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An Experimental Study to Assess and Evaluate the Effectiveness of Upright Position among Primi Mothers during First Stage of Labour in terms of Pain Perception and Progress of Labor in selected Hospital of Delhi

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Abstract: ***This study aims to assess the effectiveness of upright position in pain perception and progress of labour among primi mothers during first stage of labour. Post test only control group design was used. The sample comprised 60 primi mothers in active stage of labour selected by random sampling technique. Numerical pain intensity scale (0-10) was used for pain perception and observation schedule was used for assessment of progress of labour. Intermittent upright (Each position was provided for 15 minutes with 10 minutes rest) position was given to experimental group from the onset of active phase of first stage of labour and routine care was given to control group. The data were analyzed by using both descriptive and inferential statistics. Data shows that after 2 hours of intervention obtained mean difference was 1.96 with calculated 't' value 4.26 that was significant at 0.05. Similar findings were found at full dilatation, mean difference was 2.4 with the calculated 't' value 5.45, which was found significant at 0.05 level. Analysis of progress of labour assessment scores shows that mean difference was 1 with calculated 't' value 2.94 that was significant at 0.05 level. Similar findings of progress of labour were observed at full dilatation, obtained mean difference was 2.85 with calculated 't' value 8.63 that was significant at 0.05 level. Conclusion: The present study shows that upright position intervention reduce pain perception and enhances progress of labour among the primi mothers.***

Keywords: Pain Perception, Upright Position, Primi Mothers, Progress of labour, First stage of labour

1. Introduction

Expecting a baby is definitely one of the most joyful experiences in women's life. The child birth for a mother is an important contribution to parenthood and is highly personal and individual experience [1]. Each women comes into labour room with own set of expectations, fear, preparation, pain threshold, personality and behavioral make up and ways of experiencing what is happening to her [2]. The transition from pregnancy to labour is a sequence of events that begins gradually [3]. Labor process is one of the important events of life experienced by a woman. Negative outcomes of this event lead to negative psychological effects for the woman and her family [4]. Labour process starts with the onset of regular uterine activity associated with effacement and dilatation of the cervix and descent of the presenting part through the cervix [1].

The degree of pain experienced during labour is related to the frequency, intensity and duration of uterine contractions and dilatation of the cervix. In addition, the position of the foetus, descent of the presenting part, stretching of the perineum and pressure on the bladder, bowel and sensitive pelvic structures also contribute to pain levels [5].

Management of pain in labour has a beneficial effect on both mother and fetus. The methods used for the management of labour pain is divided into two groups: pharmacological and non-pharmacological methods [6]. The pharmacological methods include analgesia, which reduces or decreases awareness of pain and anesthesia which causes partial or complete loss of sensation, but such drugs has many adverse effects. They may cause maternal hypotension that decreases blood flow to the placenta resulting in fetal hypoxia and acidosis [7]. The non pharmacological approach to a pain includes a wide variety of techniques to address not only the physical sensations of pain but also to prevent suffering by enhancing the psychosocial and spiritual components of care. Non pharmacological methods for relief of labor pain are simple and cheap and can be used as alternative treatment with drugs. The non pharmacological methods include counter pressure, therapeutic touch, walking, rocking, application of heat and cold, transcutaneous electrical nerve stimulation (TENS), showers, breathing techniques, listening to music, imaginary, childbirth education and reflexology. Pain is perceived as a side effect of a normal process, not a sign of damage, injury or abnormality. Rather than making the pain disappear, the midwife and other caregivers assist the women to cope with it, build her self confidence and maintain a sense

of mastery and well being. Thus, strength and control feelings are created in her that are effective in reduction of labor time [8].

According to new WHO guideline on intrapartum care 2018 that every labour is unique and all progress of labour do not occur at the benchmark rate of 1 cm/hour of cervical dilatation. this new recommendation will help to substantially reduce the growing rate of unnecessary caesarean sections that has currently reached an epidemic proportion [9].

Ministry of Health and Family Welfare has launched 'LaQshya' program, aimed at improving quality of care in labour room 'LaQshya' will reduce maternal and newborn morbidity and mortality, improve quality of care during delivery and immediate post-partum period and enhance the satisfaction of beneficiaries and provide Respectful Maternity Care (RMC) by providing privacy to pregnant women during the intrapartum period, presence of birth companion during the labour , freedom to choose a comfortable position during birthing (squatting, standing, etc.) [10, 11].

Women in the developing countries with meager health facilities usually lie in bed during the first stage of labour. Numerous studies showed that a supine position in labour may have adverse physiological effects on the condition of the woman and her baby and on the progression of labour. The weight of the pregnant uterus can compress the abdominal blood vessels, compromising the other's circulatory function including uterine blood flow and this may negatively affect the blood flow to the placenta. Upright and mobile positions are also less likely to cause compression of the abdominal blood vessels by the pregnant uterus and this maximizes uterine blood flow to the placenta and fetus during labour, contractions increases the strength in the upright or lateral position compared to the supine position. Effective contractions help cervical dilatation and the descent of the baby**Error! Bookmark not defined.**.

The choice of movements and position changes play a key role in determining the perception of labour pain, the mother's comfort level during birth and enhancing positive maternal and fetal outcome. It is the best way to use gravity to help baby come down and it may speed up the labour process. During the first stage of labour, mothers who are engaged with various movements and position changes perceive less pain and duration of first stage of labour is short [12]. Activity during labour provides distraction from discomfort and provides a way to release muscle tension. In fact, women who use movements in labour, report that it is effective method of relieving pain and restricting women's movements during labour may result in worst birth outcome and decreases women's satisfaction with their birth experiences [13].

A descriptive survey was conducted to assess women's knowledge and use of different positions during labour showed majority of women knew about walking (66.4%) and lateral (60.6%) as labour positions, whereas 99.2% knew about the supine as a birthing position. Half of the women (50%) walked during labour and the majority (91.4%) gave birth whilst in supine position. Researcher recommended that Midwives were the main source of information on positions used during childbirth [14].

A qualitative study was done to gain insight into the influences on women's use of birthing positions, and into the labor experiences of women in relation to the birthing positions they used. The study concluded that the advice given by midwives was the most important factor for influencing the choice of birthing positions and if medically possible, women benefited from having the autonomy to find the positions that were most useful to them [15].

2. Objectives of the Study

The objectives of the study were to:

a) Assess and evaluate the pain perception during first stage of labour among primi mothers after providing upright position
b) Assess and evaluate the progress of labour during first stage of labour among primi mothers after providing upright position
c) Compare the pain perception of primi mothers with upright position and control group.
d) Compare the progress of labour of primi mothers with upright position and control group.

Research Hypothesis

The following research hypothesis were formulated:

H1 - There will be significant difference between mean post test pain perception score of primi mothers of experimental group and control group after providing upright position as measured by NPIS at 0.05 level of significance.

H2- There will be significant difference in the mean post test progress of labour score of primi mothers of experimental group and control group after providing upright position as measured by observation schedule at 0.05 level of significance.

Conceptual Framework

The conceptual framework of present study is based on the Ernestine Wiedenbach helping art of clinical nursing theory (1964)

The nursing practice involves identifying the patient's need for help, ministering the needed help and validating that the actions were useful.

1) Central Purpose: It refers to what the nurse want to accomplish through what she does. It is overall goal towards which a nurse strives. In the present study the central purpose is to reduce the level of pain perception and to assess the progress of labor.
2) Prescription: It refers to plan of care of the patient. It specifies the nature of the action that will fulfill the nurse's central purpose and rationale for that action. In the present study prescription is applying upright position to reduce labor pain perception and to assess progress of labor.

3) Realities: It refers to the physical, Physiological, psychological, emotional and spiritual factors that come in to play in a situation involving nursing actions. The four realities identified by Ernestine Wiedenbach are:-
   a) Agent: The agent is the care giver who has the personal attribute, capacities, capabilities, competence and commitment to provide nursing care. In the present study the investigator or researcher is the agent.
   b) Recipient: The recipient is the person for whom the action is taken. In the present study the recipient is the primi mothers who are in first stage of labor.
   c) Goal: The goal is nurses desired outcome. It directs actions and suggests the reason for taking those actions. The goal in the present study is to reduce level of pain perception, and to assess progress of labor.
   d) Means: The means are the activities & devices used by the nurse to achieve the goal. This includes specific skill, procedures & technique.

Nursing practice has three components

a) **Identification:-** Identification involves individualization of the patient, his experiences, and recognition of the patient's perception of his condition.
   Activities in identification are directed toward ascertaining: (1) whether the patient has a need (2) whether she recognizes that she has a need (3) what is interfering with her ability to meet her need (4) whether the need represents a need-for-help, in other words a need that the patient is unable to meet himself.
b) **Ministration:-** Ministration is providing the needed help. The selection of a helping measure appropriate to that need and the acceptability of the help to the patient.
c) **Validation:-** Validation is evidence that the patient's functional ability was restored as a result of the help given.

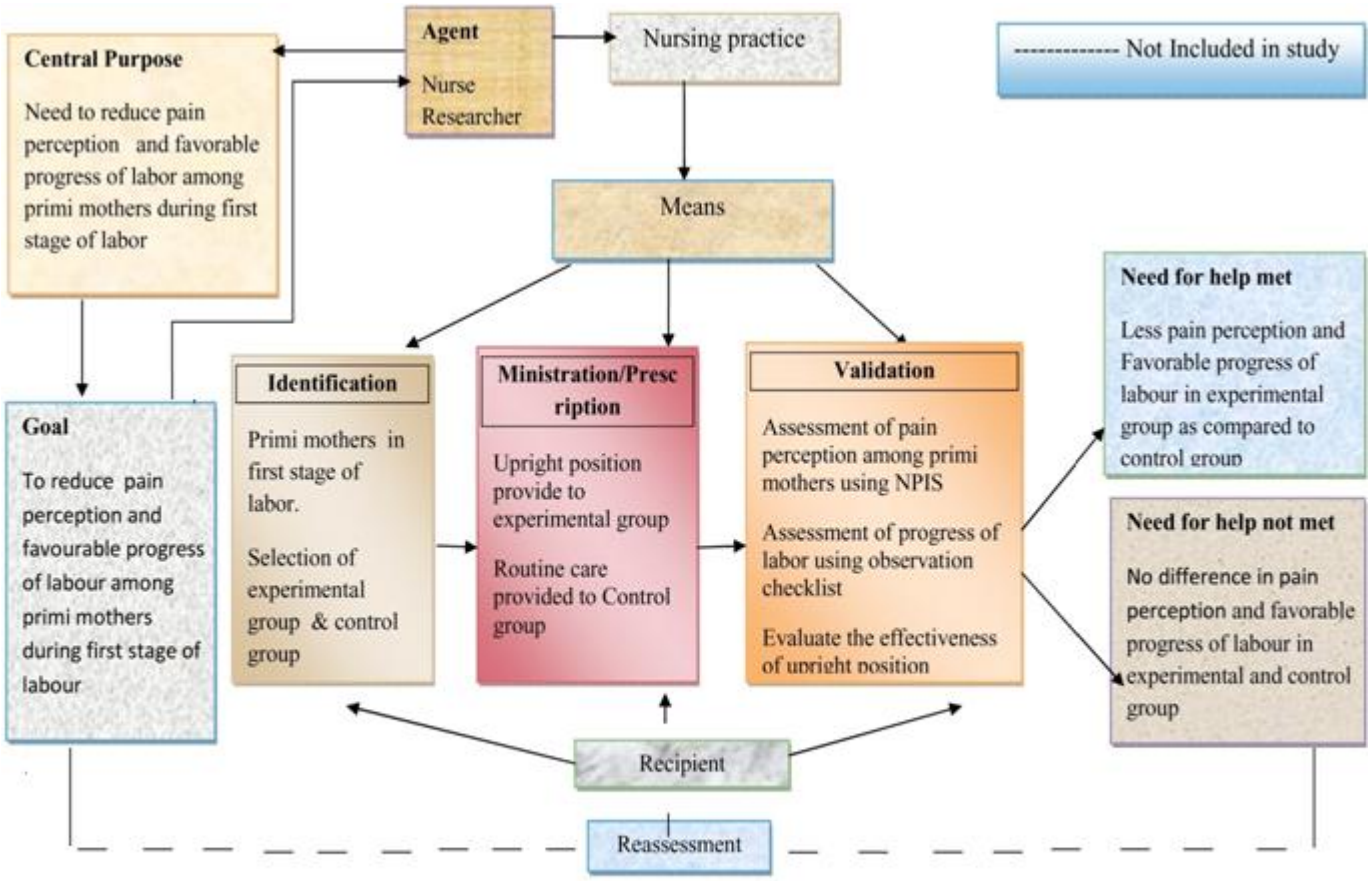

FIGURE NO. 1: CONCEPTUAL FRAMEWORK ON ERNESTINE WIDENBACH'S HELPING ART OF CLINICAL NURSING THEORY

3. Methodology

Experimental research approach with Post test only control group research design was adopted for the study. The study was conducted at Dr. Baba Saheb Ambedkar Hospital, New Delhi. The sample was primi mothers in first stage of labour in selected hospital of Delhi. The sampling technique in present study was probability random sampling. The selection of

samples was random and assignment of samples to the experimental and control group through lottery method. 60 primi mothers in first stage of labour (30 in experimental group and 30 in control group). Section I - Consist of structured interview schedule to know socio-demographic characteristics of primi mothers. Section II – It consist of Numerical pain intensity scale to assess the pain perception. Section III – It consist of developed structured observational schedule for progress of labour. In order to measure the content validity, the tool was given to 7 experts. To check the reliability of observational checklist for progress of labour, the pearson correlation method was used. It was found 0.91 and the tool was found reliable. Numerical pain assessment scale is standardized tool, reliability is checked by Cronbach's alpha and value is 0.88 [16]. The structured interview schedule and structured questionnaire were used to check the clarity of the items, their feasibility and practibility. After obtaining ethical clearance from ethical committee of Dr. Baba Saheb Ambedkar Hospital, New Delhi. try out of the tool was done by administering it to 6 primi mothers in first stage of labour and the final study conducted in Dr. Baba Saheb Ambedkar Hospital, New Delhi. Average time taken for completion of interview schedule, assessment of pain and progress of labour was 6-7 hours. The data was tabulated and analyzed by using descriptive and inferential statistics.

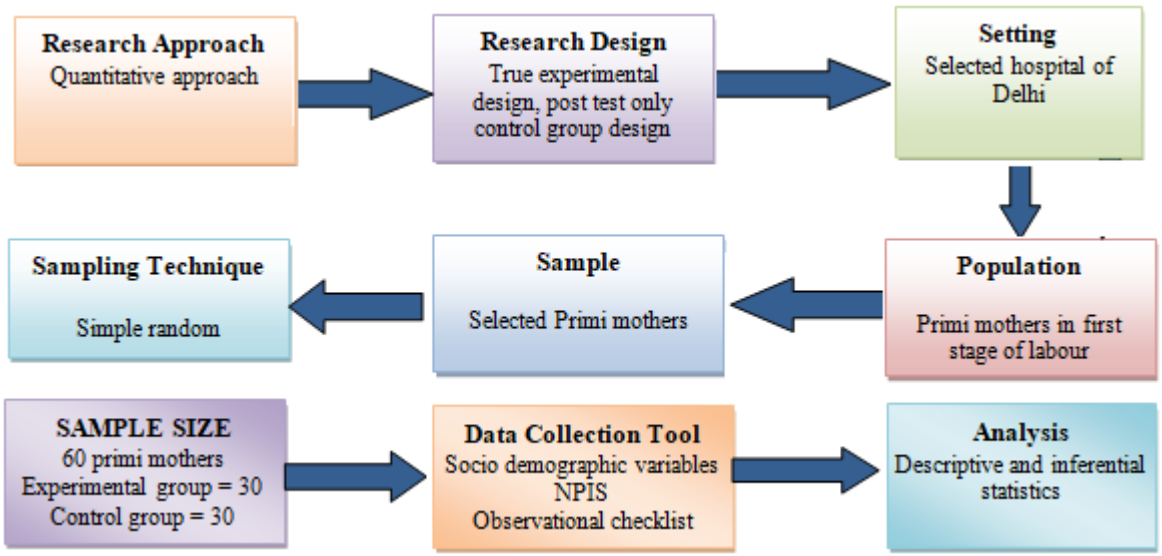

Figure 2: Schematic Diagram Representing Research Design of the Study

4. Result

The study revealed that majority of subjects 20 (66.6%) in experimental and 19 (63.3%) in control group were in age group of 18 - 22 years. Majority of subjects were Hindu 23 (76.7%) in experimental group and 25 (83.3%) in control group and least number of subjects were Muslim 7 (23.3%) in experimental and 5 (16.7%) in control group. Majority of subjects in experimental group 6 (20%) were in three categories that is uneducated, primary school and graduation and in control group 10 (33.4) had secondary school qualification. Least number of subjects 3(10%) in experimental group had secondary school qualification and in control group 7 (10%) had middle school and graduation respectively. Majority of subjects were home maker 28 (93.3%) in experimental group whereas all the subjects 30(100%) were homemaker in control group and least number of subjects had private job 2(6.7%) in experimental group.Majority of subjects 23(76.7%) had 9 month – 1year duration of marriage in experimental group and 18(60%) in control group and least number of subjects 1(3.3%) had ≥ 5 years of duration of marriage in experimental group and 2(16.7%) in control group had 3-4 years of duration of marriage. Majority of subjects 19(63.3%) had 10,000 – 20,000 monthly income in experimental and 20(66.6%) in control group and least number of subjects 3(10%) in experimental had 5000-10,000 and 5(16.7%) in control group had both 5000-10,000 and > 20,000 monthly family income. Majority of subjects 23(76.7%) were registered in experimental group and 19(63.3%) in control group and least number of subjects were unbooked 7(23.3%) in experimental and 11(36.7%) in control group.

Findings related to effectiveness of upright position on pain perception in primi mothers during first stage of labour in experimental and control group

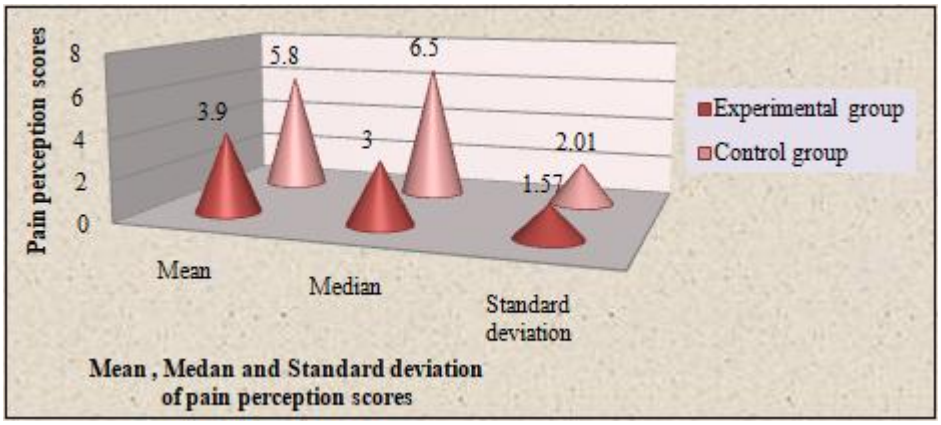

Figure 3: Findings related to effectiveness of upright position on pain perception in primi mothers after 2 hours of intervention

Data presented in figure no.3 shows that the mean of pain perception scores after 2 hours of intervention was higher in control group (5.8) than the mean of pain perception scores in experimental group (3.9). This indicates that there was decrease in pain perception of experimental group primi mothers after administration of intervention. The data also shows that the standard deviation of control group (2.01) was more than experimental group (1.57).

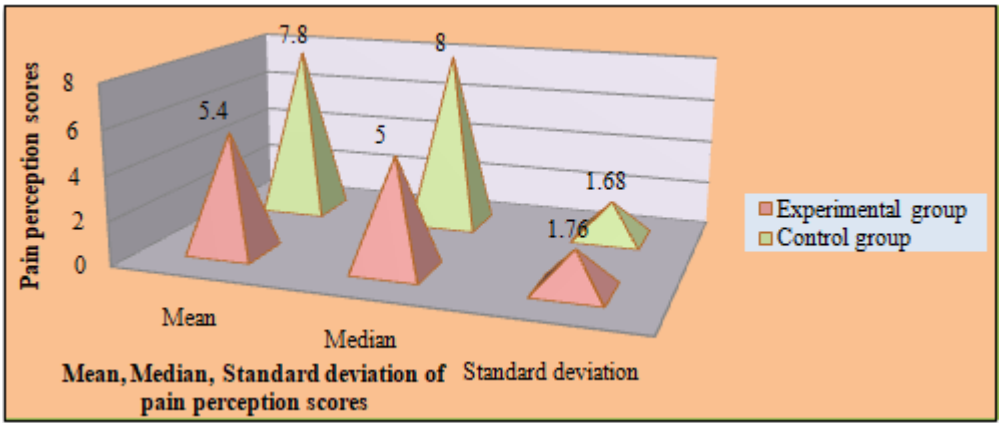

Figure 4: Findings related to effectiveness of upright position on pain perception in primi mothers at full dilatation

Data presented in Figure No.4 shows that the mean of pain perception scores at full dilatation was higher in control group (7.8) than the mean of pain perception scores in experimental group (5.4). This indicates that there was decrease in pain perception of experimental group primi mothers after administration of intervention. The data also shows that the standard deviation of control group (1.68) was more than experimental group (1.76).

Table 1: Mean, median, mean difference, standard deviation, standard error of mean difference and "t" value post test pain perception of primi mothers after 2 hours of intervention, n=60

Group	Observation	Total Score	Mean	Median	Mean Difference	SD	Standard Error Mean Difference (SEMD)	"t" Value
Experimental group	After 2 hours	10	3.9	3	1.96	1.57	0.46	4.26*
Control group	After 2 hours		5.8	6.5		2.01		

' t value ' df (58) level = 2 , $p < 0.05$ level, * = significant at 0.05 level

Table No. 1: Indicates that the mean post test pain perception score (5.8) of control group primi mothers was higher than the mean post test pain perception score (3.9) of experimental group pirmi mothers with a mean difference of 1.96 The obtained mean difference was found to be statistically significant as evident from 't' value of 4.26 for df (28) at 0.05 level of significance.

Table 2: Mean, median, mean difference, standard deviation, standard error of mean difference and "t" value post test pain perception of primi mothers at full dilatation, n = 60

Group	Observation	Total score	Mean	Median	Mean Difference	SD	Standard Error Mean Difference (SEMD)	"r" Value
Experimental group	At full dilatation	10	5	6	2.4	1.76	0.44	5.45*
Control group	At full dilatation		8	7		1.68		

' t value ' df (58) level = 2 , p < 0.05 level, * = significant at 0.05 level

Table No. 2: Indicates that the mean post test pain perception score (7.8) of control group primi mothers was higher than the mean post test pain perception score (5.4) of experimental group pirmi mothers with a mean difference of 2.4 The obtained mean difference was found to be statistically significant as evident from 't' value of 5.45 for df (28) at 0.05 level of significance. Thus it is established that the difference obtained in mean post test pain perception scores of control and experimental group was a true difference and not by chance.

Findings related to effectiveness of upright position on progress of labour in primi mothers during first stage of labour in experimental and control group

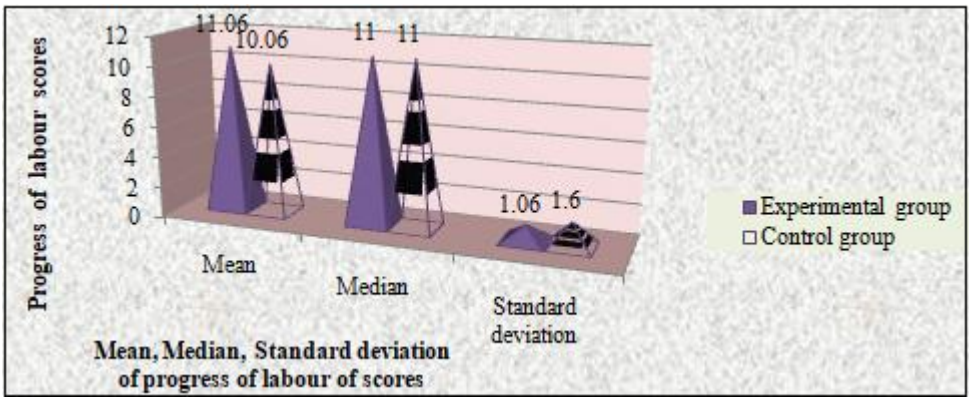

Figure 5: Findings related to effectiveness of upright position on progress of labour in primi mothers after 2 hours of intervention

Data presented in Figure No.5 shows that the mean of progress of labour scores after 2 hours of intervention was higher in experimental group (11.06) than the mean of progress of labour scores in control group (10.06). This indicates that there was increase in progress of labour of experimental group primi mothers after administration of intervention.

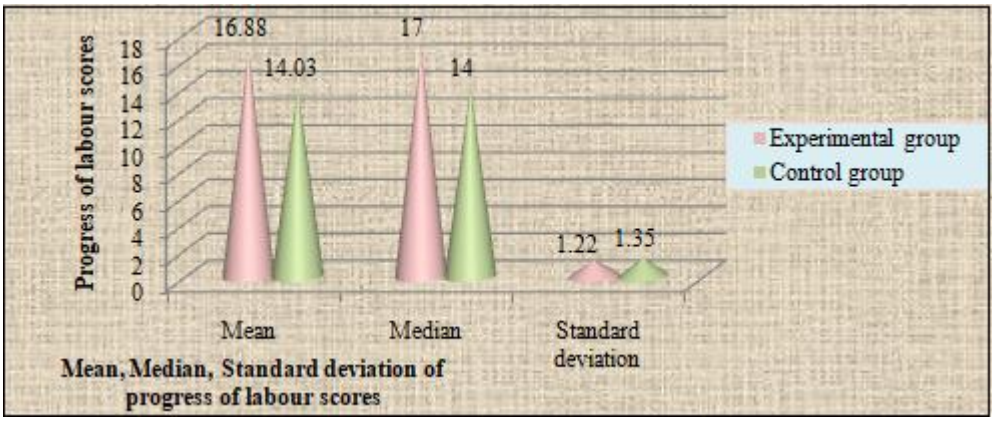

Figure 6: Findings related to effectiveness of upright position on progress of labour in primi mothers at full dilatation

Data presented in Figure No.6 shows that the mean of progress of labour scores at full dilatation was higher in experimental group (16.88) than the mean of progress of labour scores in control group (14.03). This indicates that there was increase in progress of labour of experimental group primi mothers after administration of intervention. The data also shows that the standard deviation of control group (1.35) was more than experimental group (1.22).

Table 3: Mean, median, mean difference, standard deviation, standard error of mean difference and "t" value post test progress of labour scores of primi mothers after 2 hours of intervention, n = 60

Group	Observation	Mean	Median	Mean Difference	Sd	Standard Error Mean Difference (SEMD)	"t" Value
Experimental group	At full dilatation	11.06	11	1	1.06	0.34	2.94*
Control group	At full dilatation	10.06	11		1.6		

' t value ' df (58) level = 2 , p < 0.05 level, * = significant at 0.05 level

Table No.3 indicates that the mean post test progress of labour score (10.06) of control group primi mothers was less than the mean post test pain perception score (11.06) of experimental group pirmi mothers with a mean difference of 1 .The obtained mean difference was found to be statistically significant as evident from 't' value of 2.94 for df (58) at 0.05 level of significance.

Table 4: Mean, median, mean difference, standard deviation, standard error of mean difference and "t" value post test progress of labour scores of primi mothers at full dilatation, n=60

Group	Observation	Mean	Median	Mean Difference	Sd	Standard Error Mean Difference (SEMD)	"t" Value
Experimental group	At full dilatation	16.88	17	2.85	1.22	0.33	8.63*
Control group	At full dilatation	14.03	14		1.35		

' t value ' df (58) level = 2. , p < 0.05 level, * = significant at 0.05 level

Table No.4 indicates that the mean post test progress of labour score (14.03) of control group primi mothers was less than the mean post test pain perception score (16.88) of experimental group pirmi mothers with a mean difference of 2.85 .The obtained mean difference was found to be statistically significant as evident from 't' value of 2.94 for df (58) at 0.05 level of significance.

5. Discussion

In the present study, the primi mothers were positioned in upright position and assessment of pain perception and progress of labour had done two times, one was after 2 hours of intervention and second was at full dilatation of cervix. Data shows that intensity of perceived labour pain after 2 hours of intervention was severe among control group (50%) than experimental group (6.7%) and more subjects of experimental group perceived mild pain (60%) compared to control group (26.7%).

Same findings were observed at full dilatation of cervix intensity of perceived labour pain was severe among subjects of control group (70%) compared to experimental group (40%) and majority of subjects perceived mild pain in experimental group (16.7%) compared to control group (0%) and similar findings were revealed by V Savitha, Nayak S, Paul S. [17] the control group experienced severe pain (55%) than experimental group (40%). In this study use of oxytocin augmentation at 4-5 cm dilatation was less in experimental group (13.3%) than control group (60%) it shows that upright position reduces the use of oxytocin for labour augmentation. Vallejo MC. [18] found that oxytocin used among ambulatory group nulliparous women was 36% and 40.8% in the non ambulatory group. In this study cervical dilatation rate was greater in experimental group than control group. Similar findings were shown by Mathew A. [19] that there is significant difference in ambulation and control group t value 5.438 is greater than t table value (2.042) at 0.05 level of significance. Upright position have significant effect on descent of fetal head, the mean value of fetal station at full dilatation of cervix was more in experimental group 0.7 (total score 3) than control group 0.46 with a mean difference 0.14. Liu CY. [20] found that there was significant difference in advancement of the descent of the fetal head for mothers in the upright position, the mean was 31.63 mm, this compared with the mean for the recumbent group of 23.50 mm, with a difference between the means of 8.13 mm.

6. Limitations

The study was limited to

- Primi mothers with gestational age 37 to 42 weeks.
- Mothers in first stage of labour.
- Some of PV examinations were done by doctors.

7. Recommendations

- A similar study can be under taken to do comparison to assess the effectiveness of upright position on progress of labour and labour pain among primi mothers in II stage of labour.
- A comparative study can be done on upright position on maternal and fetal outcome among primi and multi parturient mothers.
- A comparative study can be done on different movements and positions among different groups to assess the efficacy.
- It is also recommended that to conduct qualitative in combination with quantitative to explore the maternal satisfaction of mother who practices movements and position during labour.
- The study can be done with large samples so that the results can be generalized.
- The same study can be done on different settings.

8. Conclusion

The findings revealed that upright position was able to reduce pain perception and improve progress of labour. It can be used

as a non pharmacological intervention and is recommended as pain perception relief and progress of labour in primi mothers during first stage of labour irrespective of age and educational qualification. It is a simple and inexpensive therapy. Nurses make important decisions regarding application of non pharmacological therapeutic intervention for pain management and progress of labour.

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