



Effectiveness of Non-Traditional Birthing Positions During Second Stage of Labor

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Abstract: It is a universal truth that women who are ready to give birth to their babies must engage in some form of physical activity, such as standing, walking, sitting, or kneeling, to allow for the “gravity effect” which helps in cervix dilation. Non-traditional positions have been used in various birth situations and are widely regarded as a potent, safe, and simple means of accelerating labour progress and improving maternal outcomes. The contemporary research aims at examining the usage and effect of the non-traditional birthing positions during the second stage of labour on maternal outcomes in second gravida mothers. Our findings reveal that the majority of parturient mothers (59%) have reduced second-stage labour duration, moderate pain (58%), cervical dilation (89%), rupture of membranes was spontaneous and the mode of delivery was normal which indicates that non-traditional positions were effective in improving maternal outcomes.

Keywords: Non-traditional positions, Second stage of labor, Maternal outcome, Second gravida mothers

1. Introduction

Natural childbirth is a unique component of physiologic processes that is often accompanied by opposing emotions of extreme pain and anguish on one hand and immense joy on the other. This is a procedure that all women go through. Labor is a physiological process which happens in between 37 and 42 weeks of pregnancy and results in the expulsion of the fetus, membranes, umbilical cord, and placenta from the uterus. One of the most important events in a woman's life is her labour. When such an occurrence has undesirable ramifications, it has a detrimental psychological effect not only on women but also on her family [1]. Conventionally, the events of labor are classified into four stages. First stage starts from the onset of true labor-pains and ends with complete cervical dilation. Second stage of labor begins with a complete dilation of the cervix and ends with the expulsion of fetus. After the fetus is expelled, the third stage begins with the placenta and membranes being expelled. The fourth stage is one hour of monitoring after the placenta and membranes have been expelled. Among the several phases of labour, the second is a particularly difficult one for the mother and

fetus, as well as for the caregivers. It's linked to the baby being delivered after the cervix has fully dilated. Nulliparous women had a median length of around 50 minutes, while multi-parous women have a median duration of about 20 minutes. The risk of maternal and fetal problems increases as the second stage of labour lasts longer. Prolonged second-stage labour or pushing, for example, has been linked to an increased risk of postpartum haemorrhage, surgical delivery, third and fourth-degree lacerations, poor Apgar scores, and infant asphyxia-related problems. Complications for both the mother and the baby that occur during this time can be fatal. As a result, in order to have safe vaginal births, it is necessary to regulate the second stage of labour [3,4].

Modern calls tend to minimize the need of pharmaceutical approaches and propose appropriate changes such as maternal positions, which help to reduce labor pains and limit the use of drugs. Recently, call for natural delivery has switched their focus from pain management to the midwifery model, which covers all aspects of care, including psychological, emotional, and spiritual ones. The goal of maternal care during the different stages of labor, especially the second stage, should be targeted towards the promotion of maternal and fetal well-being. This, however, necessitates midwives being taught in a way that allows them to respect women's preferences while still suggesting the most optimal delivering position. Typically, there are five main non-traditional birthing positions which are often taken into account: hand and knees, sitting, squatting, side-lying and upright positions. These labor positions can be used to change the pace of labor, encourage comfort and relaxation and help labor progress. Parturient mothers tend to find non-traditional birthing positions most comfortable. The act of changing positions may give women a sense of control by providing something active to do throughout labour process to help them feel less overwhelmed. Among the aforementioned birthing positions, the upright position is the premiere one, which was most commonly adopted in the Western countries. Physiological and anatomical modifications caused by upright postures have an impact on other labor-related factors such as power, passage, passenger, and psyche [5]. It also controls uterine contractions' features and efficacy, fetal health, women's comfort, and labour progress. These positions have been shown to improve the delivery process, aid relaxation, and reduce pain perception [6,7]. According to a report from the World Health Organization (WHO), women at low risk should be encouraged to prioritise movement and a standing position during birthing. Furthermore, the major international scientific organizations advise women to avoid the supine posture, which has been related to hypotension and irregularities in the foetal heart rate (FHR), and to encourage them to pick whichever postures they feel most comfortable in [8]. It is critical to emphasise that, despite the fact that there is no one-size-fits-all posture that works for every woman, there are a variety of positions from which a woman may select; no position should be forced or disallowed during intrapartum care. Maternal upright postures and mobility are linked to various factors in birth mechanics, including pelvic type, foetal position and attitude, uterine contractions, gravity force, and the woman's choices and emotional sentiments [6,9].

As of now, many lucubrations have examined the relationship between non-traditional birthing positions and labour outcomes. In fact, such studies emphasize the role of these positions in: enabling optimal fetal placement, supporting fetal well-being, making pain more bearable and boosting maternal satisfaction, minimizing perineal trauma, influencing blood loss, lowering the usage of surgical vaginal delivery, and building the couple's empathetic bond with the midwife [10]. The effects of these labour positions on maternal-fetal and infant outcomes are rarely agreed upon, and research in this field is frequently contradictory and scattered [1,4,5]. The "gravity effect," which has been shown to reduce aortocaval compression, improve uterine contractions, favour better fetal alignment in the birth canal, and increase pelvic outlet diameters, all of which reduce intrapartum maternal and neonatal complications, may benefit from the upright positions [11].

Individual studies, systematic reviews, and meta-analyses provide validation on scientific grounds regarding the importance of non- positions and unrestricted mobility during labor. Since of the diversity of the studies featured and the difficulties of conducting randomized trials because women in labour do not stay in the same position for long periods of time, the conclusions are sometimes fragmented and not firm. Furthermore, even the most extensive analyses of maternal postures in labour occasionally compare the findings of the lithotomy position to all others, which are collectively referred to as “upright positions,” undermining the distinctiveness and significance of each individual position. Indeed, combining all the positions into a single group does not allow highlighting the peculiarity of each one and the adequacy of one with respect to another during a specific moment of labor. Regardless of the challenges encountered in conducting trials, it cannot be disputed that upright positions and movement during labour are excellent obstetric practices, intended as verifiable procedures with varying and particular effects throughout labour [12]. The midwife, as a physiology promoter, should understand, be proficient in, and support the use of free positions throughout labour and delivery [6,7]. The aim of this study is to investigate the effectiveness of non-traditional birthing positions on maternal outcome during second stage of labor.

2. Significance and Objectives of the Study

Indeed, there is a growing demand for more natural, normal childbirth and non-pharmacological methods for managing childbirth. It is in our human inclination to take steps to alleviate discomfort as soon as it is noticed. Positions are the only non-pharmacological technique that does not require the presence of a nurse because it may be done by the mother herself. The goal of modern obstetrics is to compare the mother's and foetus' quality of life and to reduce maternal and newborn morbidity and mortality. Midwives are in a unique position to offer support and advocate for the delivering woman, as well as provide high-quality, evidence-based care to both the mother and the foetus during the birthing process, because they are present with her during the whole labour period. Midwives should be aware of the advantages and risks of different birthing positions, which can help to expedite the birthing process and improve maternal-infant outcomes. Based on more current knowledge concerning typical labor parameters of parturient women, new labour guidelines could prove beneficial in facilitating vaginal delivery by allowing labour to proceed (Simpson, 2016). However, prolonged labor may cause increased risks of maternal fatigue, postpartum haemorrhage, sepsis, fetal distress, and hypoxia, higher maternal and newborn mortality and morbidity, and needs early identification and adequate therapeutic care (Martin, 2015)[14]. On the flip side, cesarean delivery is linked to a higher risk for the mother in contrast to the vaginal birth. These risks include maternal mortality and morbidity, adhesions, placental anomalies (placenta previa and placenta accreta), postpartum haemorrhage, blood transfusions, surgical injuries, unexpected hysterectomy, uterine rupture, and hospitalization to the critical care unit (Curtin, 2015). As a result, the purpose of this study is to assess the merits of non-traditional postures throughout the second stage of labour [13]. The core objectives are mentioned below:

- To examine the effect of non-traditional birthing positions on maternal outcome during the second stage of labor among second gravida mothers in experimental group.
- To compare the effect of non-traditional birthing positions and conventional birthing positions on maternal outcome during the second stage of labor among second gravida mothers in experimental and control groups.

(A). Materials and Methods

In order to accomplish the objectives, we carried out the investigation at the labor unit of the Government Maternity Hospital, Anantnag by adopting the quasi-experimental research approach. Different data collecting tools have been employed during the course of investigation, which are explicitly mentioned below:

- (i) *Structured Interview Schedule*: The researchers created this section, which included ten questions regarding the women's basic characteristics, such as age, education, working status, residential area, habit of doing exercise, type of exercise, duration of exercise, gestational age, and weight gain throughout pregnancy. The researcher completed this tool during the first stage of labour.
- (ii) *Observational checklist*: The researchers employed this tool to track the progress of labour, the mode of delivery, and the length of labour.
- (iii) *Visual analog pain severity scale (VAS)*: The researchers approved and used McCaffery and Pasero's (1999) standardised linear scale to assess pain severity before and after intervention. The subjective pain intensity level is represented by a 10 cm long horizontal line. It uses a 0-to-10 point scale, with 0 signifying no pain, (1-3) mild pain, (4-6) moderate pain, and (7-10) severe pain.

Moreover, purposive sampling was also employed to choose a group of 240 parturient mothers, who were randomly separated into two equal groups.

- (i) *Sampling Criteria*: Parturient women were recruited in the current study according to the following inclusion criteria:
 - Second Gravida mothers free from medical and obstetric problems in the current labor,
 - Who are in second stage of labour with cervical dilatation 8 cm per vaginal findings
 - Having spontaneous labor without anesthesia
 - Full term more than 37 weeks of gestation,
 - Singleton pregnancy,
 - Cephalic presentation,
 - Ready to take part in the study.
- (ii). *Exclusion Criteria*: Women with complicated pregnancy like obstructed labour, multiple pregnancies and preterm labour and Planned for elective caesarean section.

The subjects were assigned, after having fulfilled the previous criteria, into two equal groups according to women's preferring selected positions:

- *Experimental Group (N=120)*: Assumed different non-traditional birthing positions such as (walking, standing, sitting, kneeling and squatting) during second stage of labor.
- *Control Group (N=120)*: Assumed conventional position as (supine, semi recumbent) during second stage of labor.

(B). Ethical Considerations

Ethical approval was obtained from the institutional ethical committee. Approval of parturient women was obtained. Parturient ladies were guaranteed that the information gathered would be kept private and utilized solely for research purposes. Each study subject is free to withdraw at any throughout the time of data collection.

3. Outcomes of the Study

During the course of action, the investigating team analyzed both the demographic and the clinical variables. The obtained data was evaluated using several statistical tools, and the following is a full perspective: according to certain demographic variables like age, education, working status, residential area, previous information, source of information, food pattern, habit of doing regular exercise, type of exercise and duration of exercise per day. The demographic variables showed that majority of the parturient mothers in both the experimental and control groups were between the ages of 31 and 40, were graduates, unemployed, non-vegetarians, lived in a semi-urban area, had received no prior details concerning upright birthing positions, and had a habit of walking less than 1 hour. With the exception of age and education in control group, the parturient women were classified in the same way as the experimental group in terms of demographic parameters. The majorities of parturient mothers in control group were lying in the age group of 21-30 years, and had completed higher secondary education.

The statistical comparison of maternal outcome between the experimental group and the control group is given in Table 1.

S. No	Labour Outcome	Experimental Group (N=120)		Control Group (N=120)		Mean Difference	t-value/p-value
		Mean	Standard Deviation	Mean	Standard Deviation		
1.	Duration of labour	1.41	0.494	2.04	0.571	-0.633	t = -9.193 p = 0.000(S)
2.	Rate of cervical dilation	2.11	0.312	1.75	0.802	0.358	t = 4.562 p = 0.000
3.	Pain during labor	1.58	0.495	2.09	0.810	-0.508	t = -5.868 p = 0.000
4.	Rupture of membrane	1.01	0.091	1.12	0.322	-0.108	t = -3.542 p = 0.001
5.	Mode of delivery	1.41	0.628	1.75	0.664	-0.342	t = -4.093 p = 0.000

1. *Duration of Labor:* Table 1 illustrates that in the experimental group, majority of mothers (59%) had less than 1 hour of labor duration, while as in the control group majority of mothers (68%) had 1 hour labor duration.

2. *Rate of Cervical Dilation:* In the experimental group, majority of mothers (89%) had normal cervical dilatation rate; that is, 1cm/hr, while as in control group majority of mothers (47%) had less than 1cm/hr cervical dilatation rate.

3. *Pain During Labor:* Considering the pain during labor, majority of parturient mothers (58%) had moderate level of pain during labor. In the control group, majority of mothers (38% and 34%) had severe and moderate level of pain during labor.

4. *Rupture of Membranes:* While considering rupture of membranes, majority of mothers (99.1% and 88.3%) had spontaneous rupture of membranes in both groups respectively.

5. *Mode of Delivery:* Regarding mode of delivery, maximum number of parturient mothers (67% and 50%) had normal vaginal delivery in both groups, respectively.

When the duration of labor in both groups was compared, the mean score was 1.41-2.04, and the computed “t value” was -9.193, which was higher than the table value and showed a large statistically significant difference in labor duration at 0.05 level of significance. It reveals that giving birth in an upright position shortens duration of labour. In terms of cervical dilatation rate, the experimental group had a mean score of 2.11, whereas the control group had a score of 1.75. The experimental group had a mean score of 1.58 for pain during labour, while the control group had a score of 2.59. The study reveals that there was a highly statistical significant difference ($p < 0.001$) among the experimental and control groups in the mean labour duration, rate of cervical dilatation, strength of uterine contractions, rupture of membranes, and mode of delivery.

4. Discussion

The core aim of this study is to examine the effect of non-traditional birthing positions on maternal outcome during second stage of labor among second gravida mothers. The investigation demonstrates that among the non-traditional birthing positions, the non-traditional birthing positions, when compared with conventional position (recumbent), had significant effect on maternal outcome. Calculated “t value” of all parameters was greater than tabulated value. So non-traditional birthing positions had significant effect on maternal outcome at ($p < 0.05$) level of significance. The outcomes of this study show that there is a highly statistically significant difference ($p < 0.001$) between the experimental and control groups in the mean labour duration, rate of cervical dilatation, intensity of uterine contractions, rupture of membranes, and mode of delivery. The findings are in accordance to the arguments of Hafez (2017), that gravity increases the duration, intensity and frequency of uterine contractions. Moreover, the outcomes further endorse the findings of Martin and Martin (2013), who reported that changing positions and attaining an upright position during the second stage of labour enhances contraction effectiveness and comfort, reduces pain, shortens labour, and improves maternal satisfaction [14,15]. In terms of spanning time of labour stages, a highly statistically significant difference ($p < 0.001$) between the first and second stage of labour is observed. The mean duration of the experimental group was lower in comparison to the control group. This might be owing to the efficient impact of upright positions.

The findings are also supported by Gizzo, et al. (2014), who found statistically significant variations ($p < 0.001$) in the average duration of both first and second labour stages. The experimental group mean duration was lower in comparison to the control group. These findings are consistent with those of Meena (2017), who studied the effectiveness of ambulation in lowering labour pain in pregnant women at Kullu's regional hospital. The observations demonstrated that ambulation therapy is significant in curtailing the reducing labour pain and that there was a high statistically significant difference ($p < 0.001$) in the overall spanning time of the various stages of labour among the studied groups [16,17]. The obtained results are also consistent with Kripke (2010), who asserted that women maintaining the upright positions (walking, standing, sitting, kneeling, and squatting) slept one hour less than women who slept recumbently. As a result, upright postures are effective in giving relief from long periods of recumbent position [18].

Nonetheless, this study's conclusions are supported by a number of other investigations. For instance, Chopra et al. (2013) conducted a study in a labour room of a postgraduate institute of medicine, where the progress of labour was monitored using a Partograph, and found that the second stage of labour in the upright group was two hours narrower than in the recumbent group. According to the findings, maintaining upright postures throughout the second stage of labour minimizes labour duration [19]. Also, according to Searle

(2010), upright positions aid to curtail the duration of the second stage of labour, the number of assisted births, the number of episiotomies, discomfort, mother comfort, and partner engagement. The results of this article are in line with those of Kumud et al. (2013), who observed that maintaining upright positions throughout the second stage of labour shortens the labour time. Besides, the outcomes of this study are also in consistency to the Cochrane study done by Letshko (2011), who examined the upright positions against the recumbent positions and asserted that the upright group, which included sitting, standing, walking, and kneeling, had shorter labour duration than the recumbent group [20,21].

5. Conclusion

Following the investigation, the following essential facts may be deduced: the non-traditional birthing postures are useful for predicting cervical dilatation rate progression, reducing labour time, increasing the frequency and strength of uterine contractions, minimizing labour pain, promoting normal vaginal delivery, and improving parturient women's pleasure. Among the non-traditional postures, the upright positions are found to be more effective. This improved maternal outcome should be addressed among health-care personnel who assist women throughout labour and delivery. The findings of this study have several implications for nursing practice, nursing education, nursing administration, and nursing research. Below, we provide a description of such implications:

(A). Nursing Implications:

Midwives working in maternity units serve a critical role in delivering appropriate and safe nursing care to laboring mothers so as to increase maternal comfort, labour results, and perception of labour discomfort. This could be made easier if the nurse midwife practitioner is encouraged to:

- Develop thorough understanding of physiological changes and labour management.
- Improve your ability to provide effective nursing attention for appropriate pain control and comfort in the process of delivery.
- Recognize the importance of persuading caregivers to use non-traditional positions in the process of birthing, which are quite dependable and may be used throughout the first and second stages of labour in the clinical setting to achieve a successful labor outcome.

(B). Nursing Education:

The nurse educator is responsible for introducing evidence-based guidelines into the labour and delivery unit. The nurse administrator should educate all labour and delivery nurses on the importance of upright birthing postures. Through different in-service education programmes, seminars, and conferences, nursing schools must provide opportunity for nursing students and practising nurses to be exposed to the practice of non-traditional birthing positions throughout labour. On non-traditional delivery positions, audio visual tool, such as pamphlets, flash cards might be produced to teach the parturient moms.

(C). Nursing Administration:

The nurse administrator should disseminate the necessary information to all the nurses who are attending their duties in the labour unit. Indeed, the nurse administrator plays a vital role in educating parturient moms about the need of using non-traditional birthing positions during the second stage of labour. The nurse administrator may advise to the Chief Medical Officer that Continuing Nursing Education programmes on the effects of non-

traditional birthing postures on labour outcomes during the second stage of labour be organized. All nurses working in the labor unit should be taught about non-traditional birthing positions by the nurse administrator.

(D). Nursing Research:

The nurse midwife researcher should do the following:

- Encourage nurse practitioners and student nurses to employ Evidence Based Practice (EBP) in clinical settings by disseminating the study's findings to them via the internet, journals, and literature.
- Present the study's findings at conferences, seminars, and workshops in the form of a paper or a poster.
- Encourage the staff nurses to implement the study findings in the care of similar parturient mothers and expand the scope of EBP.

6. Recommendations:

The following suggestions are made in light of the findings of this study:

1. Encourage parturient mothers to use non-traditional birthing postures during second stage of labor.
2. Parturient moms should be encouraged to pick a position that is most comfortable for them. Researchers should adopt research designs that allow women to pick their preferred delivering position if they wish to compare different delivery positions.
3. Developing an educational program for pregnant women regarding the benefits of non-traditional positions for both mothers and newborns through posters, videos, brochures or pamphlets at antenatal clinics to improve the parturient women's awareness.
4. Apply the study's findings to the development of health education programmes in hospitals, community health centers, and other public places.
5. To determine the usefulness of various other non-traditional postures on labour outcomes (kneeling, squatting, standing, hand-knee), a comparison study might be undertaken.

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