Chapter - 1

Introduction

1.1 Introduction

Labour and birth represents the end of pregnancy and the beginning of extra uterine life for a neonate and a change in the lives of family. Since late pregnancy the woman and the foetus prepare for labour process and the foetus becomes ready to come to extra uterine life and continue life independently.¹

There an amazing and complex process initiated involving the baby, body and the brain as soon as labour starts. When the baby is ready for life outside the uterus, he or she signals the brain to respond by releasing oxytocin to contract the uterus and dilating the cervix.² Labour is the process where the myometrial activity increases with uterine contraction and dilatation and effacement of cervix resulting in the delivery of the foetus from uterus.³

In most of the cases, the labour initiated naturally by its own course of action. But in some instances it requires little help by artificial means. When the risk is more by continuation of pregnancy than delivering the baby, then by an intervention the labour is induced is known as induction of labour. Initiation of labour by artificial induction has been a part of childbirth for many years. The labor induction was first recorded early in the second century by Roman physician, Soranus. He used the protocol of induction and augmentation to a woman with a small pelvis by a series of interventions like administering an enema, pouring the whites of several eggs into the vagina rupturing membranes and dilating the cervix which is replaced now by advent of oxytocin and prostaglandin.⁴
“Induction of labor is defined as the interventional provocation of uterine contractions prior to the onset of spontaneous labor with the purpose of achieving vaginal delivery in a safe and timely manner. For decades, IOL has been a challenge to obstetricians, care givers, and most importantly to mother and baby in respect to provide quality care”.  

Induction of labour is a familiar obstetrical component of modern obstetrical practice. It usually accounts for 20 to 30 % of all deliveries. About 50 % of singletons pregnancy with cephalic presentation undergoes spontaneous delivery by its natural course of action with help of estrogen and prostaglandin. The rest of the women have ineffective labour, requiring induction or undergo cesarean delivery.

The familiarity of the procedure is slowly rising in every setting from rural to well equipped urban hospital with its demand in reducing the rate of unnecessary cesarean section and improvement of foetal outcomes. This is considered when delivery is thought to be the safer option than continuing the pregnancy.

Always the Induction of labour is considered when the risk outweighs the benefit and it is safe for the baby and mother and when the continuation of pregnancy may have adverse complications. The induction of labour is usually indicated in the prevention of PROM, Post dated pregnancy, placental abruption, hypertensive disorders and chorioamnionitis as stated by NICE and ACOG.

The major indications to opt an induction are, oligohydramnios, intrauterine fetal death, pre eclampsia, Postdates Diabetes mellitus, Uncomplicated twin pregnancy, Gestational hypertension, PROM at or near term. Among these, postdates pregnancy is the largest contributor to the induction. In a meta analysis it was also observed that the common
indications cited by many researchers are post term pregnancy, PROM, oligohydramnios, twins, macrosomia, preeclampsia, diabetes and IUGR.\textsuperscript{13}

Misoprostol is a cheap and easily available drug that obstetricians opt for induction of labour. The vaginal misoprostol is highly effective in dilating cervix and it is a potent labor inducing agent than oral misoprostol.\textsuperscript{15} Besides vaginal misoprostol, the oral misoprostol is also an effective inducing agent to achieve normal vaginal delivery. It is effective like vaginal misoprostol and results in higher rate of vaginal birth than vaginal dinoprostone or oxytocin. This can be widely used where the vaginal route is contraindicated for risk of ascending infection and there is lack of staff to monitor women during the procedure.\textsuperscript{16}

The most frequently used inducing agent misoprostol when used, it was ended with the uterine tachysystole and meconium stained liquor fluid, lower Apgar scores at first minute which required neonatal resuscitation as compared to Dinoprostone. But it reduced the induction-delivery interval, required single dose rather asking for a second or third dose. The study also revealed a very low CS rate.\textsuperscript{14}

The oxytocin is a natural uterotonic agent which cross the blood brain barrier and provide a relaxed feeling alternative to contraction. But the synthetic preparations like syntocinon cannot act like natural agent and does not maintain the rhythm rather it induces contraction which is very strong and painful for woman.\textsuperscript{17}

The attempt to intervene continuation of pregnancy by surgery or induction before term lead to foetal jeopardy and pre term birth for about 42\% of total pre term birth. The education and awareness among the health personnel regarding such rising issue of morbidity pattern among induced women really need attention for prevention of such unnecessary intervention.\textsuperscript{10} There is no quality evidence that the mother or babies are only benefitted by elective induction
but also it reduces the risk of cesarean delivery.\textsuperscript{18} About 10 percent of all deliveries are either induced or surgical deliveries, before 39 weeks that is not medically indicated. These early elective deliveries may lead to a various health problems to the mother and baby.\textsuperscript{6}

The elective induction results in lower rate of perinatal death, than the expectant management without strong association with higher risk of caesarean section. But sometimes it increases the incidence of NICU admission with reduction in maternal complications like uterine rupture and shoulder dystocia.\textsuperscript{13} Elective induction when done for a prami mother it has adverse effect on labour by ending it with cesarean section and increased incidence of blood loss than the women under expectant management. The babies of such mothers also require higher oxygen supply after delivery and NICU admission.\textsuperscript{19}

Though misoprostol is an effective and safe drug in lower dose for labour induction and ripening the cervix, but it increases the induction to delivery interval but there is evidence of lower rate of caesarean section, NICU admission with few cases of cord pH $<7$ compared to the dinoprostone. The overall outcome is good and the women are satisfied with the outcomes.\textsuperscript{20} Some viewed this procedure as aggressive intervention that are invasive and results in caesarean section with permanent damage to the pelvic floor and urinary tract.\textsuperscript{3}

The ACOG recommends that without any valid reason elective induction should not be performed. The policy should be prepared by the institution to control the rate of induction and thereby the prematurity among the newborn delivered before 39 weeks of gestation by elective induction.\textsuperscript{21} The women who experienced induced labour expressed that this is more painful than the spontaneous labour with increased need for epidural analgesia. This procedure requires many times the assisted delivery. It is recommended that the procedure should be supported with well evidenced justification.\textsuperscript{10}
Many studies have demonstrated that the induction at one or more point is associated with complications like hyper stimulation, meconium staining liquor, and uterine rupture, but the quality of evidence is poor and to take steps on this serious issue is not yet properly recommended as this is not merely a risk-benefit analysis rather the value judgment towards human life should be aggressively addressed. 22

For every woman the child birth is a crucial event and the experience associated with this is valued against the care and support received during labour. This experience has significant physical, psychological and emotional impact on mother. The healthy experience leads to maternal satisfaction and a healthy mother and baby relationship. 23 This is necessary to provide control and support during labor for healthy birth outcomes and enhance maternal satisfaction with positive birth experience, but it is difficult to measure the level of control and support required and that varies according to setting, person. 24

Women in labour expect the nurses to support physically for her comfort, emotional support for being calm, instructional support for breathing and positioning and a nursing care for monitoring, assisting, and administering medication. They want to see nurses to involve in their care, hear their problems, and emotionally settle them by liasioning between family and practitioner. 25

1.2 Background of the study

In modern labour room practice the traditional practice of encouraging mother to undergo contraction has declined significantly and as a result the rate of induction is increasing slowly in almost all the pregnancies and the women are lacking the experience of natural process of labour. Proper justification with current evidence, will ensure the practice by the health
professionals and induction will not outweigh the risk of continuation of pregnancy with a successful vaginal delivery.\textsuperscript{12}

Induction of labour is becoming a day to day procedure in every labour room. It contributes to the rising incidence up to 21.2\% in 2003 to 2004 in the United States. Elective induction have risen sharply over these years which is associated with increased cesarean section and preterm births.\textsuperscript{26, 27} The rate of induction has increased from 5\% to 25\% in developing countries with a view to save mother and baby. The reason for such rise is not known. But most of the time the physician’s preference, patient preference, institutional policy play major role in deciding the strategy though it is well known that many adverse effects are associated with this.\textsuperscript{19, 28}

In a population based study conducted from 1998 to 2007, it was noticed that the rate of induction has increased from 25.3 to 29.1\% in developed country over the decade. The commonly used agents were oxytocin and prostaglandin. Despite their use the failure of induction were reported both in nulliparous and multiparous women.\textsuperscript{29}

The various researchers reported the rate of induction in different magnitude as given below through graphical presentation.
This is not uncommon that the most of the mothers are admitted in hospital for the cause of induction and other procedure assisting in delivery. The Agency for Healthcare Research and Quality in its secondary analysis found that about 51.4% of women undergo induction and other similar procedure to ease labour process and the expenditure being $3,500-$4,100 as estimated in the year 2006. There is varying rate of induction depends on type of setting or kind of hospital that serve the community. As maternal and perinatal health is a matter of concern and again if it is associated with induction of labor, then the factors and outcomes of induction must be highlighted. In Latin America the rate of induction was 11.4%. Among this, the public hospital contributed 74.2% of induction and 20.9% of induction were conducted in society security hospital and rest 4.9% was conducted by private hospital. Further the variation in induction of labour was observed in 2010 and 2011 in 72 hospitals. From the total number of deliveries, about 26.7% were induced labour. But in whole state of Washington the rate of induction of labour ranged from 9.7% to 41.2%. 
Coftey P et al. conducted a retrospective population based study on pattern of induction over 12 years from 2001 to 2012, which included aboriginal and non aboriginal mothers for both primipara and multipara. The prevalence of IOL was higher among aboriginal primipara mother among all other mothers.  

At Wolliso St. Luke hospital, the documents of 340 women were reviewed those were admitted between 2014 - 2015, for their delivery details. It was surprise to know that among 340 women, 76 (22.4%) women were delivered by induction of labour.  

The practice of induction is high in urban hospitals. The obstetrician’s decision making process influenced the rate of induction. The rate varied from hospital to hospital for primiparous mother and this rate was about 27-30%.  

The induction of labour practiced widely in developed countries either by physician choice or on maternal request. Over 20 years observation, it was found in 2010, the induction rate in England was 21.0% and in France it was 22.6%, while in 2013 the rate being 22.8% in USA, with overall rate of 22.6%.  

WHO in its guidelines clearly instructs that an induction of labour indicated only with clear indication and when the harm to mother and baby not outweigh the benefit out of induction. Also the complications should be managed with availability of appropriate facilities. In a meta analysis it was also observed that the common indications cited by many researchers are post term pregnancy, PROM, oligohydramnios, twins, macrosomia, pre eclampsia, diabetes and IUGR.  

The less frequent indications are oligohydramnios, IUGR, gestational diabetes, foetal distress, macrosomia, foetal death, decreased foetal movement, uncomplicated twins,
polyhydramnios, Rh iso immunization, chorioamnionitis, heart disease and other foetal indications.\textsuperscript{29, 32, 33, 34, 35, 36}

It was reported in many studies found that many factors play important role in inducing labour like, organizational factors: lack of accountability or enforcement, scheduling staff, hospital culture and issues of marketing; patient factors: patient preference or convenience, lack of information, lack of knowledge, fear for natural birth and ignorance about the risk associated in an elective induction. The decision of elective induction should be addressed with proper research based outcomes.\textsuperscript{14, 28}

When spontaneous labor fails to initiate or start, labor induction may be considered as safe alternative regardless of whatever method employed. The important issue that, both the woman and obstetrician, whether they understand the rationale behind the procedure of induction, it’s ‘risks and the options available for failed cases.\textsuperscript{37} Since early 1990’s misoprostol is used as a potent inducing drug for labour induction. It is cheap, easily available, less costly, effective and stable at room temperature. It is effective even in pre eclampsia with lower rate of eclampsia, c-section and NICU admission.\textsuperscript{14}

Prostaglandin and its group of drugs when used for ripening of cervix in case of favorable or un-favorable cervix, were effective in bringing cervical favorability, good progress of labor with a successful vaginal delivery within 24 hours.\textsuperscript{39}

When many trials between misoprostol and oxytocin were compared, the outcomes like severe maternal morbidity and mortality, adverse fetal/neonatal outcomes found in almost no cases except fetal/neonatal morbidity in few cases in misoprostol group. No cases reported maternal satisfaction in both the drugs. There was no significant difference in uterine hyper stimulation and rate of caesarean section among the groups.\textsuperscript{40}

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Labour induction with prostaglandins shows that, it increases the need for oxytocin augmentation upto 2.2 times for oxytocin augmentation, 3.6 times for epidural anesthesia, 1.7 times to have uterine hyper stimulation, twice to have an abnormal FHR, 4.1 times more likely to have blood loss, and 2.9 times more likely to stay in hospital.\textsuperscript{15}

\begin{figure}
\centering
\includegraphics[width=\textwidth]{Fig1_2.png}
\caption{The induction of labour by different methods is presented in graphical form}
\label{fig:labour}
\end{figure}

(Source: N M Mealing, 2009 \textsuperscript{29})

Many times it has been observed that the induction of labor has resulted in higher rate of emergency cesarean section than the spontaneous labour whether it nulliparous or multipara.\textsuperscript{41} The induction of labour many times is associated with risk of cesarean section found in many studies.
Fig. 1.3: The rate of cesarean section in elective induction and spontaneous labour is presented in graphical form (source: William A. Grobman, 2012)

Induction of labor as a prolonged procedure require quite patience by the mother. It is required to know the the experience of mother and thereby to know her optimum satisfaction, so that counseling can be done with prior information about the outcomes of the procedure. Gatward et al found that there was varied feelings of women after induction, as there was no choice rather to opt induction as a subject of policy matter.

Regarding medical intervention during birth process a mixed view was given by the women but on the whole, they are against intervention unless medically necessary. They are agreed that, as a natural process, during birth process anything should not be interfered with unnecessary intervention and some of them viewed it as necessary procedure for easy delivery.

Some of the factors affecting maternal satisfaction including: the nature and adequacy of information given to women throughout the antenatal, intra-partum and postpartum period. Other factors affecting maternal satisfaction are socio-demographic and context backgrounds demonstrate to have effects on their satisfaction with physical environment.
A secondary analysis of surveys regarding care during delivery was conducted in order to improve the care during induction period. The women were less satisfied who were induced with poor birth experience. The reasons for dissatisfaction were pain, staff shortages, feeling of being neglected, and anxiety. Overall the efforts made were wasted with failure to control pain and to have successful delivery. 45

Women should be given preference to make informed choices and their care, treatment as evidenced in the information for decision-making process as an integral part of the labour room policy. A negative impression upon birth experiences by first time mothers clearly delineate regarding inadequate nursing care, insufficient support and guidance during childbirth. A midwifery led care, demonstrating concern towards her, preparing her physically will improve the quality of intranatal care that a woman expects during her labour and delivery that will help towards client centered care and satisfaction with positive childbirth expectations and experiences.

1.3 Need for the study

Labor induction is legitimately recommended when a pregnancy is complicated and difficult to be carried forward or it is post dated but now- a -days both physician and mother prefer it for their convenience. As the rate of elective induction is increasing, so also the associated complications, unnecessary instrumentation, risk of c-section and longer hospital stay, the women must be informed and should be discouraged for the risks associated and cost involved. 45

Induction is considered as one of the ways of preventing the labour related complications and improving pregnancy outcomes. It is also evident that when induction of labor was
employed in the presence of medical complications in term pregnancies, there was 50% reductions in stillbirths and perinatal death. \textsuperscript{46} The rate of labor induction is slowly increasing in the US posing the rate of 22\% in 2006 which has doubled since 1990. The reason for induction should not be vague rather with demonstratable benefit weighed against harm. ACOG recommends the conditions as maternal and foetal indications, cervical status, gestational age and others to consider for the purpose of induction.\textsuperscript{47}

Many women prefer induction with vague reason even though mother and baby are well and mostly the first-time mothers (50-60\%) are induced with or without any medical indications and ended in emergency cesarean section.\textsuperscript{48} Caughey and colleagues noted that the fast rising rate of induction indicate the trends of conducting elective induction without evidence of having any benefit. \textsuperscript{30}

The naturally produced oxytocin act on myometrial cells for a rhythmic contraction and relaxation and ultimately a spontaneous delivery, while a synthetic oxytocin dose not do so nor act perfectly on uterine muscles which in turn results in over action or ineffective uterine action with failed induction and requiring a cesarean section. \textsuperscript{53}

Misoprostol is used widely as a convenient and chief method of inducing agent. But it should be used with best available evidence to minimize the risk. Before these practice women should be informed about what is known and not known about induction and she can participate fully in decision making to accept the method for her baby or not. \textsuperscript{49}

Many times an induction introduces unnecessary risk to the mother and baby where it could be prevented and a normal birth would be the result. It enhances the chance of many unnecessary interventions, from managing pain to cesarean section. It is also associated with other interventions and increased cost and maternal dissatisfaction. \textsuperscript{50}
In contrary other study found that the induction of labor when electively performed at 41 weeks of gestation and beyond, there was decreased chance of meconium-stained amniotic fluid and cesarean delivery.  

Childbirth is a procedure that the women undergo through various new methods and intervention. The long procedure provides a wide range of experience in order to get a good control over situation. The mothers’ involvement in the birth process, pain management, accommodating herself in the situation, with sense of security, support system, receiving information, midwifery care, decision-making in managing complications and involvement in decision-making collectively provide her a child birth experience.

The concept of caring during labour has been changed by the advent of inducing agent and the way the labour is conducted in case of elective induction. The nurses in labor room instead of supporting women, remain engaged in monitoring oxytocin and managing complications.

Women should be privileged with the information before induction starts, so that she can discuss with her partner about all details of the procedure for coming to a decision. Supplying her variety sources of information, inviting to clarifying doubts and assisting in reviewing and verifying the options and supporting her in making decision that gives her optimum satisfaction.

In the clinical guideline by RCOG it is emphasized that whether she is doctors or midwife, she should fully discuss the options with the mother before any decision is reached for using misoprostol as inducing agent. She should explain the procedures and care that will be involved and whether there are any risks to her and her baby. Nurses’ participation is crucial in
every stage and also after the administration of inducing agent which should be made as a standardized procedure in labour room.  

In most of the rural hospitals, it was observed that the labor and delivery nurses are not always available even for spontaneous delivery if this is an induced labor, then safe staffing with qualified nurse must be guaranteed. Also it is recommended to meet nursing staffing need in rural hospital.

The time has come to stress upon more effective inducing agent which act early with minimum hazards as most of the women now a days are experiencing the induction of labour in labour room. Among the quick methods, the misoprostol is one of the agents which effectively dilate the cervix, but sometime it is associated with many drawbacks. To overcome these issues adequate staffing and safety factors should be considered to ensure with better experience of women.

“Many maternity practices that were originally developed to address specific problems have come to be used liberally and routinely in healthy women.” The induction and its related hazards have been reduced due to establishment of guidelines, policies and creating awareness among staff. Women with negative birth experiences during last child birth verbalized too little control, lack of satisfaction, confidence, feeling of loneliness, little support and care by midwives and felt being neglected.

Childbirth education is quite helpful in decision-making process of women and in making their choice easier. It was observed that the women who attended the classes did not prefer for elective induction. This was possible by the positive influence of childbirth educators who narrated the risk of elective induction & discussed with them through survey response. Healthcare professionals should carefully assess the state of pregnancy and status of labour.
before prescribing prostaglandins in specific cases like ruptured membranes and prolonged pregnancy. This is very important to obtain informed consent that is documented. Woman must be discussed with about her choice in opting risks to her and the baby.58

The nurses often get opportunities to discuss on elective induction of labor while talking to women and caring and providing education. The women who attended childbirth classes and did not undergo elective induction expressed that these classes helped them in providing information to take decision for induction. Women find childbirth classes as useful which helped positively with valuable information. 59

After 41 to 42 completed weeks when the pregnancy no more can be continued and induction is the only option then the absolute and relative risks of induction should be explained to the woman mostly regarding the risk of perinatal death as it increases as the pregnancy advances after 40 weeks. The crucial aspect of the information is need for continuous fetal monitoring if induction is not opted.60

To address the current paucity of data on levels and trends in induction, nurses must verify the available data and take necessary decision on augmentation and that can be added to routine health information systems. An evidence based guidelines should be developed and implemented for the use of uterotonic drugs and specific instruction and educational materials should be prepared and disseminated to all health care providers to address the use of oxytocin and misoprostol.61 Women should be given preference to take decision for own choice regarding the care and treatment for decision-making process as an integral part of the labour room policy.62

The concern in recent years during induction is taking care of experience of mother towards this unexpected procedure and related complications like tachysystole and pain. When
mother is not informed properly and prepared physically and mentally, then there will be unpleasant experience like mental trauma. The midwifery led care would make her able to cope with the situation and provide a positive birth experience.63

It is observed that women are not always satisfied with their birth experience. The reason behind this is cited as the pain, anxiety due to newer situation, lack of staffing and their support, unexpected intervention, failure of efforts with operative procedures.45

Induction of labour is not a new procedure now. Very often it is used for convenience of both obstetrician and mother. Many studies reported the outcomes in negative perspectives while others with its’ benefits. The present study is aimed to verify the effect of misoprostol induced labour especially to maternal physiological parameters and experience and effect on babies. So in order to gain a better understanding of rising induction practices, more research is needed to examine these practices in the context within which they occur. After the completion of this study the findings will influence the institutional policy decision and physician mind set for a better decision making process and the midwives to involve in caring process and resolve the unmet need of mother and baby throughout the procedure.

1.4 Statement of the Problem

Effect of induction of labour on maternal and neonatal outcome at a tertiary care hospital, Odisha.

1.4.1 Objectives

1. To determine the prevalence of induction of labour.

2. To identify the common indications of induction of labour.
3. To find out the effects of induction of labour on mother and baby.

4. To relate maternal baseline variables with maternal and neonatal outcomes.

5. To identify the independent factors responsible for maternal, foetal and neonatal outcomes

6. To assess the level of maternal control and experience during induction of labour.

7. To identify the factors responsible for maternal experience of control during labour.

8. To correlate the level of experience and control with maternal characteristics.

1.4.2 Research Question

- What is the current rate of induction?

- What are the factors those initiate to undergo induction?

- To what extent the inducing agents affect maternal physiology?

- To what degrees the health of fetus and newborn jeopardizes?

- Do the variations in effects of induction are based on maternal co-variables?

- Does variation in induction effect is based on maternal co-variables?

1.5 Projected Outcomes

The Study will bring out results related to:

- Rate of induction at a tertiary care hospital.

- Common indications for which the induction is done.

- The failure rate of induction and the reason behind it.

- The maternal, fetal and neonatal hazards occurred by induction.
• The risk benefit ratio of induction and recommendation as required.

• The independent factors responsible for failure of induction.

• The women’s expectation, birth experience and control over situation during induction.

• The factor responsible for positive birth experience, in order to recommend necessary strategy to enhance the birth experience by midwives’ support and counseling.

1.5.1 Assumption

• It is assumed that the inducing agents are effective in initiation of labour.

• The administration of inducing drug has adverse effects on health of mother and baby.

• Women’s experience and control during induction of labour depends on various internal and external factors.

• The effects are influenced by other co variables.

1.5.2 Delimitations

The study is delimited to:

1. All the women admitted in the labor room and will be induced for induction of labor in SUM Hospital

2. Women whose pregnancy is within 37 weeks to 42 weeks

3. Those who are willing to participate in the study.
1.5.3 Operational Definition

**Induction of labor**: It is a medical method adopted to initiate labor by administration of misoprostol and/or accelerated by oxytocin when required.

**Mother**: The women who are admitted in labour room for delivery and induced with misoprostol by any route.

**New born babies**: The babies those are born from the mothers who have undergone induction of labour by misoprostol.

**Maternal Outcome**- The physiological or physical effect seen in mother, after induction during and after labour like nausea and vomiting, uterine tachysystole, hyperstimulation, length of labour, failed induction, non progress of labour, mode of delivery and experience and control of mother during induced labour.

**Foetal and neonatal Outcome**: The physiological or physical changes seen in foetus and newborn baby, after induction during and after labour like APGAR score, meconium staining liquor and NICU admission.

1.6 Theoretical Framework

The present study will adopt the theoretical framework designed by Mitchell et al(1998) for studying the various factors stated as client characteristics, system characteristics and their linkage in influencing intervention and ensuing outcomes. This is the extension of Donabedian model (1966) in which the structure-process-outcome framework has been incorporated into a dynamic model of four contents: System factor, client factor, intervention and outcomes. It
mostly recognizes the feedback that indicates to study the client & system characteristics with mode of interventions and subsequently the outcome.

As the present study has identified induction as a clinical intervention for quality improvement in labour outcome and is taken as a research variable, the Quality Health outcome Model (QHOM) is adopted in a modified framework to provide a tangible network for guiding analysis of labour outcomes while considering the influence of predictors and maternal characteristics.

![Theoretical Framework](image)

**Fig. : 1.4 : Theoretical framework of the study**

### 1.7 Conceptual Framework

The present study focuses on the outcome of intervention that is induction of labour upon physician choice as organizational factor (which is not included in the study, but has influence on incidence and outcomes) decided upon client factors like obstetrics variables: gravidity, gestational week, cervical dilatation, pregnancy complications like post-dated pregnancy,
PROM, PIH, oligohydramnious and GDM. The outcome also not only includes the result of a treatment intervention, also this considers the care system models (Lohr, 1988), the perception, experience and control over birth have been taken as secondary outcomes for induced labour.

Outcomes are not only be measured in technological aspect rather the substantial output of care structures and processes in integrating all aspect of person’s experience during health and illness. (Michell, 1998)

The key variables described are structure, process and outcome. Structure is the independent variable and the dependent variable is the process, whereas outcome is the result of integration of both the factors.

Key variables

Co-variables

System factors like Policy, protocol and procedure of organization, physician choices, nursing staffing and care structures, client demographic and obstetric factors and indications for induction.

Dependent Variable

Intervention or treatment by induction of labour process.

Outcomes

The impact of induction on labour, mother and newborn in view of positive (desired) outcomes that may include successful vaginal delivery without any undue prolongation and without any remarkable maternal and foetal complications and negative (undesired) outcomes
like prolonged labor, uterine hyper stimulation, caesarean section, poor apgar score, NICU admission etc.

Fig. : 1.5 : Conceptual Framework of the study

(Dotted lines are not included in this study)

1.8 Operational Framework

The above concepts are operationalized in this study with specific concepts under variables those have been considered for the study.

A. Input structure

These are factors lying in mother and organization.

Maternal variables:

- Demographic variables: age and BMI.
• **Obstetrical variable:** Gravida, gestational week, cervical dilatation.

• **Induction Indices:** Post-dated pregnancy, oligohydramnios, PROM, PIH and Gestational diabetes mellitus.

**Organizational variable-**

physician choices, policy, procedure, staffing, support system

**B. Process**

The labour induction by Misoprostol and oxytocin is considered here as dependent variable as all the structural variables affect and consider for induction of labour.

**C. Outcome Variable**

The outcome of interventional treatment upon mother and newborn is manifested as either positive or negative outcomes. The vaginal delivery with shorter labour length, without any major complications is the positive outcomes. Similarly the caesarean delivery with other complications like foetal distress, NICU admission is the negative outcomes.
Fig. 1.6: Operational Framework (Dotted lines are not included in this study)