

## The Relationship Between A Woman's Position During Labor And The Level Of Feeling Pain In The Active Phase Of Labor

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**Abstract:** Many pregnant women worry about labor pain and they are mostly willing to perform cesarean delivery. Nowadays many pharmacological and non-pharmacological methods are used to reduce labor pain. The present study aimed to investigate the effect of changing a woman's position in the active phase of labor on the level of feeling pain during the delivery. This clinical trial was performed on 400 pregnant women in the active phase of labor who were selected according to the purposive sampling method. Samples were asked to fill out the questionnaire and personal questions, after that they placed in a sitting position and then after 15 minutes they changed their position and placed in a supine position. Changing the position iterated every 15 minutes and the level of pain in lower back and abdomen were determined by a pain ruler and finally the results were recorded. Data were analyzed through independent T-test and Chi-square. The majority of women who were in sitting position had lower abdominal pain rather than who were in supine position and changing the position from sitting to supine intensified the pain more than before. There is a significant relationship between a woman's position during labor and the level of feeling pain in lower back and abdomen in the active phase of labor ( $p=0/000$ ). Sitting position can reduce lower back pain and also lower abdominal pain; it can also change the level of severe pain into the moderate one and the level of moderate pain into the mild one in the active phase of labor.

[Dousti Rana. **The Relationship Between A Woman's Position During Labor And The Level Of Feeling Pain In The Active Phase Of Labor.** *Life Sci J* 2012;9(4):422-425] (ISSN:1097-8135). <http://www.lifesciencesite.com>. 63

**Keywords:** Sitting Position; Supine Position; Labor Pain

### 1. Introduction:

Delivery is a normal physiological process but many women during pregnancy are worried and have severe anxiety about the labor pain, so in order to deal with this fear, they are willing to perform cesarean delivery in a way the nowadays elective cesarean delivery has been increased. The main factor of labor pain is uterine contractions and cervical dilatation and the amount of pain depends on the intensity and duration of uterine contractions and also the rate of cervical dilatation. Many researchers try to reduce labor pain and in this way they want to help physiological delivery and also prevent the trend of increasing cesarean section that is due to fear of childbirth. Nowadays many pharmacological and non-pharmacological methods are used to reduce labor pain. Given that drug use may be associated with complications for the mother and her fetus, tendency to use non-drug treatments to relieve pain and suffering is greater. There are various non-pharmacological methods that have been proposed to reduce labor pain including breathing exercises, muscle relaxation, lumbosacral massage, listening to music, showering, moving and changing the position during the delivery. There are many positions that are suitable for women in labor including lying, standing, sitting, squatting, running, walking and etceteras. Given that labor pain is a physiological process and these kinds of pain are completely normal, note that the health status of the fetus should be considered, so these women need to be

carefully monitored. However, pregnant women in many hospitals of Iran (maternity unite) lie back on the bed and they pass labor stages in this position, and usually have no mobility and remain in the supine position. This position for a long time leads to uterine artery pressure. Consequently, the volume of blood returning to the heart decreases and this phenomenon leads to hypotension and sometimes placental dysfunction, and also fetal heart rate may decrease and as a result leads to cesarean delivery. The present study aimed to investigate the effect of changing a woman's position in the active phase of labor (dilatation 5-8 cm) on the level of feeling pain during the delivery. Finally if we could achieve significant results, our method can be used as a simple and non-pharmacological method so that to reduce labor pain in labor centers.

### 2. Methodology:

In this clinical trial, among the pregnant women who were admitted in Hazrat-e Zeinab (PBUH) Hospital, 400 people were selected randomly. The sample size (using the formula to determine the volume) consists of two groups; they were 400 people, in total. Nulliparous women with no risk of term pregnancy (37-42 weeks), having a fetus and normal fetal heart rate that displayed the head of the fetus, ruptured membrane and had spontaneous onset of labor and also were in 5-8cm dilatation, and did not receive pain medication and oxytocin during labor, were selected too. Some people, who need intervention (like

cesarean section) and preferred special delivery system, were excluded. At first, we explained the process to the selected people and after that samples were asked to fill out the questionnaire and personal questions, then they placed in a sitting position and after 15 minutes they changed their position and placed in a supine position. Changing the position iterated every 15 minutes. We chose 15 minutes because during the active phase, the cervix is opened 2 cm per hour and pain increases with progression of labor. Therefore, the suitable time for changing the position is a time in which from accelerating the delivery phase, the increased pain can be measurable. In each position, we asked women to measure their pain with a ruler. The pain ruler is scaled from zero to ten and two ends of it are symbols of min pain to max pain. The intensity of pain that participants felt in their lowerback and abdomen from each position, and the pain that immediately started from each contraction was measured through pain ruler; researchers categorized the levels of pain from the following pain ranges:

Max pain	Mid pain	Mild pain	Min pain
10-8	7-4	3-1	0

In the present study, pain intensity of the participants was only compared to themselves; the selected women (placing in sitting or supine positions) every 15 minutes reported their intensity of pain and

because of this we can assert that the accuracy of this research is outstanding. During the study due to the accelerated delivery, the pregnant women had vaginal examination because doctors wanted to know that the cervix is open or not. The information about the intensity of pain (in the lower back and abdomen) according to pregnant women’s position (sitting or supine position) in various cervical dilatations was collected. During the study, due to fetal distress and intolerance of a particular situation, ten women were excluded but the study continued with 400 remaining people. Then data were analyzed through independent T-test and Chi-square.

**3. Results:**

The age range for the participants were from 15 to 39 and their mean age was 21/6 ±3/6. The education of these women was 50% a diploma. The comparison of pain intensity in lower back and abdomen (in both sitting and supine position) at 5 cm cervical dilatation are shown in table 1.

By using Chi-square test we found out that there is a significant relationship between lower back pain in sitting position and lower back pain in supine position in 5 cm cervical dilatation (p=0/000). The Chi-square test also showed that there is a significant relationship between abdominal pain in sitting position and abdominal pain in supine position in 5 cm cervical dilatation (p=0/000).

**Table 1-** the comparison of pain intensity in lowerback and abdomen (in both sitting and supine position), in Nulliparous women who are in the active phase of labor at 5 cm cervical dilatation.

The intensity of abdominal pain					The intensity of lower back pain					Supine position Sitting position	
Max	Mid	Mild	Min		Max	Mid	Mild	Min			
% #	% #	% #	% #		% #	% #	% #	% #			
0 0	0 0	83 44	17 9		0 0	0 0	28/8 24	17/2 5		MIN	
0 0	81 145	19 34	0 0		0/5 1	89/1 163	8/2 15	2/2 4		MILD	
47/7 72	43/7 66	8/6 12	0 0		55/9 95	38/8 66	5/3 9	0 0		MID	
52/9 9	47/1 8	0 0	0 0		61/1 11	38/9 7	0 0	0 0		MAX	
$\chi^2 = 328/963$					$\chi^2 = 339/666$					p= 0/000	

By using Chi-square test we found out that there is a significant relationship between lower back pain in sitting position and lower back pain in supine position in 6-7 cm cervical dilatation (p=0/000). The Chi-square test also showed that there is a significant relationship between abdominal pain in sitting position and

abdominal pain in supine position in 6-7 cm cervical dilatation (p=0/000).

The comparison of pain intensity in lower back and abdomen (in both sitting and supine position) at 6-7 cm cervical dilatation are shown in table 2.

**Table 2-** the comparison of pain intensity in lowerback and abdomen (in both sitting and supine position), in Nulliparous women who are in the active phase of labor at 6-7 cm cervical dilatation

The intensity of abdominal pain					The intensity of lower back pain					Supine position	
Max	Mid	Mild	Min		Max	Mid	Mild	Min		Sitting position	
% #	% #	% #	% #	% #	% #	% #	% #	% #	% #		
0	0		80	201	0	0	100	1	0	0	MIN
0	0		4		0	0					
0	92/7	89	7/3	0	0	0	93/2	6/8	4	00	MILD
0			7	0			55				
72/1	15	27/4	59	5	1	0	68/6	28/2	2/9	8	0/41
				0			190	78			
78/6	16/7	14	4/8	0	77/8	49	20/6	13	1/6	1	0
66			4	0					0	0	0
$\chi^2 = 323/217$					$\chi^2 = 134/713$					p= 0/000	

The Chi-square test also showed that there is a significant relationship between abdominal pain in sitting position and abdominal pain in supine position in 8 cm cervical dilatation (p=0/000). In this research, there is not a significant relationship between education and the intensity of abdominal pain.

The comparison of pain intensity in lower back and abdomen (in both sitting and supine position) at 8 cm cervical dilatation are shown in table 3.

**3.3.2 The aeration rate was controlled by the**

**Table 3-** the comparison of pain intensity in lower back and abdomen (in both sitting and supine position), in Nulliparous women who are in the active phase of labor at 8 cm cervical dilatation.

The intensity of abdominal pain					The intensity of lower back pain					Supine position	
Max	Mid	Mild	Min		Max	Mid	Mild	Min		Sitting position	
% #	% #	% #	% #	% #	% #	% #	% #	% #	% #		
0	0	0	0	0	0	0	0	0	0	0	MIN
0					0	0					
0	94/1	16	5/9	1	0	0	100	0	0	0	MILD
0					0	0	3	0	0	0	
82/7	17/3		0	0	94/8		4/6	6	0	0	MID
13	28		0	0	16		8	1	0	0	
98/6	1/4	3	0	0	95/5	4/5	10	0	0	0	MAX
			0	0	213			0	0	0	
$\chi^2 = 163/5$					$\chi^2 = 55/851$					p= 0/000	

**Discussion:**

The results showed that the majority of women who participated in this research, in the active phase of labor, by changing from supine position to sitting position felt less pain on their abdomen, and the intensity of pain in sitting position is much less than supine position. In Shimada et al. the pain scores for those in sitting position was much less than those in supine position. Their result is similar to us, and we can conclude that the pain in sitting position is possibly in connection with the nerves of Sacroiliac joint or SI joint and their surroundings.

According to the study that was carried out by Pierce et al. and was planned for evaluating the relationship between the decreased lower back pain and abdominal pain during the first stage of labor, the analyzed data showed that the majority of patients felt persistent and cramping pain in their abdomen and lower

**oxygen concentration in exhaust gas**

The simulation result of variations of compost indexes, are listed in Table 2. With developed dynamic simulation model, Air flow was adjusted so that outlet oxygen concentration in the exhaust gas remained a proper range to optimize the aeration costly. When the oxygen concentration was controlled the range from 10% to 18%, At the same conditions, the experimental results are shown in Figure 8.

back while placing in supine position. These results are against our achievements. The present study proposed that sitting position can reduce pain in abdomen and lower back, and also this can change the intensity of pain from severe pain into the moderate one and the level of moderate pain into the mild one in the active phase of labor. These findings are in the path of Melzack et al.

Melzack investigated the intensity of pain in sitting and supine positions. According to the study, 35% of pregnant women had abdominal pain and 50% of them had lower back pain in sitting position, these finding were against the results of Molina et al. They reported that the position (sitting or supine) will not influence the intensity of pain.

Robert et al. concluded that patients at 6 cm cervical dilatation prefer to place in sitting position, and at the end of the delivery, they would prefer side-

sleeping. Cherzanofsky's research showed that vertical position of women had significantly shorter phase of maximum slop but the intensity of pain did not differ. These findings are against our results. Mendez et al. proposed that the intensity of contractions was significantly higher in standing position, lower frequency of contractions and uterine activities were greater in this position. Less pain was considered during the time of uterine contractions and patients felt more comfortable in supine position. These findings are on the path of our achievements. Bloom et al. in a randomized study (among 1000 women) could find out that, walking is neither safe nor risky. In fact, walking does not have any influence on the active phase of labor.

Davim et al. did a research on the effect of non-pharmacological methods and reducing the intensity of pain by changing the position, and they finally concluded that these methods are applicable and appropriate and they can at long last reduce the intensity of labor pain. We can certainly assert that their findings are in the path of our achievements. The significant issue that should be note in this research is that changing the position from supine to sitting had more effect on reducing the lower back pain than abdominal pain and on the other hand, if the dilatation is greater and if the delivery is close, the intensity of pain will be lesser.

Therefore, in the active phase of labor we should allow pregnant women to change their position from supine to sitting (vice versa) because in this way the intensity of pain will be lesser. Of course we had some restrictions in the head of us, including the effect of time (morning, noon, and night) and chronobiological effects on the intensity of pain. Learning about the pain ruler was after admissions to the hospital and in the onset of labor, so this may slightly reduce the accuracy. This research only focused on supine on the bed and sitting position on the chair, there are some other positions that may reduce the pain even better but we restricted ourselves to this but note that further investigation is needed too. Among the labor stages, we only focused on the active phase of labor at 5-8 cm cervical dilatation, but it should be better to research on the second phase of labor, too. We only selected Nulliparous women in order to integrate the sample size; further investigations can be based on Multiparous women.

#### Conclusion:

Sitting position can reduce lower back pain and also lower abdominal pain; it can also change the level

of severe pain into the moderate one and the level of moderate pain into the mild one in the active phase of labor.

#### Acknowledgements:

This research was conducted with financial support and scientific Myandoab city hospital. The author thanks to the efforts of hospital administration.

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9/6/2012