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The effect of birth companion on the level of pain perception among primi-parturient admitted for labor

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Abstract
Introduction: According to WHO, a companion is any person from her family, friend or social network chosen by the parturient for continuous support during labor and childbirth who is expected to be caring, compassionate and trustworthy advocate (1). Labor pains plays a major role for the potential outcome of the delivery process which can be positive or negative. Negative birth experience can result in different forms of discomfort, both for the mother as well as for the infant. The aim of the study was to assess the effect of birth companion on the level of pain perception among primi-parturient in the labor room.

Methodology: This qualitative study carried out in Clean labor room at Tertiary health care center (JIPMER) after obtaining permission from Research monitoring committee and Institutional ethics committee. It was a non-randomized; pre-test post-test control trial with 54 participants, 27 in each group. Experimental group was given birth companion in the labor room and pain is assessed at every 2 hours with Numerical Pain Rating scale in both groups. Content was analyzed after coding and categorizing data with SPSS software version 22.

Results: The result indicated the pain has been reduced from worst and severe level in pre-test (8.78) to moderate and mild level of pain perception in subsequent post-test-1 (7.78) and post-test-2 (4.89) respectively. Comparing the mean pain in both the groups shows statistically significant difference between both the groups.

Conclusion: The study concluded the effectiveness of birth companion for the primi-parturient in reducing the pain perception in primi-parturient. The recommends encouraging the provision of birth companions in labor room. Such practice helps the mother to have less painful experience of the childbirth.

Keywords: birth companion, primigravida, pain perception, numerical pain rating scale, JIPMER

1. Introduction
The experience of childbirth is of great importance that impacts a mother's physiological and psychological well-being. It also affects the mother-infant relationship. The most difficult part of the birthing process is "Labor pains" which are subjective to everyone.

Various pharmacological and non-pharmacological methods are being used to reduce the pain during intra-partum period. There are chances where a parturient is not willing use pharmacological methods for childbirth. In these situations, the non-pharmacological methods can be utilized to relief pain during labor. In India, initiatives like SUMAN (Surakshit matritva Ashwasan) [2] and LaQshya by Ministry of Health and Family Welfare(3) encourages respectful maternity care which includes patient's right to choose birth companion.

Birth companion reduce pain by rubbing hands, breathing exercise, positioning, etc. These methods will help to reduce the anxiety which leads to decrease in adrenaline production to helps the mother to shorten the delivery time with less pain perception. [4] Birth companion aids in reducing the workload of nurses by looking after the parturient and continuously being present for her. It improves the involvement and knowledge of family members in regard to the labor process.

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2. Statement of The Problem

A study to assess the effect of birth companion on the level of pain perception among primi-parturient admitted for labor.

3. Objectives

i.   To assess the pain perception in the primi parturient in experimental group and control group.
ii. To compare the pain perception in experimental group and control group.

4. Need of the Study

Childbirth is a natural biological process which differs in each parturient. The primigravida experience more intense pain during labor as compared to multigravida mothers. It is important to conserve the experience of primigravida before getting worse and leading to potential psychological disorders. Labor companion, with her expertise and experience helps the primi-parturient to deliver the baby in a safe and natural way.

The need of the study are as follows:

i.   This study uses birth companion as a non-pharmacological method to reduce pain by rubbing hands, breathing exercise, positioning, etc. These methods will help to reduce the anxiety which leads to decrease in adrenaline production to helps the mother to shorten the delivery time with less pain perception [4].

ii. In implementing Respectful Maternity Care (RMC) by giving autonomy to the laboring patient to choose her birth companion. (5)

iii. It gives a chance to enhance the family involvement and their understanding in the birthing process.

iv. Birth companion aid in reducing the workload of nurses by looking after her parturient and continuously being present for her. In a tertiary-care hospital, the nurse-patient ratio is unsatisfactory and the nurse posted in labor room is unable to fulfil the demands of all patients.

5. Review of Literature

2011, Shiney. K studied the effectiveness of continuous support on level of pain perception during child birth among primi-parturient mothers in tertiary health center at Kanyakumari district. It was a quasi-experimental study design with 60 samples (30 in each group) chosen by non-probability purposive sampling technique. In the experimental group, the pre-test level of pain score was 8.98 with standard deviation 0.56 and the post-test mean score was 5.57 with standard deviation 0.47. The calculated t value of 24.96 was statistically highly significant at p<0.001 level. So, from this study it was concluded that the pain perception was reduced after giving birth companion [6].

February 2018, Bonapace. J *et al.* did a systematic review has been done through Medline and PubMed to review the evidence relating to nonpharmacological approaches in the management of pain during labor and delivery to formulate recommendations for the usage of nonpharmacological approaches to pain management. They have summarized about labor companion as Continuous labor support, a part of nonpharmacological approaches to pain management during childbirth, reduces stress, fear, and anxiety, which in turn decreases the frequency of obstetrical interventions [7].

2019, Quintana. S.M performed a study to find out the Non-pharmacological Resources in Assisting Labor. 80 participants were involved in this randomized control trial. Experimental group received the combination of non-pharmacological methods according to cervical dilation. Visual analogue scale was used to measure pain. The author found that the non-pharmacological methods used are beneficial to reduce pain perception along with the routine care [8].

6. Methodology

i.   **Research approach:** Quantitative approach.
ii. **Research design:** Non-randomized controlled trial pre-test post-test design.
iii. **Research setting:** Clean Labor Room (CLR), Department of Obstetrics and Gynaecology, Women and Children Hospital (WCH), JIPMER, Puducherry.
iv. **Population**

▪ **Target population:** All the primi-gravida mothers admitted in the clean labor room (CLR), JIPMER.

▪ **Accessible population:** All the primi-gravida mothers with spontaneous vaginal delivery accompanied with birth companion meeting inclusion criteria at CLR, JIPMER hospital during the period of study.

▪ **Sample:** All women with spontaneous vaginal delivery at JIPMER accompanied with birth companion during the course of data collection (6 weeks). Fifty-four primi-gravida mothers were included as per inclusion and exclusion criteria. According to WCH statistics, the total number of deliveries per day are 40 but because of the pandemic (Covid-19) during the data collection period the number of deliveries per day reduced to 6 to 7. Among those primigravida mothers with spontaneous labor were 2-3.

▪ **Sample size calculation:** The sample size was calculated by using open epi version 3.01. With a 95% confidence interval and 90% power to detect a significant difference, 27 patients in each group were calculated (Total sample size is 54)

▪ **Sampling technique:** Purposive sampling technique.

v.   **Criteria for sample selection**

Inclusion criteria: Primi-gravida mothers ≥ 18 years of age with

▪ Gestational age 36 - 42 weeks
▪ Spontaneous labor.
▪ Primi gravida with singleton pregnancy in vertex presentation
▪ Active stage of labor (≥ 4cms cervical dilatation)
▪ Female birth companion who has attended the training session of birth companion

Exclusion criteria: Primi-gravida mothers with

▪ Any chronic disease (DM, HTN) or has been developed in pregnancy.
▪ Any other maternal and fetal complication to her or to her baby
▪ Develops complications develop during at the time of delivery
▪ Epidural analgesia.

vi. **Conducting teaching sessions for Birth companion**

Two sessions to train birth companion were planned two weeks prior to the expected date of delivery but due to Global Pandemic (COVID-19) only one training session has been managed to provide teachings for the birth companion.

The non-pharmacological methods taught to the companion and used by her to reduce the pain perception of the primi-parturient includes:

- Holding hands
- Talking to the women
- Helping in positioning
- Inform mother about labor process and its outcome
- Wipes the sweat
- Rubs the thigh, back, legs
- Present with the mother in the labor room
- Encourage the mother to take deep breath

vii. Variables
- Independent variables: Continuous support of Birth companion
- Outcome variables: Level of pain perception
- Confounding and interacting variables: Education of both primi parturient and birth companion
- Demographic variables:
a. Age
b. Type of family
c. Family income
d. Education
e. Residence
f. Occupation

viii. Score interpretation of instrument
a. Demographic variables such as Age, Type of family, Family income, Education, residence and occupation will be analysed by percentage and mean.
b. Outcome variable which is pain perception is measured by Numerical Pain Rating Scale and is analysed by Student t-test

ix. Reliability: The reliability of the Numerical Pain Rating Scale (NPRS) was assessed for level of pain perception during labor. It was done by inter-rater reliability method. The Spearmans Rank Correlation Co-efficient was used to calculate the reliability of this Numerical Pain rating Scale. The reliability value was found $r=0.87$ which shows that the tool is quite reliable.

x. Validity: The data collection Performa has been validated by the experts from the Department of Obstetrics and Gynaecology, JIPMER and College of nursing.

xi. Ethical consideration: Ethical consideration is obtained by the Institutional Ethical Committee (IEC) before data collection.

xii. Data collection procedure: After ethical committee clearance from JIPMER Institutional Ethical Committee (IEC). Primi gravida were selected by purposive sampling method. The birth companion got training in at-least one session. Those laboring mothers who attended JIPMER labor room with birth companion who was trained already are included in the study group. Primi-gravida fulfilling the inclusion criteria but without a birth companion was taken in the control group.

a. Demographic data of the primi gravida and birth companions collected. The level of pain is compared in each group at different point of time is assessed i.e., pain perception level at the time of admission with every 2 hours of labor. Then it is compared in both the groups. Pre-test was conducted in both the groups at the time of admission in Labor room. Birth companion is introduced in experimental group and control group got the routine care. Post-test is done for both the groups at 2nd and 4th hour after the pre-test. The level of pain is compared between both the groups and the association between pain perception and demographic data found.

7. Results

Table 1: Comparison of the Pre-test and post-test 1 and post-test 2 level of pain perception score among primi-parturient admitted for labor in experimental group. (n=27)

Level of Pain Perception	Test	Mean	Standard Deviaton	Mean Difference	't' Value Paired t test	df	'p' Value
Experimental Group	Pre-test	8.78	1.155	0.556	2.155	26	0.041*
	Post-test 1	8.22	1.601				
	Pre-test	8.78	1.155	1.481	2.757	26	0.011*
	Post-test 2	7.3	2.554				

Table -1: shows that, the mean score of effectiveness of birth companion on experimental group in the pre-test was 8.78 ± 1.155, post- test 1 was 8.22 ± 1.601 and post-test 2 was 7.3 ± 2.554. The calculated paired 't' test value t = 2.155 shows statistically significant when comparing the Pre-test and post-test 1 value and when the mean score of pre-test is compared with mean score of post-test-2, the 't' value is statistically significant i.e. t = 2.757 for experimental group.

Table 2: Comparison of the Pre-test and post-test 1 and post-test 2 level of pain perception score among primi-parturient admitted for labor in control group. (n=27)

Level of Pain Perception	Test	Mean	Standard Deviaton	Mean Difference	't' Value Paired t test	df	'p' Value
Control Group	Pre-test	8.56	0.801	-0.222	-0.923	26	0.364
	Post-test 1	8.22	1.155				
	Pre-test	8.56	0.801	-0.407	-1.49	26	0.148
	Post-test 2	8.96	1.16				

*-p < 0.05 significant

Table-2 shows that, the mean score of effectiveness of birth companion on control group in the pre-test was 8.56 ± 0.801, post- test 1 was 8.78 ± 1.155 and post- test 2 was 8.96 ± 1.160. The calculated paired 't' test value of t = -0.923 shows statistically not significant difference between Comparison of the Pre-test and post-test 1 level and the mean score of pain in the pre-test was 8.56 ± 0.801 and the mean score in the post- test 2 was 8.96 ± 1.160 when compared together the value of t = -1.490 which shows statistically not significant.

Table 3: Comparison of the effectiveness of birth companion on the level of pain perception among primi-parturient admitted for labor with experimental and control group. (n=54)

Level of pain perception	Group	Mean	Standard Deviaton	Mean Difference	'T' Value Student T Test	Df	'P' Value
Pre-test	Experimental group	8.78	1.155	0.222	0.822	52	0.415
	Control group	8.56	0.801				
Post-test-1	Experimental group	8.22	1.601	-0.556	-1.462	52	0.15
	Control group	8.78	1.155				
Post-test-2	Experimental group	7.3	2.554	-1.667	-3.087	52	0.003*
	Control group	8.96	1.16				

Table -3 shows that, the mean score of effectiveness of birth companion on pre-test in the experimental group was 8.78 ± 1.155 and in the control group was 8.56± 0.801. The calculated independent 't' test value of t = 0.822 shows statistically not significant difference. The mean score of effectiveness of birth companion on post-test 2 in the experimental group was 7.30 ± 2.554 and in the control group was 8.96 ± 1.160. The calculated independent 't' test value of t = -3.087 shows statistically significant difference between the experimental and control group level of pain perception score among primi-parturient admitted for labor.

Table 4: Comparison of the effectiveness of birth companion on the level of pain perception among primi-parturient admitted for labor with experimental and control group. (n=54)

Group	Pre-Test		Post Test 1		Post Test 2		Repeated Measures ANOVA
	Mean	S.D	Mean	S.D	Mean	S.D	
Experimental Group	8.78	1.15	8.22	1.6	7.3	2.55	F=5.548 P = 0.016*
Control Group	8.56	0.801	8.78	1.155	8.96	1.16	F=1.074 P = 0.345

Table-4: shows that the experimental group the mean level of pain perception score has been, 8.78, 8.22 and 7.30 at pre-test, post-test 1 and post-test 2 respectively. The mean values clearly indicate there is a reduction in the level of pain perception score from pre-test to post-test 2. When repeated measures ANOVA is applied, the significant p-value (0.016) infers that reduction in the mean pain score is statistically significant. Thus, the intervention (birth companion) has been effective in reducing the level of pain perception among primi-parturient admitted for labor in experimental group

8. Discussion
The study findings were consistent with the study conducted by Ms. Shiney. K on finding the effectiveness of continuous labor support on the level of pain perception during childbirth. In the experimental group, observation 1 revealed that majority 96.67% had severe pain, in the observation 2 majority 66.67% had severe pain, in the observation 3 majority 19(63.33%) had moderate pain. In the control group, observation 1 revealed that 96.67% had severe pain, and the overall post-test level of pain shows that majority (100%) had severe pain in the control group [6].

The study findings were resembled with the study done by Mosallam. M, *et al*, on assessing the effectiveness of continuous labor support compared with usual care. The post-test level of pain perception in the experimental group revealed that 62 percentage had severe pain and 38 percentage had moderate pain, and in the control group 91 percentage had excruciating pain and 9 percentage had severe pain.

When comparing the pain perception in experimental group and control group, the mean score of pain on pre-test in the experimental group was 8.78 ± 1.155 and in the control group was 8.56± 0.801. Thus, both groups are comparable for post-tests. On post-test 2 i.e., 4 hours after the pre-test, the mean pain score experimental group was 7.30 ± 2.554 and in the control group was 8.96 ± 1.160 with independent 't' test value of t = -3.087 shows statistically significant difference between mean pain in both the groups.

This shows the longer the birth companion stays the more the pain is reduced in experimental group.

9. Recommendations
1. A similar study can be done in a different setting in PHCs or CHCs.
2. Large sample size must be taken to generalize the study results.
3. The effectiveness of birth companions can also be seen in the duration of the labor and positive effect on the mental health of the primi-parturient.
4. Effect of birth companion between primigravida and multi-gravida can be done as a comparative study.
5. Effect of birth companion on the level of anxiety can be assessed.

10. Implications
10.1 In Nursing Service
The birth companion aid to provide non-medical non-nursing care to the fellow parturient which will reduce the pain perception during labor. Thus, the workload of the nurse working in the labor room will reduce and helps the parturient to give a normal birth with less pain.

It gives the autonomy for the parturient to choose the companion. It also has other benefits like maintaining hydration level, safety, reducing the duration of labor, the chance of Cesarean section, etc.

10.2 In Nursing Education
Nursing education can take efforts to teach their students the effectiveness of birth companion to reduce the pain perception as a part of non-pharmacological methods to reduce pain during the labor. They can encourage the students to practice this method during the clinical experience and make them aware of patients right inside the labor room.

10.3 In research
Studies can be encouraged in different settings like PHC's as a birth companion can easily join to help in the delivery process with more sample size for the generalization of study findings. Nurse researchers can give encouragement, motivation, and financial support to conduct further research. The results of nursing research can be implemented for evidence-based interventions in nursing.

11. Conclusion
The study concluded that the birth companion is effective in reducing the level of pain perception by giving support by rubbing hands, giving back massage, water, psychological support, etc., during the time of delivery. Majority of the birth companions have low educational status but high parity, which can be considered as the positive factor in supporting parturient in the delivery which helped to decrease the pain perception during the delivery. Thus, we can allow labor companions in the labor room, to help in reduction in pain and to ensure respectful maternity care.

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