

Assessing the Effect of Patterned Breathing Techniques for Reducing Pain during Active Stage of Labour among Pregnant Women in Tertiary Care Hospital, Bhubaneswar

Karishma Bal, Kalyani Rath, Pramila Baxla

Abstract

A study was undertaken to evaluate the effect of patterned breathing techniques in reducing pain during active stage of labour among pregnant women in tertiary care hospital, Bhubaneswar (Odisha). The conceptual framework adopted for this study was based on JW Kenny Open System Model. A randomised control trial design was used and consecutive sampling technique was used to select 50 pregnant mothers. Patterned breathing exercises were taught and practised individually to the mothers of experimental group during latent stage of labour and the mothers with 4 cm cervical dilatation were made to practice breathing exercise at each contraction for 1 hour. Pain intensity level was assessed in five subsequent observations at an interval of 1 hour both in experimental and control group using modified numeric pain intensity scale. Five post-tests scores after intervention were recorded using numeric pain intensity scale for assessing pain level after pre-test during the contraction. Findings revealed that in experimental group 80 percent people experienced mild pain and 20 percent experienced moderate pain. As p value was <0.005 , so there was significant difference between the mean scores of two groups. Thus, patterned breathing techniques have significant effect in reducing of labour pain during active stage of labour. But demographic variables do not have significant association with the level of pain with patterned breathing exercises.

Child birth can be one of the most exhilarating and fulfilling experiences in a woman's life. It can also be one of the most stressful and painful. Even with pain medication child birth can be uncomfortable. Breathing techniques are a helpful way to help a woman focus and get through the sometimes long, arduous task of delivering a baby (Chanberlain,1996).

While labour can seem like a scary experience for many pregnant women, there are many methods through which to cope with pain during labour. Some of these methods work by easing labour pain naturally, while others reduce the pain of birth medically. Pain during labour is caused by the contractions of the uterine muscles of the body, as well as pressure on the cervix. Women also experience discomfort during child birth because of the pressure of the baby's head on the bowels and bladder.

The level of discomfort a woman experiences while giving birth varies from individual to individual. Some women experience body cramps all over, including in the abdomen, groin and back, while others feel pain on their sides and thighs. Women may describe pain during labour as being similar to menstrual cramping, while others describe it as feeling extreme pressure on their bodies. One important

method of natural labour pain relief is breathing. The use of breathing techniques to relax oneself during labour is taught in the patterned breathing techniques, which views birth as a natural process. The patterned breathing technique emphasises breathing and massages. Bradley method is another natural option to minimise pain during child birth. It teaches that labour is a natural process and that child birth pain can be alleviated through breathing, the use of medication is encouraged only when necessary.

In the initial stages of labour, it is important for a woman to help the body relax for all the right processes to take place for a successful delivery. Slow pace breathing is an exercise that helps the body do just that relax. Slow pace breathing is done beginning with a deep "cleansing" breath and then taking constant, steady, deep breaths through the nose and exhaling slowly through the mouth. This helps a woman focus on her breathing. She can also use visualisation (her favourite place, what her baby looks like in her arms among other images) during slow pace breathing to help her focus.

Once a woman moves further on into active labour, she may feel the need to increase the pace of her breathing to compensate for the increased pain or discomfort. Accelerated breathing, again, begins with a cleansing breath and then continues the same as slow pace breathing, but with a faster pace and

Department of Obstetrics Gynaecological Nursing, Kalinga Institute of Nursing Science, KIIT University, Bhubaneswar, Odisha

more concentration on focusing on each, individual breath. Once labour hits full on, it is usually time for patterned breathing. This type of breathing exercise not only helps to get the mind clear of as much of the pain as possible, but it can also help women who feel anxiety, stress or panic.

Patterned breathing also begins with an initial cleansing breath and then settles into a pattern of more shallow, rapid, in-and-out breathing. Sometimes this is referred to as “hee-hee-hoo” breathing, as that is the sound the air makes when following the pattern. During labour, women sometimes feel the need to push before it is time to do so. When this happens, breathing exercises can be helpful. If a woman feels the need to push, she should take a cleansing breath and focus on deep breaths in through the mouth and blow the air out again through the mouth. She should do this as many times as needed until the urge to push passes. Beginning in the late 1950’s many specific methods for non-medication pain reduction were developed. These include the Lamaze, Dick-Read and Bradley methods. Child birth education has been moving away from the method approach.

Most of the methods advocated are based on three premises. First: discomfort during labour can be minimised if the woman comes into labour informed about what is happening and prepared with breathing exercises to use during contractions. Second: discomfort during labour can be minimised if the woman’s abdomen is relaxed and the uterus is allowed to rise freely against abdominal wall contractions. Third: the pain perception be altered by distraction techniques by a “gate control” theory of pain perception.

Objectives

The objectives of the study were to: (i) Assess the pain level among mothers during active stage labour (a) in experimental and control group before practising patterned breathing techniques and (b) after practicing patterned breathing techniques; (ii) Evaluate the effectiveness of pattern breathing on pain in experimental group.

Methodology

Quantitative research design was used for this study; research design was randomised controlled trial design. Consecutive sampling technique was adopted for selecting 50 pregnant mothers working in KIMS Hospital, Bhubaneswar, Odisha. Randomisation was done after taking the samples through consecutive sampling technique. The data collection was done by using numeric pain intensity scale demographic variable. Pilot study was conducted on 5 samples showed that the tool was feasible and researchable. Data obtained were analysed using descriptive and inferential statistics. Data was collected from during

1-30 May 2018. Research and ethical clearance was obtained from Research and Ethics committee of KIIT University. Permission was obtained from the concerned hospital authority. The investigator herself collected the data using numeric pain intensity scale among from subjects. Data was analysed using descriptive and inferential statistics. Demographic data was analysed in terms of frequency and percentage. Pain score was analysed by computing frequency, percentage, maximum score, mean, mean percentage and standard deviation. Paired t-test was used to evaluate the effectiveness of patterned breathing technique. Fisher exact test was used to find association between the pain score and selected demographic variables.

Results

The data obtained from the study population were analysed and interpreted in terms of objectives and hypothesis of the study.

Findings regarding demographic variables (Tables 1-10)

- Majority of sample mothers (n=17, 68%) were in the age group 21-30 years and minimum (n=3, 12%) belonged to groups upto 20 years in experimental group and 15 (60%) between 21-30 years and minimum 2 (8%) in control group.
- Out of 50 samples, 12 (48%) samples had studied upto graduation and 5 (20%) upto secondary education, and in experimental group, 15(60%) were upto secondary education, 4 (16%) studied

Table 1: Age-wise distribution of mothers in active stage of labour pain (n=50)

Parameters	Experimental		Control	
Age	Frequency	Percentage	Frequency	Percentage
20 Years	3	12	2	8
21-30 Years	17	68	15	60
31-35 Years	5	20	8	32
35-40 Years	0	0	0	0

Table 2: Education-wise distribution of mothers under active labour pain

Parameters	Experimental		Control	
Education	Frequency	Percentage	Frequency	Percentage
Primary	8	32	6	24
Secondary	5	20	15	60
Graduation	12	48	4	16
Post-graduation	0	0	0	0
Illiterate	0	0	0	0

Table 3: Family-wise distribution of mothers under active labour pain (N=50)

Parameters	Experimental		Control	
Type of Family	Frequency	Percentage	Frequency	Percentage
Joint family	15	60	12	48
Nuclear family	10	40	13	52

Table 4: Occupation-wise distribution of mothers under active labour pain

Parameters	Experimental		Control	
	Frequency	Percentage	Frequency	Percentage
Employed	4	16	2	8
Unemployed	18	72	14	56
Self-employed	3	12	9	36

Table 5: Income-wise distribution of mothers under active labour pain (N=50)

Parameters	Experimental		Control	
	Frequency	Percentage	Frequency	Percentage
5000-10000	0	0	2	8
10001-15000	4	16	9	36
15000-20000	13	52	10	40
>20000	8	32	4	16

Table 6: Primi gravida/Multi Gravida status of mothers under active labour pain (N=50)

Parameters	Experimental		Control	
	Frequency	Percentage	Frequency	Percentage
Primigravida	19	76	16	64
Multigravida	6	24	9	36

upto graduation in control group.

- 15 (60%) mothers belonged to joint family and 10 (40%) to nuclear family in experimental group, 13 (52) belonged to nuclear family, 12 (48%) to joint family.
- 4 (16%) and 3 (12%) were employed and self-employed respectively and 18 (72%) were unemployed in experimental group, 15 (60%) were unemployed, 4 (16%) were employed.
- In experimental group, 13 (52%) mothers earned Rs. 5000-10000 and 4 (16%) earned between Rs.10,001-15,000, 10 (40%) Rs.10,000-15,000,

Table 7: Experiences status of mothers under active labour pain

Parameters	Experimental		Control	
	Frequency	Percentage	Frequency	Percentage
Yes	2	8	3	12
No	23	92	22	88

Table 8: Level of pain in pre and post-test stages of pregnant mothers of control group

Test	Level of pain in the control group			
	No pain	Mild pain	Moderate pain	Severe pain
Pre-test	0	1	9	15
Post-test 1	0	2	7	16
Post-test 2	0	2	5	18
Post-test 3	0	0	6	19
Post-test 4	0	0	7	18
Post-test 5	0	0	7	18

2 (8%) earned between Rs.5,000-10,000.

- Majority of mothers i.e. 19 (76%) belonged to primigravida and 6 (24%) were multi gravida in experimental group. In control group 16 (64%) were primigravida, 9 (36%) belongs to multi gravida in control group.
- Majority of mothers i.e. 25 (100%) were in active stage of labour and none (0 %) in latent stage of labour in experimental group; 25 (100%) were active stage of labour in control group.
- Majority of mothers i.e. 23 (92%) had not experienced patterned breathing exercise and 2 (8%) had experienced patterned breathing exercise in experimental group, 22 (88%) had not experienced patterned breathing exercise.

It was observed that in pre-test out of 25 control group, 1 (4%) woman experienced mild pain, 9 (36%) experienced moderate pain and 15 (60%) had experienced severe pain. In post-test 1 category after counselling 2 (10%) experienced mild pain, 7 (28%) experienced moderate pain, and 16 (64%) had severe pain. In post-test 2, 2 (8%) had mild, 5 (20%) moderate and 18 (72%) had-severe pain. In post-test 3, 6 (24%) had moderate, 19 (76%) severe; in post-test 4, 7 (28%) had moderate, 18 (72%) had severe pain. In post-test 5, 7 (28%) had moderate, and pain, 18 (72%) experienced severe pain (Table 8).

In pre-test out of 25 pregnant women 8 (32%) had experienced moderate pain and 17 (68%) had experienced severe pain. In post-test 1 category, after practising patterned breathing 6 (24%) had experienced mild pain, 8 (32%) had experienced moderate pain 11 (44%) severe pain. In post-test 2, 10 (40%) had mild, 13 (52%) moderate, 2 (8%) had severe. In post-test 3, 14 pain (56%) had mild, 11 (44%) had moderate pain; in post-test 4, 17 (68%) had mild, 8 (32%) moderate pain. In post-test 5, 24 (96%) had mild pain, and 1 (4%) had experienced moderate pain (Table 9).

A comparison was made between the mean scores of pre-test and post-test. Paired t- test was applied to test the significance. p value of pre-test was 0.76, and p value of post-test 1 was 0.02, post-test 2=0.000, post-test 3=0.00, post-test 4= 0.00, post-test 5= 0.00. If the p value is <0.05, then the test is statistically significant, Though the p value of post-test 1, 2, 3, 4, 5 is less than 0.05, so the test is statistically significant. Thus, there is significant difference between the mean scores of two groups. In other words, patterned breathing techniques has significant effect in reduction of labour pain during active stage of labour (Table 10).

Discussion

Present study findings are in congruence with those of Elizabeth Thomas and Savita Dhiwar who men-

Table 9: Level of pain in pregnant mothers of experimental group (N=50)

Test	Level of pain in the control group			
	No pain	Mild pain	Moderate pain	Severe pain
Pre-test	0	0	8	17
Post-test 1	0	6	8	11
Post-test 2	0	10	13	2
Post-test 3	0	14	11	0
Post-test 4	0	17	8	0
Post-test 5	0	24	1	0

Table 10: Association of Pre-and Post-test pain score of mothers among experimental and control groups. (N=50)

Characteristics	Experimental (Mean $\pm$ SD)	Control (Mean $\pm$ SD)	p Value
Pre-test	3.56 $\pm$ 0.504	3.45 $\pm$ 0.604	0.76
Post-test 1	3.26 $\pm$ 0.639	3.25 $\pm$ 0.638	0.02
Post-test 2	2.73 $\pm$ 0.583	2.85 $\pm$ 0.587	0.0004
Post-test 3	2.53 $\pm$ 507	2.4 $\pm$.502	0.00
Post-test 4	2.43 $\pm$ 504	2.2 $\pm$ 0.410	0.00
Post-test 5	2.2 $\pm$ 406	2.1 $\pm$ 0.307	0.00

tioned that the mean pre-test score (on admission) and for overall mean post test scores (at 1st, 2nd, 3rd, 4th and 5th hour) of pain level before and after practicing patterned breathing technique during first stage of labour, among primigravida women in experimental group, has p-value 0.00, which is less than 0.05 level of significance. Therefore, it was concluded that on admission the pain level during the active phase of first stage of labour was less after that with the progress of labour there was significant increase in the level of pain every hourly. The level of pain on admission was mild then increased moderately at the end of 5th hour.

Assessment of the level of pain in study population of control group: According to study findings of Elizabeth the pre-test score (on admission) and overall mean post-test scores (at 1st, 2nd, 3rd, 4th and 5th hour) of pain level without practicing Patterned breathing technique during first stage of labour, among primigravida women in control group, has p-value 0.00, which is less than 0.05 level of significance. Therefore, it was concluded that on admission the pain level during the active phase of first stage of labour, the pain level was less; after that, as the labour progressed there was a significant increase in the level of pain every hourly. And the level of pain on admission was mild then increased severely at the end of 5th hour.

Comparison of pre- and post-test scores of mothers in experimental and control groups: Present findings are in congruence with Elizabeth concluding that The mean pre-test score of pain level in primigravida

women before practicing patterned breathing technique in experimental was 2.6, which is less than control group (2.8) with a mean difference of (0.2), which is not significant as evident from 'z' value of 1.68, which is less than 0.05 level of significance. Therefore, it was concluded that on admission before practicing patterned breathing technique the level of pain experienced by the primigravida women in experimental and control group was almost same with no significant difference.

It was evident from the statistical tests that practicing selected patterned breathing technique was effective in reduction of pain among primigravida women during first stage of labour. Analysis of data showed that there was significant difference between pre-test and post-test pain scores of pain level in experimental group after practicing patterned breathing technique and without practicing patterned breathing technique control group

Limitations of the Study: The sample size for the study was small, and limited to one hospital, so generalisation of findings is limited. Also, the procedure is time taking.

Conclusion

The following conclusions were drawn from the findings of the study.

- The study results showed that patterned breathing techniques was effective in relieving pain.
- There was significant difference between pre-test pain level and post-test pain level score.
- Findings concluded that patterned breathing was effective for reducing labour pain among pregnant mothers during active stage of labour.

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