex	Birth Weight (in kgs)	Time of Delivery (in 24 hrs format)	APGAR score at 1 min	APGAR score at 5 min	Yes/No	NICU If Yes Indication Admision	POSTPARTUM Haemorrhage	Postpartum psychosis	Puerperal pyrexia	UTI	Wound Complication	Pain Score	Duration of Stay	Mother DOD	Duration of NICU admission	Foetus Improved/ DAMA/ Death
1	16645	23	05-11-2020	1	0	0	41	1	1.54	48	20.2	Full-Term	Vaginal	NA	NA	16	10	6	Live	M	2.8	05:25	7	9	Yes	MAS	No	No	No	No	6	5	10-11-2020	4	Improved
2	16743	20	05-11-2020	1	0	0	39	1	1.54	52	21.9	Full-Term	Vaginal	NA	NA	20	12	8	Live	M	3	19:30	7	8	No	NA	No	No	No	No	6	4	09-11-2020	NA	NA
3	17420	21	08-11-2020	1	0	0	38	1	1.56	48	19.7	Full-Term	Vaginal	NA	NA	9	7	2	Live	M	1.90	02:05	7	9	Yes	LBW	No	No	yes	No	8	12	20-11-2020	10	Improved
4	17457	20	08-11-2020	1	0	0	38	1	1.58	57	22.8	Full-Term	Vaginal	NA	NA	16	12	4	Live	F	2.4	14:00	7	9	No	NA	yes	No	No	No	8	3	11-11-2020	NA	NA
5	17818	20	10-11-2020	1	0	0	38	2	1.52	48	20.8	Full-Term	Vaginal	NA	NA	13	7	6	Live	M	2.4	03:05	7	9	Yes	RDS,LBW	No	No	No	No	8	5	15-11-2020	4	Improved
6	18030	27	10-11-2020	1	0	0	38	0	1.58	52	20.8	Full-Term	Vaginal	NA	NA	11	7	4	Live	M	2.2	01:00	7	9	NO	NA	No	No	No	No	6	4	14-11-2020	NA	NA
7	18922	20	15-11-2020	1	0	0	40	0	1.58	59	23.6	Full-Term	Vaginal	NA	NA	10	4	6	Live	M	3	17:30	7	9	NO	NA	No	No	No	No	6	2	17-11-2020	NA	NA
8	106439	22	20-11-2020	1	0	0	38	2	1.54	52	21.9	Full-Term	Vaginal	NA	NA	8	3	5	Live	M	2.6	01:05	7	9	No	NA	No	No	No	No	6	3	29-11-2020	NA	NA
9	23248	20	01-12-2020	1	0	0	39	6	1.52	48	20.8	Full-Term	Vaginal	NA	NA	12.5	9	3.5	Live	F	2.5	18:50	4	6	Yes	RDS	No	No	No	yes	7	8	08-12-2020	7	Death
10	23381	24	03-12-2020	1	0	0	38	0	1.58	52	20.8	Full-Term	Vaginal	NA	NA	20	12	8	Live	F	2.5	01:20	7	9	No	NA	No	No	yes	No	7	4	08-12-2020	NA	NA
11	24258	24	04-12-2020	1	0	0	38	6	1.58	52	20.8	Full-Term	Vaginal	NA	NA	14	6	8	Live	M	2.7	08:40	7	9	Yes	MAS	No	No	No	No	8	4	08-12-2020	3	Improved
12	24604	24	06-12-2020	1	0	0	38	6	1.58	52	20.8	Full-Term	Vaginal	NA	NA	14	11	3	Live	M	2.5	19:00	7	9	No	NA	No	No	No	No	8	3	09-12-2020	NA	NA
13	26203	24	14-12-2020	1	0	0	38	6	1.58	52	20.8	Full-Term	Vaginal	NA	NA	14	6	8	Live	F	3.2	06:10	7	9	No	NA	No	No	No	No	6	6	20-12-2020	NA	NA
14	30685	24	24-12-2020	1	0	0	38	4	1.60	58	22.7	Full-Term	Vaginal	NA	NA	11	6	5	Live	M	2.4	22:26	7	9	Yes	MAS	yes	No	No	No	6	7	31-12-2020	6	Improved
15	39592	19	01-01-2021	1	0	0	39	4	1.58	52	20.8	Full-Term	Vaginal	NA	NA	13	9	4	Live	F	3	01:20	7	9	No	NA	No	No	yes	No	8	3	05-01-2021	NA	Improved
16	39598	23	02-01-2021	2	0	1	39	4	1.54	52	21.9	Full-Term	Vaginal	NA	NA	7	3	4	Live	M	2.9	07:15	7	9	Yes	RDS	No	No	No	No	6	5	08-01-2021	3	Improved
17	45293	25	06-01-2021	2	0	1	38	5	1.60	58	22.7	Full-Term	Vaginal	NA	NA	16.5	11	5.5	Live	M	3.2	21:30	7	9	Yes	MAS	No	No	No	No	8	8	14-01-2021	4	Improved
18	59356	23	16-01-2021	1	0	0	37	2	1.58	68	27.2	Full-Term	Vaginal	NA	NA	5	2	3	Live	M	2.56	15:05	7	9	No	NA	No	No	No	No	2	4	19-01-2021	NA	Improved
19	66192	28	24-01-2021	1	0	0	36	3	1.52	59	25.5	Pre-Term	Vaginal	NA	NA	8	5	3	Live	M	2.3	12:36	7	9	Yes		No	No	No	No	7	5	28-01-2021	2	Improved
20	87308	21	05-02-2021	1	0	0	38	3	1.58	62	24.8	Full-Term	Vaginal	NA	NA	9	5	4	Live	F	2.2	03:05	7	9	No	NA	yes	No	yes	No	6	3	07-02-2021	NA	NA
21	88801	21	06-02-2021	1	0	0	40	6	1.6	54	21.1	Full-Term	Vaginal	NA	NA	10	6	4	Live	F	2.8	22:05	7	9	No	NA	No	No	No	No	8	4	09-02-2021	NA	NA
22	98090	25	19-02-2021	1	0	0	38	0	1.6	62	24.2	Full-Term	Vaginal	NA	NA	13.5	8.5	5	Live	M	2.4	16:30	7	9	No	NA	No	No	No	yes	8	5	23-02-2021	NA	NA
23	111435	20	23-02-2021	1	0	0	38	0	1.52	52	22.5	Full-Term	Vaginal	NA	NA	11	6	5	Live	M	2.1	19:35	7	9	Yes	RDS	No	No	No	No	6	7	01-03-2021	4	Improved
24		22	26-02-2021	1	0	0	37	0	1.55	52	21.6	Full-Term	Vaginal	NA	NA	10.5	4	6.5	Live	F	2.8	02:30	7	9	Yes	RDS	No	No	No	No	6	7	04-03-2021	3	Improved
25	117664	25	27-02-2021	1	0	0	40	0	1.58	58	23.2	Full-Term	Vaginal	NA	NA	8	4	4	Live	M	3.4	11:10	7	9	Yes	Ob	No	No	No	No	6	3	01-03-2021		Improved
26	159634	26	26-03-2021	1	0	0	39	1	1.54	52	21.9	Full-Term	Vaginal	NA	NA	14	7	7	Live	F	2.6	15:50	7	9	No	NA	No	No	No	No	6	4	29-03-2021	NA	NA
27	1943	20	02-04-2021	1	0	0	40	5	1.58	58	23.2	Full-Term	LSCS	Emerge	Nor	18	9	9	Live	M	3	04:43	5	8	Yes	BA	No	No	yes	No	6	6	07-04-2021	4	Improved
28	9459	25	07-04-2021	1	0	0	39	2	1.57	61	24.7	Full-Term	Vaginal	NA	NA	14	8	6	Live	M	2.2	06:26	7	9	Yes	Tachycardia	No	No	No	No	6	4	10-04-2021	2	Improved

29	14305	20	10-04-2021	1	0	0	40	1	1.52	55	23.8	Full-Term	Vaginal	NA	NA	13	9	4	Live	F	2.9	07:15	7	9	No	NA	No	No	No	No	No	6	3	12-04-2021	NA	NA
30	64025	19	23-05-2021	1	0	0	39	6	1.57	58	23.5	Full-Term	Vaginal	NA	NA	9	6	3	Live	F	2	14:40	7	9	No	NA	No	No	yes	No	No	2	3	25-05-2021	NA	NA
31	63861	23	23-05-2021	1	0	0	40	0	1.56	54	22.2	Full-Term	LSCS	Emerge	Obs	26	18	8	Live	F	3	06:18	7	9	Yes	RDS	No	No	No	No	No	8	7	29-05-2021	3	Improved
32	64126	24	24-05-2021	1	0	0	40	1	1.6	62	24.2	Full-Term	LSCS	Emerge	Obs	16	8	8	Live	M	2.8	12:40	7	9	Yes	RDS	No	No	No	No	No	8	8	31-05-2021	6	Improved
33	68579	19	30-05-2021	1	0	0	39	6	1.58	60	24.0	Full-Term	Vaginal	NA	NA	13	8	5	Live	M	2.4	01:45	6	7	Yes	RDS	yes	No	No	No	No	2	4	02-06-2021	3	Improved
34	141003	21	01-06-2021	1	0	0	39	5	1.55	58	24.1	Full-Term	Vaginal	NA	NA	14	8	6	Live	F	2.5	17:05	7	9	Yes	MAS	No	No	No	No	No	8	6	06-06-2021	3	Improved
35	71656	28	04-06-2021	2	0	1	38	6	1.58	57	22.8	Full-Term	Vaginal	NA	NA	12	3	9	Live	M	2.8	10:10	7	9	Yes	LBW	No	No	yes	No	yes	6	5	08-06-2021	4	Improved
36	72299	24	05-06-2021	1	0	0	38	6	1.6	62	24.2	Full-Term	Vaginal	NA	NA	15	9	6	Live	F	2.9	13:15	7	9	Yes	MAS	No	No	No	No	No	8	4	08-06-2021	3	Improved
37	78303	18	13-06-2021	1	0	0	38	3	1.58	62	24.8	Full-Term	Vaginal	NA	NA	6	3	3	Live	F	3	15:52	7	9	No	NA	No	No	No	No	No	6	4	16-06-2021	NA	NA
38	81707	22	18-06-2021	1	0	0	40	0	1.58	58	23.2	Full-Term	Vaginal	NA	NA	13	8	5	Live	F	2.7	05:15	7	9	No	NA	yes	No	No	No	No	8	4	21-06-2021	NA	NA
39	166926	19	03-09-2021	1	0	0	38	6	1.55	58	24.1	Full-Term	Vaginal	NA	NA	14.5	10	4.5	Live	F	2.3	10:25	7	9	No	NA	No	No	No	No	No	6	3	05-09-2021	NA	NA
40	170908	21	07-09-2021	1	0	0	38	2	1.52	55	23.8	Full-Term	Vaginal	NA	NA	9	3.5	5.5	Live	M	3	01:45	7	8	No	NA	No	No	No	No	No	6	3	09-09-2021	NA	NA
41	163236	21	18-09-2021	1	0	0	38	1	1.55	58	24.1	Full-Term	Vaginal	NA	NA	11.5	9.5	2	Live	M	2.7	21:50	7	9	No	NA	No	No	No	No	No	6	3	20-09-2021	NA	NA
42	186280	25	21-09-2021	1	0	0	40	1	1.58	59	23.6	Full-Term	Vaginal	NA	NA	11	6	5	Live	F	3.3	02:13	7	9	No	NA	No	No	yes	No	No	6	4	24-09-2021	NA	NA
43	198505	20	01-10-2021	1	0	0	38	0	1.56	51	21.0	Full-Term	Vaginal	NA	NA	11	5	6	Live	M	2.6	04:10	7	9	No	NA	No	No	No	No	No	6	4	04-10-2021	NA	NA
44	238746	23	01-11-2021	1	0	0	40	0	1.58	54	21.6	Full-Term	Vaginal	NA	NA	11	6	5	Live	M	2.7	22:40	7	9	No	NA	No	No	No	No	No	6	3	03-11-2021	NA	NA
45	238764	20	01-11-2021	1	0	0	40	0	1.58	58	23.2	Full-Term	Vaginal	NA	NA	19.5	14	5.5	Live	M	2.6	15:45	7	9	No	NA	No	No	No	No	No	6	6	06-11-2021	NA	NA
46	241185	24	04-11-2021	1	0	0	37	1	1.56	62	25.5	Full-Term	Vaginal	NA	NA	12	4	8	Live	F	2.8	17:00	7	9	No	NA	No	No	No	No	No	6	4	07-11-2021	NA	NA
47	158774	31	05-11-2021	1	0	0	38	0	1.55	55	22.9	Full-Term	Vaginal	NA	NA	13	8	5	Live	F	2.4	16:13	7	9	No	NA	No	No	No	No	No	6	3	07-11-2021	NA	NA
48	249094	22	10-11-2021	1	0	0	38	2	1.56	49	20.1	Full-Term	Vaginal	NA	NA	23	19	4	Live	F	1.9	09:01	7	9	Yes	LBW	No	No	No	No	No	6	10	19-11-2021	8	Improved
49	169731	24	11-11-2021	1	0	0	40	0	1.58	50	20.0	Full-Term	Vaginal	NA	NA	13.5	8	5.5	Live	F	2.9	19:30	7	9	No	NA	No	No	No	No	No	6	3	13-11-2021	NA	NA
50	250832	22	14-11-2021	1	0	0	39	5	1.56	59	24.2	Full-Term	Vaginal	NA	NA	8	3	5	Live	F	2.7	01:40	7	9	No	NA	No	No	No	No	No	8	5	18-11-2021	NA	NA
51	36679	20	18-11-2021	1	0	0	40	0	1.58	58	23.2	Full-Term	Vaginal	NA	NA	13.5	8	5.5	Live	M	2.5	15:45	8	9	No	NA	No	No	No	yes	No	6	3	20-11-2021	NA	NA
52	258211	20	18-11-2021	1	0	0	38	3	1.56	59	24.2	Full-Term	Vaginal	NA	NA	8	2	6	Live	F	2.7	18:30	7	9	No	NA	No	No	No	No	No	6	6	23-11-2021	NA	NA
53	258706	21	19-11-2021	1	0	0	37	0	1.56	52	21.4	Full-Term	Vaginal	NA	NA	8.5	4.5	4	Live	M	2.7	04:04	7	9	No	NA	No	No	No	No	No	6	6	24-11-2021	NA	NA
54	263038	21	22-11-2021	1	0	0	41	4	1.55	55	22.9	Full-Term	Vaginal	NA	NA	16	9	7	Live	M	2.9	21:58	7	9	Yes	RDS	No	No	No	No	No	6	4	25-11-2021	3	Improved
55	262091	19	22-11-2021	1	0	0	40	1	1.55	55	22.9	Full-Term	Vaginal	NA	NA	15	9	6	Live	M	3.2	05:40	7	9	No	NA	No	No	No	No	No	6	5	26-11-2021	NA	NA
56	266725	20	24-11-2021	1	0	0	39	1	1.59	54	21.4	Full-Term	Vaginal	NA	NA	14	6	8	Live	M	2.7	16:00	7	9	Yes	RDS	No	No	No	No	No	6	7	30-11-2021	6	Improved
57	269034	22	26-11-2021	1	0	0	40	1	1.58	60	24.0	Full-Term	Vaginal	NA	NA	11	8	3	Live	F	2.8	12:35	7	9	No	NA	No	No	No	No	No	6	4	29-11-2021	NA	NA
58	295692	21	03-12-2021	1	0	0	37	6	1.56	54	22.2	Full-Term	Vaginal	NA	NA	15	8	7	Live	M	2.2	20:25	7	8	Yes	LBW	No	No	No	No	No	6	12	14-12-2021		Improved
59	278421	22	05-12-2021	1	0	0	39	1	1.6	62	24.2	Full-Term	Vaginal	NA	NA	16	8	8	Live	M	2.9	02:00	6	8	Yes	RDS	No	No	No	No	No	6	5	09-12-2021	3	Improved
60	280125	24	08-12-2021	1	0	0	39	1	1.57	60	24.3	Full-Term	Vaginal	NA	NA	13	7	6	Live	M	2.8	21:55	7	9	No	NA	No	No	No	No	No	6	4	11-12-2021	NA	NA
61	290806	20	10-12-2021	1	0	0	40	6	1.58	59	23.6	Full-Term	Vaginal	NA	NA	7	2	5	Live	M	3.1	01:58	7	9	No	NA	No	No	No	No	No	6	4	13-12-2021	NA	NA
62	299331	24	17-12-2021	2	0	1	39	3	1.58	56	22.4	Full-Term	Vaginal	NA	NA	10	5	5	Live	M	3.7	11:20	6	7	Yes	RDS	No	No	No	No	No	6	4	20-12-2021	2	Improved
63	55264	20	11-02-2022	1	0	0	38	3	1.56	58	23.8	Full-Term	Vaginal	NA	NA	10	8	2	Live	M	2.5	21:44	7	9	No	NA	No	No	No	yes	No	6	4	14-02-2022	NA	NA
64	73262	26	15-02-2022	1	0	0	40	0	1.58	62	24.8	Full-Term	Vaginal	NA	NA	8	3	5	Live	M	3.2	09:29	7	9	No	NA	No	No	No	No	No	6	4	18-02-2022	NA	NA
65	61609	25	17-02-2022	1	0	0	40	3	1.58	60	24.0	Full-Term	Vaginal	NA	NA	23	12	9	Live	M	3.1	09:40	7	9	No	NA	No	No	No	No	No	6	3	19-02-2022	NA	NA
66	63784	22	19-02-2022	1	0	0	39	4	1.56	58	23.8	Full-Term	Vaginal	NA	NA	12	6	6	Live	F	2.6	11:56	7	9	Yes	MAS	No	No	No	No	No	6	5	23-02-2022	2	Improved
67	65107	26	20-02-2022	1	0	0	41	4	1.58	60	24.0	Full-Term	Vaginal	NA	NA	17.5	12	5.5	Live	F	2.7	10:34	7	9	No	NA	No	No	No	No	No	6	4	23-02-2022	NA	NA
68	66502	21	21-02-2022	1	0	0	40	2	1.55	55	22.9	Full-Term	Vaginal	NA	NA	13	8	5	Live	M	3.5	18:40	7	9	No	NA	No	No	No	No	No	6	4	24-02-2022	NA	NA
69	87865	21	11-03-2022	1	0	0	39	4	1.56	52	21.4	Full-Term	LSCS	Emerge	Non-Progressi			9	Live	M	2.7	18:05	7	9	No	NA	No	No	No	No	No	6	8	18-03-2022	NA	NA
70	89966	25	12-03-2022	1	0	0	40	0	1.58	58	23.2	Full-Term	Vaginal	NA	NA	9	5	4	Live	M	3.6	20:25	7	9	No	NA	No	No	No	No	No	6	4	15-03-2022	NA	NA
71	72100	33	13-03-2022	1	0	0	37	1	1.58	55	22.0	Full-Term	Vaginal	NA	NA	18	12	6	Live	M	2.7	23:14	7	9	No	NA	yes	No	No	No	No	6	4	16-03-2022	NA	NA
72	87300	25	10-03-2022	2	0	1	40	0	1.56	59	24.2	Full-Term	Vaginal	NA	NA	19	14	5	Live	F	2.7	3.56	7	9	NO	NA	No	No	No	No	No	7	4	14-03-2022	NA	NA
73	84709	25	09-03-2022	1	0	0	38	5	1.56	60	24.7	Full-Term	Vaginal	NA	NA	17	8	9	Live	F	2.1	2.25	7	9	Y	NA	No	No	No	No	No	8	7	15-03-2022	3	Improved
74	81385	23	06-03-2022	1	0	0	39	1	1.56	58	23.8	Full-Term	Vaginal	NA	NA	14	7	7	Live	M	3.1	6.11	7	9	NO	NA	yes	No	No	No	No	8	10	15-03-2022	NA	NA

75	79995	21	04-03-2022	1	0	0	38	5	1.54	59	24.9	Full-Term	Vaginal	NA	NA	20	12	8	Live	F	2.4	9.36	7	9	NO	NA	No	No	No	No	No	8	4	08-03-2022	NA	NA
76	81971	22	06-03-2022	1	0	0	37	2	1.56	54	22.2	Full-Term	Vaginal	NA	NA	8	2	6	Live	M	2.4	5.45	7	9	No	NA	No	No	No	No	No	7	3	08-03-2022	NA	NA
77	69396	29	06-03-2022	2	0	1	39	0	1.61	68	26.2	Full-Term	Vaginal	NA	NA	16	8	8	Live	F	2.1	8	7	9	NO	NA	No	No	No	No	No	3	4	09-03-2022	NA	NA
78	82042	24	07-03-2022	1	0	0	38		1.52	59	25.5	Full-Term	Vaginal	NA	NA	12	7	5	Live	F	2.5	11.22	7	9	NO	NA	No	No	No	No	No	3	4	10-03-2022	NA	NA
79	83529	24	08-03-2-22	1	0	0	39		1.55	57	23.7	Full-Term	Vaginal	NA	NA	17	11	6	Live	F	2.8	3.15	7	9	Y	RDS	No	No	No	No	No	5	6	13-03-2022	NA	Improved
80	84709	23	10-03-2021	1	0	0	38	5	1.55	59	24.6	Full-Term	Vaginal	NA	NA	11	8	3	Live	F	2.2	2.25	6	9	NO	NA	No	No	No	yes	No	6	4	14-03-2022	NA	NA
81	87300	25	10-03-2022	2	1	0	40		1.56	63	25.9	Full-Term	Vaginal	NA	NA	8	4	4	Live	F	2.7	35	5	6	NO	NA	No	No	No	No	No	6	4	14-03-2022	NA	NA
82	72100	23	13-03-2022	1	0	0	37	1	1.55	57	23.7	Full-Term	Vaginal	NA	NA	14	9	5	Live	M	2.7	11.14	7	9	NO	NA	No	No	No	No	No	6	3	16-03-2022	NA	NA
83	77273	19	11-04-2022	1	0	0	40	5	1.54	54	22.8	Full-Term	Vaginal	NA	NA	18	13	5	Live	F	2.7	5.14	7	9	YES	MAS	No	No	No	No	No	8	7	18-04-2022		Improved
84	131564	19	19-04-2022	1	0	0	38	4	1.58	59	23.6	Full-Term	Vaginal	NA	NA	11	7	4	Live	M	2.5	9.05	7	9	NO	NA	No	No	yes	No	No	6	4	22-04-2022	NA	NA
85	75817	24	23-03-2022	1	0	0	38	4	1.6	60	23.4	Full-Term	Vaginal	NA	NA	17	10	7	Live	M	3.1	5	7	9	NO	NA	yes	No	No	No	No	6	4	26-03-2022	NA	NA
86	132710	19	24-04-2022	1	0	0	40	0	1.5	62	27.6	Full-Term	Vaginal	NA	NA	13	7	6	Live	F	2.8	9.23	7	9	NO	NA	No	No	No	No	No	7	4	27-04-2022	NA	NA
87	133724	23	20-04-2022	1	0	0	38	1	1.59	65	25.7	Full-Term	Vaginal	NA	NA	10	6	4	Live	F	2.6	2.15	6	9	NO	NA	No	No	No	No	No	6	3	22-04-2022	NA	NA
88	133491	25	24-04-2022	1	0	0	40	0	1.58	63	25.2	Full-Term	Vaginal	NA	NA	18	10	8	Live	M	3.1	4	7	9	YES	RDS	No	No	No	No	No	7	7	30-04-2022		Improved
89	98268	21	19-03-2022	1	0	0	38	3	1..57	64	25.1	Full-Term	Vaginal	NA	NA	21	16	5	Live	M	3.2	12.35	7	9	YES	MAS	yes	No	No	No	No	6	6	24-03-2022	5	Improved
90	2003	26	03-01-2022	1	0	0	38	2	1.56	63	25.9	Full-Term	Vaginal	NA	NA	15	9	6	Live	F	2.1	3.4	6	9	NO	NA	No	No	No	No	No	6	3	05-01-2022	NA	NA
91	146307	22	01-05-2022	2	0	1	39	4	1.6	71	27.7	Full-Term	Vaginal	NA	NA	18	15	3	Live	F	3	3.2	7	9	NO	NA	No	No	No	No	No	7	3	03-05-2022	NA	NA
92	136341	20	23-04-2022	1	0	0	38	3	1.5	52	23.1	Full-Term	Vaginal	NA	NA	11	7	4	Live	M	2.5	2.4	7	9	YES	MAS	No	No	No	No	No	6	6	28-04-2022		Improved
93	140918	23	26-04-2022	2	0	1	40	2	1.52	61	26.4	Full-Term	LSCS	EMERG	NPO	19	11	8	Live	F	3.3	2.5	7	9	YES	DISTRESS	No	No	yes	No	No	7	6	01-05-2022	3	Improved
94	75666	22	28-04-2022	2	0	1	39	5	1.54	55	23.2	Full-Term	Vaginal	NA	NA	19	12	7	Live	F	3.8	7	7	9	NO	NA	No	No	yes	No	NO	6	3	30-04-2022	NA	NA
95	177775	19	20-05-2022	1	0	0	39	2	1.57	61	24.747	Full-Term	Vaginal	NA	NA	12	8	4	Live	M	2.4	7	7	9	NO	NA	yes	No	No	No	No	6	3	22-05-2022	NA	NA
96	172685	21	22-05-2022	2	0	1	40	2	1.56	65	26.709	Full-Term	Vaginal	NA	NA	20	12	8	Live	F	2.9	10.2	7	9	NO	NA	yes	No	No	No	No	8	4	25-05-2022	NA	NA
97	172680	19	22-05-2022	1	0	0	40	1	1.57	63	25.559	Full-Term	Vaginal	NA	NA	14	9	5	Live	M	2.5	4.4	7	9	NO	NA	No	No	No	No	No	6	5	26-05-2022	NA	NA
98	155109	23	08-05-2022	1	0	0	38	4	1.6	62	24.219	Full-Term	Vaginal	NA	NA	20	16	4	Live	M	3	10.09	7	9	NO	NA	No	No	No	No	No	6	4	11-05-2022	NA	NA
99	150910	26	08-05-2022	1	0	0	38	3	1.6	75	29.297	Full-Term	Vaginal	NA	NA	9	6	3	Live	F	2.5	1.1	7	9	NO	NA	No	No	No	No	No	6	4	11-05-2022	NA	NA
100	75666	22	28-04-2022	2	0	1	39	5	1.54	55	23.191	Full-Term	Vaginal	NA	NA	19	12	7	Live	F	3.8	7.07	7	9	NO	NA	No	No	No	No	No	6	3	30-04-2022	NA	NA
101	172599	22	21-05-2022	1	0	0	39	3	1.56	62	25.477	Full-Term	Vaginal	NA	NA	14	10	4	Live	F	2.5	4.25	7	8	NO	NA	No	No	No	No	No	8	5	25-05-2022	NA	NA
102	167014	27	17-05-2022	2	0	1	39	5	1.55	62	25.806	Full-Term	Vaginal	NA	NA	17	12	5	Live	M	2.5	12.25	7	9	NO	NA	No	No	No	No	No	6	4	20-05-2022	NA	NA
103	154434	23	08-05-2022	1	0	0	38	6	1.54	64	26.986	Full-Term	Vaginal	NA	NA	15	9	6	Live	M	2.4	3.5	7	9	NO	NA	yes	No	yes	No	No	7	4	11-05-2022	NA	NA
104	177162	20	25-05-2022	1	0	0	37	2	1.59	67	26.502	Full-Term	Vaginal	NA	NA	14	8	6	Live	M	2.7	9.48	7	9	YES	MAS	No	No	No	No	No	6	5	29-05-2022		Improved
105	165250	20	25-05-2022	2	0	1	38	2	1.56	64	26.298	Full-Term	Vaginal	NA	NA	19	12	7	Live	M	2.4	7.1	7	9	NO	NA	No	No	No	No	No	6	5	29-05-2022	NA	NA
106	169889	20	26-05-2022	1	0	0	38	6	1.55	62	25.806	Full-Term	Vaginal	NA	NA	19	15	4	Live	M	2.8	1.33	7	9	NO	NA	No	No	No	No	No	7	4	29-05-2022	NA	NA
107	170628	20	27-05-2022	1	0	0	40	0	1.54	62	26.143	Full-Term	Vaginal	NA	NA	16	12	4	Live	F	2.4	5	7	9	NO	NA	No	No	No	No	No	7	4	30-05-2022	NA	NA
108	180419	23	28-05-2022	1	0	0	38	3	1.56	62	25.477	Full-Term	Vaginal	NA	NA	13	11	2	Live	F	3	1.58	7	9	NO	NA	No	No	No	No	No	6	5	01-06-2022	NA	NA
109	107964	20	09-04-2022	1	0	0	38	3	1.54	63	26.564	Full-Term	Vaginal	NA	NA	14	9	5	Live	M	3	2.18	7	9	NO	NA	No	No	No	No	No	6	3	11-04-2022	NA	NA
110	180498	19	28-05-2022	1	0	0	38	3	1.58	67	26.839	Full-Term	Vaginal	NA	NA	11	6	5	Live	F	2.8	1	7	9	NO	NA	yes	No	No	No	No	6	3	30-05-2022	NA	NA
111	181760	22	28-05-2022	1	0	0	38	2	1.56	61	25.066	Full-Term	Vaginal	NA	NA	14	9	5	Live	F	2.7	4.07	7	9	YES	BIRTH ASPH	No	No	No	No	No	7	6	02-06-2022	3	DEATH
112	122457	21	03-03-2021	1	0	0	40	2	1.56	59	24.244	Full-Term	Vaginal	NA	NA	11	7	4	Live	M	3.4	10.14	7	9	NO	NA	yes	No	No	No	No	6	3	05-03-2021	NA	NA
113	103233	21	10-04-2021	1	0	0	39	6	1.55	60	24.974	Full-Term	Vaginal	NA	NA	18	12	6	Live	M	2.5	2.2	7	9	NYE	BIRTH ASPH	No	No	No	No	No	8	8	17-04-2021	6	Improved
114	132522	19	07-06-2022	1	0	0	38	3	1.54	60	25.299	Full-Term	Vaginal	NA	NA	20	12	8	Live	M	3.1	8.14	7	9	NO	NA	No	No	No	No	No	6	5	11-06-2022	NA	NA
115	45991	21	03-05-2021	1	0	0	38	6	1.56	61		Full-Term	Vaginal	NA	NA	16	10	6	Live	M	2.7	7.14	7	9	NO	NA	yes	No	yes	No	No	7	3	05-05-2021	NA	NA
116	19639	23	13-04-2021	1	0	0	38	1	1.55	59	24.558	Full-Term	Vaginal	NA	NA	13	9	4	Live	M	2.5	1.4	7	9	NO	NA	No	No	No	No	No	6	4	16-04-2021	NA	NA
117	32825	19	24-04-2021	1	0	0	37	0	1.56	64	26.298	Full-Term	Vaginal	NA	NA	12	7	5	Live	M	2.8	11.3	7	9	NO	NA	yes	No	No	No	No	6	2	25-04-2021	NA	NA
118	188132	21	03-06-2022	1	0	0	39	2	1.57	62	25.153	Full-Term	Vaginal	NA	NA	9	6	3	Live	F	3	6.5	7	9	NO	NA	No	No	No	No	No	6	3	05-06-2022	NA	NA
119	107964	20	09-04-2022	1	0	0	39	3	1.56	63	25.888	Full-Term	Vaginal	NA	NA	14	9	5	Live	M	3	2.18	7	9	NO	NA	No	No	No	No	No	6	3	11-04-2022	NA	NA
120	151148	22	05-05-2022	2	0	1	39	5	1.54	63	26.564	Full-Term	Vaginal	NA	NA	12	10	2	Live	M	2.9	4.24	7	9	NO	NA	No	No	No	No	No	7	4	08-05-2022	NA	NA

121	90941	23	14-03-2022	1	0	0	40	3	1.58	69	27.64	Full-Term	Vaginal	NA	NA	10	6	4	Live	F	3	8.3	7	9	NO	NA	No	No	No	No	No	7	3	16-03-2022	NA	NA
122	272627	22	29-04-2022	1	0	0	40		1.56	66	27.12	Full-Term	Vaginal	NA	NA	19.4	14	4	Live	F	3.4	5,35	7	9	YES	RDS	No	No	yes	No	No	6	4	02-05-2022	1	Improved
123	144978	22	29-04-2022	1	0	0	40		1.54	57	24.034	Full-Term	Vaginal	NA	NA	18	12	6	Live	F	2.5	8.15	7	9	NO	NA	No	No	No	yes	No	7	4	02-05-2022	NA	NA
124	135896	19	30-04-2022	1	0	0	40		1.54	59	24.878	Full-Term	Vaginal	NA	NA	16	12	4	Live	F	3.1	9.41	7	9	NO	NA	No	No	No	No	No	6	4	03-05-2022	NA	NA
125	150483	19	05-05-2022	1	0	0	40		1.57	64	25.965	Full-Term	Vaginal	NA	NA	12	9	3	Live	F	3.1	8.15	7	9	NO	NA	yes	No	No	No	No	6	4	08-05-2022	NA	NA
126	200360	26	13-06-2022	1	0	0	40		1.57	61	24.747	Full-Term	Vaginal	NA	NA	12	8	4	Live	F	2.7	6.24	7	9	NO	NA	No	No	No	No	No	6	3	15-06-2022	NA	NA
127	200356	26	13-06-2022	1	0	0	40		1.54	57	24.034	Full-Term	Vaginal	NA	NA	11	7	4	Live	F	2.1	7.1	7	9	LBW		No	No	No	No	No	6	8	20-06-2022	6	Improved
128	201339	28	13-06-2022	2	0	1	40		1.56	71	29.175	Full-Term	EMERGA	NON P	NA	24	14	10	Live	M	2.7	10.05	7	9	YES	RESPIRATOR	No	No	No	No	No	7	7	19-06-2022	6	Improved
129	198442	19	10-06-2022	1	0	0	39	4	1.55	69	28.72	Full-Term	Vaginal	NA	NA	14	8	6	Live	M	2.38	2.49	7	9	NO	NA	No	No	No	No	No	6	3	12-06-2022	NA	NA
130	170628	20	27-05-2022	1	0	0	40	0	1.53	62	26.486	Full-Term	Vaginal	NA	NA	11	6	5	Live	F	2.4	5.05	7	9	NO	NA	No	No	yes	No	No	6	3	29-05-2022	NA	NA
131	181818	22	29-05-2022	1	0	0	38	4	1.55	60	24.974	Full-Term	Vaginal	NA	NA	14	10	4	Live	F	3.2	6.09	7	9	NO	NA	yes	No	No	No	No	6	4	01-06-2022	NA	NA
132	186725	27	01-06-2022	1	0	0	40	0	1.56	59	24.244	Full-Term	Vaginal	NA	NA	13	9	4	Live	F	3	1.32	7	9	NO	NA	No	No	yes	No	No	6	3	03-06-2022	NA	NA
133	186722	19	01-06-2022	2	0	1	40	0	1.55	62	25.806	Full-Term	LSCS	EMERG	NA	7	4	3	Live	M	2.7	10.51	7	9	YES	RDS	No	No	yes	No	No	7	6	06-06-2022	NA	Improved
134	167649	21	21-06-2022	1	0	0	39	5	1.54	51	21.504	Full-Term	Vaginal	NA	NA	15	11	4	Live	M	2.7	8.32	7	9	NO	NA	No	No	No	No	No	7	3	23-06-2022	NA	NA
135	212479	20	21-06-2022	1	0	0	39	6	1.57	63	25.559	Full-Term	LSCS	EMERG	NA	29	22	7	Live	F	2.9	6.21	7	9	Y	MAS	No	No	No	No	No	6	7	27-06-2022	3	Improved
136	252281	19	22-07-2022	3	0	2	40	0	1.56	61	25.066	Full-Term	Vaginal	NA	NA	16	12	4	Live	M	2.7	8.32	7	9	NO	NA	No	No	No	No	No	7	4	25-07-2022	NA	NA
137	252271	22	22-07-2022	1	0	0	40	0	1.53	54	23.068	Full-Term	Vaginal	NA	NA	16	14	2	Live	M	2.6	2.5	7	9	NO	NA	No	No	No	No	No	7	5	26-07-2022	NA	NA
138	253520	18	22-07-2022	1	0	0	40	0	1.56	57	23.422	Full-Term	Vaginal	NA	NA	12	9	3	Live	M	2.7	9.49	7	9	NO	NA	No	No	No	No	No	5	3	24-07-2022	NA	NA
139	250918	22	20-07-2022	2	0	1	37	0	1.55	54	22.477	Full-Term	Vaginal	NA	NA	24	20	4	Live	M	2.7	8.53	7	9	NO	NA	yes	No	yes	No	No	6	3	22-07-2022	NA	NA
140	254033	19	23-07-2022	1	0	0	39	6	1.54	55	23.191	Full-Term	Vaginal	NA	NA	16	13	3	Live	M	3	3.07	7	9	NO	NA	No	No	No	No	No	7	5	27-07-2022	NA	NA
141	255598	18	24-07-2022	1	0	0	39	6	1.52	56	24.238	Full-Term	Vaginal	NA	NA	15	13	2	Live	F	2.8	12.05	7	9	NO	NA	No	No	No	No	No	6	4	27-07-2022	NA	NA
142	179943	24	24-07-2022	1	0	0	38	3	1.56	62	25.477	Full-Term	Vaginal	NA	NA	18	12	6	Live	F	3.3	6.54	7	9	NO	NA	No	No	No	No	No	6	4	27-07-2022	NA	NA
143	258553	28	26-07-2022	1	0	0	38	5	1.48	59	24.6	Full-Term	Vaginal	NA	NA	15	10	5	Live	F	2.5	5.24	7	9	NO	NA	No	No	No	No	No	7	4	29-07-2022	NA	NA
144	259807	25	28-07-2022	1	0	0	39	0	1.5	58	25.778	Full-Term	Vaginal	NA	NA	24	20	4	Live	F	2.5	4.14	7	9	NO	NA	No	No	No	No	No	7	3	30-07-2022	NA	NA
145	156723	24	06-05-2022	1	0	0	40	0	1.56	60	24.655	Full-Term	Vaginal	NA	NA	12	9	3	Live	M	2.9	3.15	7	9	NO	NA	No	No	No	No	No	7	4	09-05-2022	NA	NA
146	162876	26	22-02-2022	1	0	0	40	2	1.54	59	24.878	Full-Term	Vaginal	NA	NA	13	8	5	Live	M	2.8	6.4	7	9	NO	NA	No	No	No	No	No	7	3	24-02-2022	NA	NA
147	66502	21	21-02-2022	1	0	0	38	2	1.55	57	23.725	Full-Term	Vaginal	NA	NA	17	12	5	Live	M	2.6	7.25	7	9	NO	NA	yes	No	No	No	No	6	4	24-02-2022	NA	NA
148	327365	20	17-09-2021	1	0	0	37	5	1.54	59	24.878	Full-Term	Vaginal	NA	NA	22	16	6	Live	F	2.6	7	7	9	NO	NA	No	No	yes	No	No	7	4	20-09-2021	NA	NA
149	318782	25	12-09-2022	1	0	0	38	3	1.56	61	25.066	Full-Term	Vaginal	NA	NA	20	15	5	Live	M	2.6	9.37	7	9	NO	NA	No	No	No	No	No	7	5	16-09-2022	NA	NA
150	313512	20	07-09-2022	1	0	0	39	1	1.55	57	23.725	Full-Term	Vaginal	NA	NA	15	11	4	Live	F	3.5	8.24	7	9	NO	NA	No	No	No	No	No	8	4	10-09-2022	NA	NA

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Date-22/01/2021

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(Declared vide notification No. F.9-37/2007-U.3 (A) Dated. 29-2-2008 of the MHRD, Government of India under Section 3 of the UGC Act, 1956)

The Constituent College

SHRI. B. M. PATIL MEDICAL COLLEGE, HOSPITAL AND RESEARCH CENTRE

INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Institutional ethical committee of this college met on 11-01-2021 at 11-00 am to scrutinize the synopsis of Postgraduate students of this college from Ethical Clearance point of view. After scrutiny the following original/corrected and revised version synopsis of the Thesis has been accorded Ethical Clearance

Title: A Cross-Sectional study to anlyse the changing trends in Friedman's curve in primary vaginal delivery.

Name of PG student: Dr Lavanya Vodnala, Department of Obst/Gynaec

Name of Guide/Co-investigator: Dr Aruna.M.Biradar,Associate Professor of Obst/Gynaec

DR.S.V.PATIL
CHAIRMAN, IEC

Institutional Ethical Committee
L D E (Deemed to be University)
Shri B.M. Patil Medical College,
VIJAYAPUR-586103 (Karnataka)

Following documents were placed before Ethical Committee for Scrutinization:

1. Copy of Synopsis / Research project
2. Copy of informed consent form
3. Any other relevant documents.

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20BMOBG007-LAVANYA-A CROSS-SECTIONAL STUDY TO ANALYSE THE CHANGING TRENDS IN FRIEDMAN'S CURVE IN PRIMARY VAGINAL DELIVERY

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