

# Effectiveness of Squatting Position on the Duration of Labor and Maternal Satisfaction among Primi Gravida Mothers: A Mixed Method Approach

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## Abstract

**Background:** Maternal positioning affects all views of labor including the power, passenger, passage, and the psyche. The position of the woman during the labor could be freely modified according to her desires and comfort.

**Aim:** The aim of the study was to evaluate the effectiveness of squatting position on the duration of first stage of labor and the maternal satisfaction with the position.

**Materials and Methods:** A mixed method approach was adopted and the duration of active phase of labor was assessed for the 40 samples. In-depth interview was taken to explore the concern and satisfaction of the mothers with the squatting position.

**Results:** Major findings of the study revealed that the mean duration of the active labor of the experimental group was 224.75 min  $\pm$  15.96 while that of the control group was 253.25 min  $\pm$  27.24. The mean difference was calculated to be 28.25 and the standard error was found to be 7.06. At the level of  $P < 0.005$ , the computed “t” value was 4.03 at the degree of freedom 38. Thus, as per the analysis, squatting position was found to be effective in reducing the duration of active phase of labor. During the qualitative analysis, five themes emerged were experience of mothers, effectiveness of squatting position, issues while squatting, respectful care during the childbirth, and recommendations.

**Conclusion:** The study illustrates that most of the primi-gravida mothers had positive attitude toward squatting and preferred supportive squatting. The study concluded that squatting is an effective position which needs to be encouraged during active labor.

**Keywords:** Duration of labor, maternal satisfaction, Primi-gravida mothers, squatting position

## BACKGROUND

Birth brings you face-to-face with your insecurities, doubts, inadequacies and fear, as well as with your joy, determination,

willingness, and courage. The process of labor for each woman has its own unique ebbs and flows; it may last from few hours to few days starting from rhythmic uterine contraction up to the birth of the baby and placenta thereafter.

Women often “choose” to do what is expected of them, and the most common picture which one can frame of the laboring woman is “on the bed.” The recumbent position (supine, semi-recumbent, and lateral) provides easy access for the nurses to monitor the progress of labor but these positions reduce the uterine activity. Laboring women need to be encouraged to move freely and adopt any position which they are comfortable in.<sup>[1]</sup> Thus, “Getting her off the bed” is something which needs to be encouraged by the midwives.<sup>[2]</sup>

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Upright positions (walking, standing, sitting, kneeling, squatting, and rocking hips) during labor and birthing have always shown positive results in terms to improved maternal outcomes and an optimal progress in labor.<sup>[3]</sup> With gravity at work, baby has better and a quicker chance of coming out and resulting in increased maternal satisfaction.<sup>[4]</sup> American College of Obstetrics and Gynecologists suggests that there be “no one position that needs to be mandated nor prescribed” when a woman is giving birth. Many a time’s birthing mothers are confined to recumbent positions against her wish<sup>[5]</sup> which makes them feel out of control which may even lead to negative perceptions of birth, increased risk of postpartum depression and fear<sup>[6]</sup> of subsequent birth, and the unwillingness to have another baby. Once the birthing mother finds comfortable position, she starts to feel control of the labor and control over the contractions there by increasing the satisfaction of the mother and their well-being.<sup>[7]</sup>

## Objectives

The objectives of the study are as follows:

- i. To assess the effectiveness of squatting position/routine care on the duration of labor among primi gravida mother.
- ii. To gain a deeper understanding of the satisfaction and concern of the primi gravida mother with the squatting position.

With this aim in mind the study was conducted to find the alternative positions during labor which are not only beneficial to the mothers but also are comfortable and satisfactory for them.

## MATERIALS AND METHODS

Mixed method approach was adopted. The study was conducted on 40 primi gravida mothers in active phase of labor which were selected through non-probability purposive sampling technique.

### Study tool

The tool used for the study was WHO modified partograph and semi-structured questionnaire. It consisted of three sections –

- Section A: Sociodemographic variables such as age, educational status, occupational status, monthly income, type of family, and religion.
- Section B: Clinical variables such as gestational age, total antenatal visits, family member present during first stage, knowledge about squatting, position adopted during first stage of labor, comfort with the position adopted, information about labor progress, respectful nursing care, and preference of selective exercises during first stage to promote labor process were used for obtaining information regarding the obstetrical profile.
- Section C: The WHO modified partograph with the time frame. Standardized tool developed by E.A. Friedman and recommended by the WHO to monitor the progress of labor.
- Section D: Self semi-structured questionnaire consisted of six main questions related to the experience, satisfaction,

and concern of the mother with the squatting position were used to explore the experience and satisfaction of the primi gravida mothers with the squatting position during active phase of labor.

### Procedure for data collection

The written permission was taken from the concerned authority of the government hospital, Indore. The samples were selected as per the inclusion criteria of the study. The data collection procedure of the quantitative apart of the study was divided in to pre-intervention, intervention, and post-intervention.

#### Pre-intervention

- Samples were selected after taking permission from the authorities
- A total of 40 samples were selected through non-randomized purposive sampling.
- Then, these 40 samples were randomly assigned (through alternate method) in to experimental group ( $n = 20$ ) and control group ( $n = 20$ ).
- Samples were explained about the purpose of the study and informed consent was taken.
- Time of the active phase of labor (cervical dilatation of 5–6 cm) was recorded in the tool.

#### Intervention

- Experimental group: At the time of contractions, samples were helped to sit in squatting posture for approximately 1–2 min. Thus, on an average, every sample was in squatting position for 10–15 min every hour during active phase of labor
- Control group: Samples were given routine care/position.

#### Post-intervention

- The time of the full dilatation of the cervix was observed and documented in the tool to evaluate the effectiveness of squatting position on the duration of active phase of labor.

While for the qualitative strand of the study, samples were drawn from the quantitative study till the data saturation (six samples). The purpose of the study was explained to the mothers, consent was taken, confidentiality was maintained, and verbatim recording was done according to the comfort of the mother. Semi-structured indepth interview was used for collecting the qualitative data. The researcher organized mutually convenient interview schedules with the mothers. In this context, each mother was encouraged to express their feelings, experiences, and satisfaction with the squatting position. During the interview, close attention was also paid to the non-verbal cues of the mother which could be the sign of either comfort or discomfort. The initial interview questions were proceeded by the open ended questions which provided the mothers opportunity to share their personal experiences.

## RESULTS

Data were presented as frequency and percentages, mean, standard deviation, and standard error. Un-paired t test was used to compare means of the groups. The qualitative data were analyzed by generating a code book for the preparation of themes and sub themes. The final results of the analysis were brought together and interpretation of the entire analysis was done by embedding the qual data in the QUAN data and then deriving the final inferences of the study.

### Demographic variables of the primi-gravida mothers

Total six items were assessed to collect baseline data about the primi gravida mothers. It includes demographic variables such as age, educational status, occupational status, monthly income, type of family, and religion.

Table 1 depicts the maximum samples in both group were from the age group 21–26 years, and majority of the samples in experimental group had primary and middle educational level while majority of samples in control group had secondary educational qualification. Table 2 depicts that majority of the samples in both the groups were home makers and had a monthly income of 5000–10000 rupees. Table 3 reveals that majority of the samples in experimental and control group belonged to joint family and followed Hindu religion.

### Clinical variables of the primi-gravida mothers

Table 4 depicts the distribution of the samples according to their clinical variables such as gestational week, antenatal visit, companion during first stage, information about first stage of

labor, position during labor, respectful maternity care, comfort level with the position, formation about the labor progress, and selective exercises during labor.

### Duration of the active phase of labor

The duration of labor was assessed and the samples were distributed into the different categories depending on the duration of active phase of labor. Table 5 depicts the distribution of samples according to their duration of active of phase of labor.

Figure 1 depicts that in the experimental group, the majority 12 (60%) of the samples had their duration of active phase of labor between 180 and 240 min. Where as in the control group, the majority 14 (70%) of the samples had their duration of active phase of labor between 240 and 300 min.

Table 6 depicts the comparative data showing the effectiveness of squatting position on the duration of active phase of labor. The mean duration of the active labor of the experimental group was 224.75 min.  $\pm$  15.96 while that of the control group was 253.25 min  $\pm$  27.24. The mean difference was calculated to be 28.25 and the standard error was found to be 7.06. The computed “t” value was 4.03 at the degree of freedom 38 at the level of  $P < 0.005$ .

This indicates that there is a significant difference in the duration of active of labor as measured by the WHO modified partograph with the time frame at the level of  $P < 0.05$ . Hence, it was inferred that the squatting position was effective in reducing the duration of active phase of labor.

**Table 1: Frequency and percentage distribution of the demographic variables of primi gravida mother ( $n=20+20$ )**

Variable	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Age				
a. <21 years	5	25	7	35
b. 21–26 years	11	55	13	65
c. 26–31 years	2	10	0	0
d. >31 years	2	10	0	0
Educational status				
a. Not been to school	1	5	3	15
b. Primary (1–5)	1	5	4	20
c. Middle (6–8)	5	25	4	20
d. Secondary (9–10)	5	25	6	30
e. Higher Secondary	4	20	0	0
f. Graduate or above	4	20	3	15

**Table 2: Frequency and percentage distribution of the demographic variables of primi gravida mothers: Occupation and family income ( $n=20+20$ )**

Variable	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Occupational status				
a. Employed	7	35	6	30
b. Home Maker	13	65	14	70
Monthly family income				
a. <5000	1	5	0	0
b. 5000–10,000	12	60	13	65
c. 10,000–15,000	6	30	3	15
d. >15,000	1	5	4	20

**Table 3: Frequency and percentage distribution of the sociodemographic variables of primi gravida mothers: Type of family and religion ( $n=20+20$ )**

Variable	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Type of family				
a. Joint	12	60	15	75
b. Nuclear	8	40	5	25
Religion				
a. Hindu	15	75	14	70
b. Muslim	5	25	6	30

**Table 4: Frequency and percentage distribution of the clinical variables of primi gravida mothers ( $n=20+20$ )**

Variable	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
Gestational age				
a. 36–38 weeks	14	70	13	65
b. 38–40 weeks	6	30	7	35
Antenatal visit				
a. <2 visit	2	10	0	0
b. 2–4 visits	8	40	10	50
c. >4 visits	10	50	10	50
Companion during first stage of labour				
a. Yes	19	95	18	90
b. No	1	5	2	10
Family member present was				
a. Mother	8	40	11	55
b. Husband	2	10	0	0
c. Mother-in-law	5	25	5	25
d. Others	4	20	2	10
Have you ever heard about squatting during first stage of labour?				
a. Yes	4	20	3	15
b. No	16	80	17	85
Were you allowed to adopt any position during first stage of labour?				
a. Yes	20	100	2	10
b. No	0	0	18	90
Were you comfortable in the position you adopted during first stage of labour				
a. Yes	17	85	5	25
b. No	3	15	15	75
Were you given respectful nursing care during first stage of labour?				
a. Yes	16	80	12	60
b. No	4	20	8	40
Were you informed about labour progress during first stage of labour?				
a. Yes	14	70	13	65
b. No	8	40	7	35
Will you prefer selective exercises during first stage of labour?				
a. Yes	17	85	16	80
b. No	3	15	4	20

### Emerg ed categories and themes

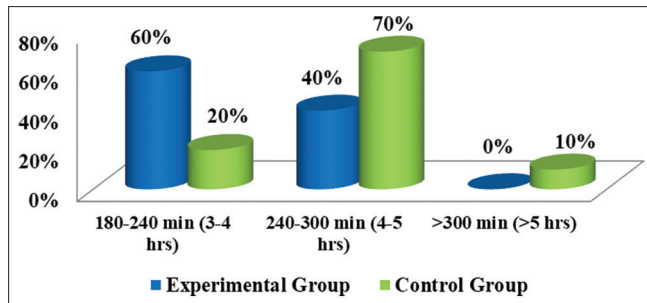
The findings of the qualitative aspect of the study reveal that on the basis of data analysis major five themes emerged.

1. Theme 1: Experience of the mothers describes that squatting was associated with the positive feelings and it was a unique experience for the mothers. Mothers had a positive attitude toward squatting.
2. Theme 2: Effectiveness of squatting reveals that the squatting position is effective in decreasing the duration of labor, increasing the cervical dilatation, decreasing the labor pains, and increasing the fetal descent.
3. Theme 3: Issues while squatting describes that there were certain issues which the mothers experienced. Most of the mothers heard about squatting for the first time, some of the mothers even felt scared and anxious which made them reluctant to squat. Most of the mothers were afraid and worried that squatting would harm them or their unborn baby.
4. Theme 4: Respectful care during childbirth explains that the mothers were satisfied with the care they had received during the first stage of labor. They expressed that their concerns, anxieties were heard and resolved. Most of the mothers had felt cared and were not forced to be on bed.

**Table 5: Frequency and percentage distribution of the duration of active phase of labor of primi gravida mothers (n=20+20)**

Duration of labor	Experimental group		Control group	
	Frequency	Percentage	Frequency	Percentage
180–240 min. (3–4 h)	12	60	4	20
240–300 min. (4–5 h)	8	40	14	70
>300 min. (>5 h)	0	0	2	10

\*unpaired t-test

**Figure 1:** Cylindrical graph showing the percentage distribution of duration of active phase of labor

Most of the mothers even expressed that they were timely informed about their labor progress.

- Theme 5: Recommendations describes that almost all the pain bearing mothers recommended that other pain bearing women should also do squats for the labor progress. Some of the mothers even suggested that squatting was more comfortable and satisfactory when practiced with someone's support.

## DISCUSSION

Kumud and Chopra,<sup>[8]</sup> carried out research to discover whether or not standing up the time between contractions during the early stage of labor shortens the overall duration of the process for mothers who have never given birth before. The primary takeaways from the research were that the duration of the active period of the first stage of labor ranged between 201 and 400 min for 93.3% of the participants in the experimental group, but only 63.3% of the participants in the control group. While none of the subjects in the experimental group experienced an active period of the first stage of labor lasting longer than 400 min, 36.3% of the subjects in the control group did. The Chi-square test revealed that the decline in significance was statistically significant ( $P = 0.001$ ). According to the results of an independent t-test, the mean duration in the experimental group was  $241.33 \pm 36.46$  minutes, while the mean duration in the control group was  $365.83 \pm 103.10$  min ( $P = 0.001$ ). The reduction in the average amount of time needed for labor was 125.5 min. The findings of this study led the researchers to the conclusion that maintaining upright positions throughout the initial stage of labor shortens the total duration of labor.

The themes generated in the present study are also well supported with the qualitative systematic review conducted by

Downe *et al.*<sup>[9]</sup> to investigate and characterize what aspects of labor and delivery are significant to women who are otherwise healthy. According to the findings of the study, women all over the world share a common goal: They want to have a labor and birth experience in which they are able to use their own physical and psychosocial capacities to give birth, while also receiving consistent support from a birth partner. This goal was identified as the most important aspect of the labor and birth experience. The research was condensed into three broad themes, which were as follows: Wishing for a happy delivery experience, anticipating triumph and happiness, fearing pain and abandonment, and enduring the influence of familial and societal natal norms.

The present study was supported by a study that was carried out in 2015 by Carol<sup>[10]</sup> to assess the peanut ball's effectiveness on the length of the first and second stages of labor as well as maternal satisfaction with the peanut ball among primi and multi-pregnant moms at a Kentucky acute care hospital.<sup>[10]</sup> The study was carried out to assess the effectiveness of the peanut ball on the duration of the first and second stages of labor. Reviewing the medical records of the patients was the primary method of data collection, but qualitative information was also gathered. According to the findings of the qualitative research, 64% of the women who used peanut ball said that it sped up the progression of labor, and 71% of those women said that they would recommend using peanut ball to other women. The primary ideas that emerged from the analysis of the qualitative data were comfort supplied, assistance with progressing labor, assistance with placing labor, and recommendations.

The findings were even corroborated by the qualitative content analysis that was carried out by Boryri *et al.*,<sup>[11]</sup> 2016 to investigate the experiences of primi parous mothers with relation to natural childbirth concerns.<sup>[11]</sup> This study was performed to find out more about the challenges that first-time mothers face during natural childbirth. After doing an analysis of the data, the researchers came up with four primary themes: "Fear and anxiety from labor pain; lack of information and not knowing how labor and the delivery room work; need for support from husband, family, friends, and midwives."

The present study is supported by a qualitative study by De Jonge and Lagro-Janssen<sup>[12]</sup> 2004, to the perspectives of women regarding the different positions during childbirth. According to the findings of the study, women have a greater variety of options when working with midwives. The results of the research indicated that the guidance provided by midwives was



**Table 6: Comparative data showing the effectiveness of squatting position on the duration of active phase of labor among the primi gravida mothers (n=20+20)**

Groups	Mean	Mean difference	SD	SE	df	Calculated 't' value	Table 't' value
Experimental group	224.75	28.25	15.96	7.06	38	4.03	2.0244
Control group	253.25		27.27				*S

\* $P \leq 0.05$  S: Significant

the most significant factor in terms of having an effect on the selection of the method of childbirth. As a result, they have a responsibility to assist the women in assuming the position in which they feel the most at ease.

Squatting was found to have great benefits in terms of reducing the duration of active phase of labor.

## CONCLUSION

During labor, the nurses and midwives need to be equipped with knowledge about the squatting posture, and they need to be encouraged to assist the women in adopting a position that is most comfortable for them. During the active phase of labor, they need to concentrate on adopting upright positions, which can not only speed up the rate of uterine contractions but also shorten the total time of labor.<sup>[13]</sup>

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## CONFLICTS OF INTEREST

None.

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