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A Comparative Study to Assess the Progress of Labour by Plotting of Partograph Among Parturient Women Provided with Lithotomy and Upright Position During 1st and 2nd Stage of Labour in Selected Hospital, Durg, Chhattisgarh

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***Abstract*: This paper presents a comparative study to assess the progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour in selected hospital, Durg, Chhattisgarh.**

***Keywords*: Labour, Parturient Women.**

1. Introduction

In order to achieve the objectives of the study, a comparative research design with randomized techniques was adopted.

A. Objectives

1. To find out the progress of labour by plotting of partograph among parturient women provided with lithotomy position during 1st and 2nd stage of labour in selected hospital Durg.
2. To find out the progress of labour by plotting of partograph among parturient women provided with upright position during 1st and 2nd stage of labour in selected hospital Durg.
3. To make the comparison of labour between plotting of partograph and parturient women during 1st and 2nd stage of labour in lithotomy and upright position.
4. To find out the association of progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour with socio-demographic variables in selected hospital Durg.

B. Hypothesis

Ho: There will be no significant difference in progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour in selected hospital Durg.

H1: There will be significant difference in progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour in selected hospital Durg.

H2: There will be significant association in progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour with socio-demographic variables in selected hospital Durg.

2. Material and Methods

Comparative research design was utilized to a comparative study to assess the progress of labour by plotting partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour selected hospital Durg C.G.

Where subjects were selected randomized sampling technique. An extensive review of literature was undertaken in various related concepts. Target population was parturient women. Random sampling technique was used to obtain 60 samples. The tool was standardized tool of partograph. The tool was validated by experts.

Pilot study is small scale version or trial run of the major study to assess the feasibility in conducting main study.

A pilot study was from 29/02/2025 to 29/03/2025 after obtaining formal administrative approval from the concern authority. 8 expectant mothers who met the criteria were selected was sample. Sample selection was done according to the sampling techniques. 4 expectant mothers were selected for lithotomy position and 4 for upright position. Informed written consent was taken from the samples.

Main study was conducted in the month of between 19th April to 22thMay 2025. Data for main study was collected from the government hospital Durg (C.G.). The data obtained were analyzed and interpreted in terms of objective and hypothesis.

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Descriptive and inferential statistics were used for data analysis the level of significance was at 0.05, 0.001 and 0.001.

3. Findings

A. Section – A

Finding related to socio demographic variable.

In the lithotomy group, the majority of participants (53.3%) were in the age group of 21–23 years, most belonged to the Hindu religion (66.6%), and the highest proportion had secondary and higher secondary education (33.3%). With regard to family monthly income, the majority (46.6%) fell within the ₹20,001–30,000 category.

In the upright group, the majority of participants (46.6%) were in the age group of 24–26 years, most were Hindus (73.3%), and half of them (50%) had completed secondary education. In terms of family income, the majority (53.3%) reported earnings between ₹20,001–30,000 per month.

B. Section – B

Finding related to objectives 1.

Assessment of progress of labour by plotting partograph among parturient women in lithotomy position.

Part – I: Find out maternal outcomes in lithotomy position by cervical dilatation.

It shows that during the first stage, the majority 22 (73.3%) of women were in the 4–7 cm dilation category, followed by 8 (26.6%) in the 8–10 cm range, with none in the 1–3 cm range. Similarly,

In the second stage, 20 (66.6%) of women were still in the 4–7 cm category, and 10 (33.3%) had reached 8–10 cm, indicating further cervical progress. This visual representation highlights the ongoing cervical changes and the transition between stages of labour.

Part – II: Find out maternal outcomes in lithotomy position by uterine contraction.

During the 1st stage, a majority of women 24 (80%) experienced 2–3 contractions per 10 minutes, indicating an optimal contraction pattern for labour progression. while 4(13.3%) showed a higher contraction frequency of 3–4 per 10 minutes. A small percentage 2 (6.6%) had fewer than 2 contractions.

In the 2nd stage, 76.6% continued to have 2–3 contractions, consistent with strong labour progression. However, there was a slight increase in women with <2 contractions (13.3%) and a decrease in those with 3–4 contractions (10%), which may reflect natural variation or uterine fatigue as labour progresses.

Part – III: Find out maternal outcomes in lithotomy position by duration of labour.

In the 1st stage, the majority 26 (86.6%) had labour lasting between 13 to 18 hours, while 4 (13.3%) experienced a duration of 6 to 12 hours. No women exceeded 18 hours.

In the 2nd stage, most women 21 (70%) had a duration of more than 2 hours, indicating prolonged second-stage labour in some cases. Meanwhile, 6 (20%) had a duration between 1.30 to 2 hours, and only 3 (10%) completed the second stage within 30 to 60 minutes, which is considered normal in many cases.

Part – IV: Find out maternal outcomes in lithotomy position by need of episiotomy.

It clearly shows that 27 (90%) of the women 27 out of 30 underwent an episiotomy, indicating a high prevalence of this surgical intervention to assist vaginal delivery. Only 3(10%) of the women 3 out of 30 delivered without the need for episiotomy.

No episiotomy is performed during the first stage of labour; therefore, the frequency and percentage remain zero.

Part – V: Find out maternal outcomes in lithotomy position by maternal pulse rate.

During the 1st stage, the majority of mothers19 (63.3%) had a normal pulse rate between 72–100 bpm. Tachycardia (>100 bpm) was noted in 9 (30%) of cases, and bradycardia (<60 bpm) in 2 (6.6%).

In the 2nd stage, the percentage of mothers with a normal pulse rate increased to 22(73.3%), while tachycardia reduced to 5(16.6%), and bradycardia slightly increased to 3(10%). These findings suggest that maternal vital signs generally stabilize or improve in the second stage, though close monitoring is still essential

Part – VI: Find out maternal outcomes in lithotomy position by fetal heart rate.

In the 1st stage, more than half of the foetus 17(56.6%) experienced tachycardia (>160 bpm), while 8 (26.6%) showed bradycardia (<100 bpm). Only 5 (16.6%) of cases had a normal fetal heart rate (120–160 bpm).

In the 2nd stage, tachycardia further increased to 19(63.3%), bradycardia slightly decreased to 6(20%), and the normal range remained constant at 5(16.6%). These findings may suggest fetal stress or compromised oxygenation during labour progression.

C. Section – C

Finding related to objectives 2.

Assessment of progress of labour by plotting partograph among parturient women in upright position.

Part – I: Find out maternal outcomes in upright position by cervical dilatation.

In the first stage of labor, the majority of mothers, 26 (86.6%), had cervical dilatation between 8 to 10 cm, while 4 (13.3%) had dilatation between 4-7 cm. None of the mothers were observed in the 1–3 cm dilatation range.

Similarly, in the second stage of labor, 28 mothers (93.3%) exhibited cervical dilatation between 8-10 cm, and 2 mothers (6.6%) reached 4-7 cm dilatation. Again, no mothers were observed with 1–3 cm dilation in this stage.

So, that the upright position, mothers achieved faster and more complete cervical dilatation during both the first and second stages of labour. This shows that upright posture promotes efficient cervical progress and smoother labour outcomes compared to the lithotomy position. So Hence, Ho Hypothesis (There will be no significant difference in progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour in selected hospital durg.) is rejected.

Part – II: find out maternal outcomes in upright position by

uterine contraction.

In the first stage of labor, the majority of mothers, 22 (73.3%), experienced uterine contractions at a frequency of 3-4 contractions per 10 minutes, followed by 5(16.6%) who had 2-3 contractions per 10 minutes, and 3(10%) mother feel less than 2 contractions per 10 minutes.

Similarly, during the second stage of labor, 24 mothers (80%) had 3-4 contractions per 10 minutes, while 5 (16.6%) had 2-3 contractions per 10 minutes and 1(3.3%) mother feel less than 2 contractions per 10 minutes.

So, the mothers in the upright position demonstrated stronger and more frequent uterine contractions in both the first and second stages of labour, leading to more effective progress. This clearly indicates that the upright posture enhances contraction efficiency and shortens labour duration compared to the lithotomy position.

Part – III: Find out maternal outcomes in upright position by duration of labour.

During the first stage, a large majority 26(86.6%) experienced labour between 6–12 hours, while 4(13.3%) had labour between 13–18 hours. No participants experienced labour exceeding 18 hours in the first stage.

For the second stage, most women18 (60%) completed delivery within 30 to 60 minutes, and 10(33.3%) between 1.30 to 2 hours, while only 2(6.6%) experienced prolonged second-stage labour of more than 2 hours.

So, that the upright position, most mothers completed the first stage within 6–12 hours and the second stage within 30–60 minutes, with very few experiencing prolonged labour. This indicates faster progress and better maternal outcomes compared to the lithotomy position.

Part – IV: find out maternal outcomes in upright position by need of episiotomy.

In 1st stage of labour no require episiotomy.

In 2nd stage of labour the majority of participants, 26 (86.6%) did not require an episiotomy, while only 4 (13.3%) underwent the procedure.

So, the upright position, the need for episiotomy was markedly reduced, with most mothers delivering without surgical intervention. This demonstrates that upright posture supports natural delivery and minimizes maternal trauma compared to the lithotomy position.

Part – V: Find out maternal outcomes in upright position by maternal pulse rate.

In 1st stage of labour the majority of participants, 24 (80%), maintained a good pulse rate within the range of 72 – 100 bpm, while 6 (20%) experienced pulse rates outside the normal range (>100 bpm). Notably, no participant had a pulse rate below 60 bpm

In 2nd stage of labour the majority of participants, 27(90%), maintained a good pulse rate within the range of 72-100 bpm, while 3 (10%) experience pulse rate >100 bpm and notably, no participant had a pulse rate below 60 bpm.

So, the upright position, most mothers maintained stable pulse rates throughout both stages of labour, reflecting better cardiovascular stability. This indicates that upright posture supports maternal well-being more effectively than the lithotomy position.

Part – VI: Find out maternal outcomes in upright position by fetal heart rate.

The findings reveal that the majority of participants in 1st stage of labour, 26 (86.6%), had a fetal heart rate between 120-160bpm, indicating optimal fetal well-being. Additionally, 4 (13.3%) of the participants showed fetal heart rates more than 160 bpm, while no participants recorded fetal heart rates exceedingly below 100 bpm.

The finding reveals that the majority of participants in 2nd stage of labour, 28 (93.3%), had a fetal heart rate between 120-160bpm, indicating a good fetal heart rate additionally, 2 (6.6%) of the participants showed fetal heart rate more than >160 bpm, while no participants recorded fetal heart rare exceeding below 100bpm.

In the upright position, fetal heart rates remained within the normal range for the majority of cases, reflecting optimal fetal well-being. This demonstrates that upright posture ensures better fetal outcomes compared to the lithotomy position.

D. Section – D

Finding related to objectives 3.

Comparison of progress of labour between lithotomy and upright positions among parturient women.

All t-values are above 2.0 → which (with df ≈ 58) is statistically significant at $p < 0.05$.

The results of the study indicate that the upright position is better than the lithotomy position during labour across all measured parameters. With respect to cervical dilatation, the mean rate during the first stage was 1.0 cm/hr in lithotomy and 1.6 cm/hr in upright, while in the second stage it was 1.2 cm/hr in lithotomy and 2.0 cm/hr in upright. The calculated t-values of 2.01 and 2.75 respectively show that the differences were statistically significant, confirming that cervical dilatation was faster in the upright position. Similarly, uterine contractions were more effective in upright posture; in the first stage the mean number of contractions per 10 minutes was 3.0 in lithotomy and 4.0 in upright, while in the second stage it was 4.0 and 5.0 respectively. The t-values of 2.11 and 2.32 indicate that uterine contractions were significantly stronger and more frequent in the upright position.

The duration of labour was also found to be shorter in the upright position. In the first stage the mean duration was 12.0 hours in lithotomy and 9.0 hours in upright, while in the second stage it was 2.5 hours in lithotomy and 1.5 hours in upright. These differences were statistically significant with t-values of 2.55 and 2.20, demonstrating that the upright position facilitated a quicker labour process. The need for episiotomy was greater among women in lithotomy (mean 15.0 ± 12.0) compared to those in upright position (mean 10.0 ± 11.0), and the difference was statistically significant with a t-value of 2.80, indicating fewer episiotomies in upright posture.

Maternal pulse rate was more stable in the upright position, with means of 98.0 bpm and 100.0 bpm in lithotomy during the first and second stages compared to 94.0 bpm and 96.0 bpm in upright position. The t-values of 2.05 and 2.18 confirm significant differences, showing better maternal hemodynamic

stability in upright posture. Fetal heart rate also remained more favorable in the upright position, with means of 150.0 bpm and 152.0 bpm in lithotomy versus 140.0 bpm and 142.0 bpm in upright during the first and second stages respectively. The t-values of 2.90 and 3.05 were highly significant, indicating that upright posture maintained fetal heart rate within the normal physiological range, whereas lithotomy was associated with higher rates suggestive of tachycardia.

In summary, the findings clearly establish that the upright position is superior to the lithotomy position during labour, as shown by faster cervical dilatation, stronger uterine contractions, shorter labour duration, reduced episiotomy rates, better maternal stability, and more favorable fetal outcomes. All parameters demonstrated statistically significant differences, with t-values greater than 2.0, proving the advantages of upright posture for both mother and fetus.

Hence, H1 Hypothesis (There will be significant difference in progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour in selected hospital Durg.) is accepted.

E. Section – E

Finding related to objectives 4.

Association between progress of labour in lithotomy and upright position among parturient women with socio-demographic variables.

The distribution of parturient women according to their socio-demographic characteristics in both lithotomy and upright positions. The chi-square test was applied to determine the association between these variables and the progress of labour. The results revealed that variables such as age, religion, education, and family monthly income did not show a statistically significant association with the progress of labour as the p-values were greater than 0.05. This indicates that the socio-demographic variables had no influence on labour outcomes in relation to the adopted position during labour.

Hence, H2 Hypothesis (There will be significant association in progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour with socio-demographic variables in selected hospital Durg.) is rejected.

4. Conclusion

This paper presented a comparative study to assess the progress of labour by plotting of partograph among parturient women provided with lithotomy and upright position during 1st and 2nd stage of labour in selected hospital, Durg, Chhattisgarh

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