

# Effect of Upright Position versus Conventional Labour Position on Selected Feto - Maternal Outcomes

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**Abstract:** *Introduction:* Pregnancy is a natural physiological phenomenon & delivery is its natural culmination. Despite the fact that the upright position is thought to hasten the delivery, most of the mothers are made to lie down during the entire birthing process. **Aims & Objectives:** To determine the effect of upright position during active phase of first stage of labor on selected feto - maternal outcomes. **Material and Methods:** An experimental study, with post - test only control group design conducted on 76 nulliparous women, aged 19 - 40yrs with singleton pregnancy with no high - risk factors. Simple random sampling was used to select the study samples. In the experimental group mothers were instructed to ambulate during active phase of first stage of labor for a duration of 10mins, then sit on a birthing stool for a period of 10mins followed by a resting phase in position of comfort for 40mins, repeating 4 such cycles until full dilatation of cervix. The control group was given conventional labour position. Thereafter the selected feto - maternal outcomes were assessed using a structured observational checklist, modified WHO partograph and standardized maternal satisfaction scale. **Results:** The results of the study revealed that the mean duration of labour in experimental group was shorter than the control group (Z value - 8.75 at  $p < 0.0001$ ), establishing a statistically significant difference in the duration of active stage of labour. The length of hospital stay was significantly reduced in the experimental group ( $p < 0.002$ ) as compared to the Control group. 97.4% mothers reported greater satisfaction with their birthing experience in the experimental group as compared to 16 (42%) in the control group ( $p < 0.0001$ ). **Conclusion:** The upright position during active phase of first stage of labour was effective in improving selected feto - maternal outcomes.

**Keywords:** Upright position, conventional labour position, Nulliparous women, selected feto - maternal outcomes

## 1. Introduction

Labour - the most awaited period in women's life. In many cultures it is believed that undergoing labour pains and delivering normally is like performing one Hajj (pilgrimage to Mecca & Madina). It has been an old saying that, "it's not that birth is painful, it's that the women are strong".

Every pregnant woman needs to understand how easily and exquisitely engineered labour and delivery are. It is crucial to follow the straightforward, physiological process of labour and birth with minimum interference, unless there is a clear medical indication, in order to maintain labour and birth as safe as possible and to reduce the risk of any complications.<sup>1</sup>

Nature has carefully organised the physiological process of birth. Women's bodies are built to develop, give birth, and care for young children. There are various physiologic changes that take place in the final weeks of pregnancy. The cervix starts to soften, enlarge, and efface. Oxytocin makes the uterine muscles more receptive. Strong uterine contractions cause pain, and this discomfort signals the brain to secrete huge amounts of the hormone oxytocin, which is necessary for powerful, efficient contractions. The sustained release of oxytocin is made possible by coping with the stronger contractions with exercise, rest, and other comforting techniques.<sup>2</sup>

Pain plays a critical role in how labour develops. The "nature's opioids" known as beta - endorphins are released when oxytocin levels are high. Women can manage the discomfort

of labour with the help of endorphins. This shows that nature does not abandon expectant mothers. This process is hindered by stress and anxiety. At this time, women need someone who will give them emotional support and make them feel safe.<sup>1</sup>

The first stage of labor typically lasts for 12 to 16 hours for primi mothers. Body positions that allow gravity to expedite dilation, such as walking, squatting, kneeling forward on a chair, or sitting, can frequently ease discomfort. This facilitates a quicker and less painful descent of the baby into the pelvis.<sup>3</sup>

The Ministry of Health and Family welfare, GOI launched an ambitious program LaQshya on 11<sup>th</sup> December 2017, which aims to enhance satisfaction of beneficiaries, positive birthing experience and provide respectful maternity care (RMC) to all pregnant women attending public health facilities.<sup>13</sup>

The National Institute for Health and Clinical Excellence (NICE) also suggests encouraging women to avoid lying down when giving delivery. The capacity to walk, stand, sit, and use vertical positions during labor and delivery has a long history. More upright postures for labor and delivery have been documented than any other positions.<sup>14</sup>

## 2. Subjects, Materials and Methods

### Subjects

76 Nulliparous women in active phase of first stage of labour (begins at about 4 cm of cervical dilation) participated in this study. They were selected randomly from selected tertiary

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care hospital of Western Maharashtra. Their ages were ranged from 18 to 35 years old. Their body mass index was not more than 35kg/m<sup>2</sup>. Their gestational ages were from 37 to 41 weeks. They were in active phase of first stage of labour. They were with single live fetus. The fetus was in cephalic presentation. They were without any pregnancy or medical complications. Women with history of previous abortion, preeclampsia or eclampsia, gestational diabetes mellitus, BMI over 35kg/m<sup>2</sup>, antepartum haemorrhage, premature rupture of membranes and malpresentation or malposition are excluded from the study. This study was conducted from Nov 2023 to Dec 2023.

### Data Collection Procedure

After formal written permission 76 samples were selected as per inclusion criteria. Rapport was established with the parturient and brief introduction about the study was given. Data collection was done for one month. The study subjects were selected by consecutive sampling technique with random allocation. After selecting the samples, the investigator gave brief introduction about self and purpose of the study to both groups of parturient and maintained good rapport to ensure that the mother is wide awake. After getting the consent, the intervention had been given to the experimental group.

The experimental group parturient were encouraged to walk for 10 minutes, sit for 10 minutes on a birthing stool followed by a period of 40 minutes rest in left lateral position and continue this for 4 times till full cervical dilatation.

The control group parturient were given routine position in the labor room that includes lying supine/left lateral/right lateral/semi fowlers position on bed, with ambulation only for toilet needs. Fetal & Maternal outcomes were assessed using modified WHO Partograph and observation checklist.

**Research Design:** a true experimental research, post - test only control group design

### Descriptive statistics:

- Frequency and percentage distribution was used to assess the demographic variables, and fetal and maternal outcome.
- Mean and standard deviation was used to analyse the maternal outcome of parturient

### Inferential statistics: -

Chi square for homogeneity of variables

ANNOVA for Association between duration of active stage of labor & demographic variable

Mann Whitney test to compare feto - maternal outcomes in experimental and control group Testing of hypothesis was done with p value of 0.05

### Statistical analysis:

### Descriptive statistics:

In this study, the descriptive statistics inform of mean and standard deviation was calculated for all women of the study to determine the homogeneity and central deviation.

### Analytic statistics:

In this study, the mean, standard deviation and standard error were calculated for all variables in both groups. Independent "t" test was used also to compare between pretest and posttest in each group. Comparison was applied by student T test to compare between the independent means. A value of p < 0.05 was considered statistically significant.

## 3. Results

Assessment of feto – maternal outcome among parturient mothers in experimental and control group

**Table 4.3.1:** Comparison of mode of delivery in experiment and control group, n=76

Mode of delivery	Experiment		Control	
	(f)	%	(f)	%
Normal vaginal delivery	7	18	4	10
Instrumental delivery	2	5	3	8
Normal vaginal delivery with episiotomy	26	69	23	61
Caesarean	3	8	8	21

Chi - square = 3.48, P=0.32

The data presented in table 4.3.1 reveals that majority of sample population in both the groups had normal vaginal delivery with episiotomy, experimental group 26 (69%) and 23 (61%) in control group. 7 (18%) of the sample population in the experimental group and 4 (10%) in the control group delivered vaginally without an episiotomy. There were 2 (5%) instrumental deliveries and 3 (8%) caesarean sections in experimental group however in the control group had 3 (8%) instrumental deliveries and 8 (21%) caesarean sections.

Indication of instrumental/LSCS delivery	Experiment		Control		p=0.20
	(f)	%	(f)	%	
Fetal distress	1	20	6	18.18	
Poor maternal effort, prolonged second stage (vacuum)	1	20	1	9.09	-
Arrest of descent of head in 2nd stage of labour	1	20	1	9.09	-
Delayed second stage (forceps)	1	20	1	9.09	-
Persistent variable deceleration	1	20	1	9.09	-

Although the findings were not statistically significant (P - 0.32) but clinically it can be stated that there was lesser frequency of instrumentation in the experimental group as compared to the control group.

**Table 4.3.3.** Frequency and percentage distribution of adverse immediate postpartum maternal outcomes in sample population (n=76)

Parameters	Experiment		Control		
	(f)	%	(f)	%	
Immediate postpartum complication	Yes (PPH)	-	-	2	5.26
	No	38	100	36	94.74

Table 4.3.3 depicts that although p value (0.49) was not statistically significant but there were no immediate complications of labor in the experimental group while 2 (5.26%) cases among the control group had PPH in the immediate postpartum period.

**Table 4.3.4:** Comparison of duration of active stage of labour in experiment and control group (n=76)

Active stage of labor	Experiment (n=38)		Control (n=38)		Z Value	P Value
	Mean	SD	Mean	SD		
Duration (Min.)	191.05	62.32	364.5	105.08	8.75	<0.0001

The above table 4.3.4 depicts that the duration of active stage of labor in both the groups. The mean duration of labor in experimental group was 191.05 mins with a SD of 62.32min and 364.5mins and SD of 105.08 min in the control group. The Mann Whitney test was computed to test the comparison of duration of active stage of labour in experimental and control group. Calculated Z value was 8.75 at level of significance  $p < 0.0001$ . Hence, there was a statistically significant difference in the duration of active stage of labor in the experimental group. Thereby, the alternate hypothesis that there is a difference in the mean duration of labor among nulliparous women in upright position vs conventional labor position during the active phase of first stage of labor is accepted and null hypothesis was rejected.

**Table 4.3.5:** Comparison of duration of 2<sup>nd</sup> stage of labour in experiment and control group (n=76)

2 <sup>nd</sup> stage of labor	Experiment (n=38)		Control (n=38)		Z Value	P Value
	Mean	SD	Mean	SD		
Duration (Min)	52.82	35.29	50.74	39.28	0.24	0.81

The table 4.3.5 above shows that in experimental group the mean duration of 2<sup>nd</sup> stage of labor is 52.82 min with SD of 35.29 min whereas in control group the mean duration of 2<sup>nd</sup> stage of labor is 50.74min with SD of 50.74. This shows there is no mean difference in duration of second stage of labor in both experimental and control group.

**Table 4.3.6:** Comparison of hospital stay in the Sample population (n=76)

Parameter	Experiment (n=38)		Control (n=38)		Z Value	P Value
	Mean	SD	Mean	SD		
Hosp. stay (days)	3.18	1.72	4.79	2.51	3.26	0.002

Table 4.3.6 above depicts, statistically significant ( $p < 0.002$ ) difference in the mean length of Hospital stay in experimental group (3.18 days) and SD 1.72, as compared to the control group (4.79 days) and SD 2.51.

The Mann Whitney test was computed to test the comparison of hospital stay in experimental and control group. Calculated Z value was 3.26 at level of significance  $p = 0.002$ . The hospital stay significantly reduced in the experimental group ( $p < 0.002$ ) as compared to the Control group.

**Table 4.3.7:** Frequency & percentage distribution of selected Fetal outcome among the sample population

Parameters		Experiment		Control	
		(f)	percentage	(f)	percentage
Fetal distress	Yes	1	2.63	5	13.16
	No	37	97.37	33	33
Neonatal resuscitation	Yes (DRCPAP)	-	-	1	2.36
	No	38	38	37	97.37
Admission to NICU	Yes (Fetal distress)	-	-	1	2.63
	No	38	38	37	97.37

Table 4.3.7 depicts that the most common adverse fetal outcome was Fetal Distress 6 (15.8%), out of which 5 (13.16%) were in the control group. In the control group 1 newborn required neonatal resuscitation while 1 required to be admitted to the NICU. Although, statistically insignificant ( $p$  value - 0.20) but the analysis reveals a lesser preponderance of the selected fetal adverse outcomes in the experimental group as compared to the control group

**Table 4.3.8:** Comparison of maternal satisfaction in the experimental and control group, (n=76)

	Experiment		Control	
	(f)	Percentage	(f)	percentage
Greater satisfaction	37	97.36	16	42.10
Lower satisfaction	1	2.63	22	57.89

Chi - square = 24.94,  $P < 0.0001$

Table 4.3.8 depicts the maternal satisfaction with the birthing experience among the sample population. Almost all of the women in the experimental group 37 (97.4%) reported greater satisfaction with their birthing experience, whereas in the control group only 16 (42%) women reported greater satisfaction. Statistically, it was proved that the Experimental group had a greater satisfaction than the control group ( $p < 0.0001$ ). Hence, the Null Hypothesis is rejected and alternate Hypothesis is accepted at a  $p$  value of  $< 0.0001$ .

#### 4. Discussion

A study showed strong concordance with the present study conducted by Kaur Rana, Chopra S. The study was to assess the effect of upright positions (standing, sitting) on the duration of first stage of labour among nulliparous mothers. Result of this review revealed that first stage of labour was approximately one hour shorter for women randomised to upright as opposed to recumbent positions. In this study only two positions were adopted i. e standing and sitting, while in my study there were a sequence of events, a resting time was also provided, which encouraged the parturient for a healthier birthing process.

Similarly a study conducted by Miquelutti et. al, documented that by administering different maternal upright positions (sitting, balloon - squatting, standing, walking) during labor, we can enhance the normal vaginal delivery, reduce the risk of operative delivery and prevent the perineal tear.

Midwives plays a pivotal role in providing comfortable and shorter duration of labor process (birthing process) among Nulliparous women which in turn enhance maternal satisfaction about birthing process.

It is an attempt towards promoting natural births and prevent prolonged labor and more specifically achieving satisfactory birthing process. Promoting natural births helps in empowering women to adopt desired position during labour process and preventing maternal exhaustion results in retaining the positive birth memories.

Area of concern included:

#### Individual level:

- Researcher: The study aided in identifying the gaps in the care given and the issues that labouring mothers encounter. It provides a strong evidence based practice to improve the quality of midwifery care services delivered to the mothers in labor.
- Client: From the perspective of the parturient mothers, the study helped to pinpoint the key factor determining maternal satisfaction and suggested actions that could be taken to enhance and improve that factor in order to offer respectful maternity care across the continuum.

#### Institutional level:

- The purpose of this study was to give expectant mother's a way to voice their preferences for birthing methods and to give service providers the knowledge they needed to raise the standard of care. It gave policymakers additional knowledge to help them pinpoint problems specifically and build solutions and top - notch nursing care delivery plans. This study served as a test case for new policies meant to improve the treatment of expectant mothers with respect.

#### Delimitations

This study is delimited to

- Mothers, delivering at the selected tertiary care hospital during the study period of 6 weeks.

#### Strength

- The following were the study's advantages:
- promoting a natural childbirth process will help shift the focus from obstetric care to maternity care.
- Randomized research to reduce prejudice among researchers
- Many labouring women prefer to be in upright postures.
- commodious labour process
- positive experience with birth
- A step taken towards compassionate maternity care
- Emphasis the value of nurse - led antenatal clinics for teaching about different upright positions.

#### 5. Limitation

- The limitation of the study are mentioned as follows
- Study is limited to labor room of one tertiary care hospital only
- The health care providers view remains unexplored and was not included in the study.

#### 6. Recommendations

The following suggestions for future practice and research are made in light of the inferred data.

- 1) To shorten the duration of the active phase of labour and to have a positive delivery experience, encourage

primigravida women to adopt upright positions such walking, standing, sitting, squatting, kneeling, etc. in the first stage of labour.

- 2) Choosing a posture during labour should follow a set routine during the intranatal stage, especially standing up.
- 3) Nurses must receive training in delivering the parturient in the position that she prefers.
- 4) A bigger environment may be used for a similar study.
- 5) To determine the impact of different complementary and alternative therapies on a positive delivery experience and a shorter labour.
- 6) Several settings can be used to perform similar research
- 7) The same study might be carried out in the same location with a different target population.
- 8) To educate expectant mothers about complementary and alternative therapies before giving birth, antenatal clinics should be set up on an institutional basis.
- 9) The different stages of labour throughout the intranatal period can be compared.
- 10) To expand the nurses' body of knowledge, regular bedside clinics and nursing rounds should be held.
- 11) Nurses who work in labour rooms should take refresher training on the most recent developments and WHO recommendations, such as the most recent Labor care guide, which calls for ambulation, positioning, and a birth companion during the labour process.
- 12) Continual encouragement to deliver high - quality care is given to those who work in maternity and child health.
- 13) The involvement of nurses in hospital planning and policy development.
- 14) Regular service evaluation would point out any flaws and assist the administration in adjusting the care to match what expectant mothers want.

The present study is an experimental study conducted to assess the effect of upright position on duration of active phase of first stage of labor among nulliparous women on selected fetomaternal outcomes in selected tertiary care hospital of western Maharashtra. simple random sampling was used to select 76 nulliparous women into experimental and control group. upright position was given to the experimental group whereas the control group received routine care. Data was collected by WHO modified partograph in respect of duration of active phase of first stage of labor and standardized maternal satisfaction scale was used to measure the satisfaction of birthing experience. Analysis of the data pertaining to duration of active phase of first stage of labour and maternal satisfaction about birthing process revealed that there is a significant statistical difference between the mean duration of active phase of first stage of labor and mean satisfaction score regarding maternal satisfaction about birthing experience and reduced hospital stay in experimental group compare to control group at the level of significance  $p < 0.0001$ ,  $p = 0.002$ , proving the effect of upright position in reducing the duration of active phase of first stage of labor which in turn enhances the maternal satisfaction about birthing experience and reduces the hospital stay.

Many studies were conducted by using various upright positions, but my study was more effective since an events of cycle was used, like standing for some time, ambulation,



sitting for some time duration and then resting in left lateral position, more over a positive reinforcement was used. The experimental group developed hope and trust on the researcher.

Hence Nurse led antenatal clinic could be arranged at an institutional level and multidisciplinary team could be introduced to provide pre - labor education about the complementary and alternative therapies like adoption of various upright positions, breathing and relaxation techniques to promote natural birth and provide comfortable shorter labor process and lifelong rememberable positive birth memories taking a step towards supporting respectful maternity care.

## 7. Conclusion

Significant statistical difference between score of experimental and control group during active phase of labour and maternal satisfaction about birthing process at level of significance  $p < 0.0001$ .

Upright position was effective in reducing the duration of active phase of labour and promoting maternal satisfaction about birthing process among Nulliparous women.

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