Effect of Walking during the Active Phase of Labor on the Progress of Labor among Primiparae

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Abstract

Background: *A quasi-experimental study was conducted at labor and delivery unit affiliated to El-Sabeen Maternity Hospital- Sana'a - Republic of Yemen.* ***Objective:*** *To determine the effect of walking during active phase of labor on progress of labor among primiparae.* ***Setting:*** *the study was conducted at labor and delivery unit affiliated to El-Sabeen Maternity Hospital- Sana'a - Republic of Yemen.* ***Subjects:*** *A convenience sample of 120 primiparae in their active phase of labor were randomly assigned to either a study or a control group.* ***Tools****: Two tools were used to collect the necessary data. Tool I: The Partograph. Tool II: Hand Held Doppler. In addition, socio-demographic and clinical characteristics.* ***Results:*** *The study revealed a statistically significant difference in the progress of cervical dilatation over time between the two groups P=.001 (f=15.480). Mean cervical effacement at the first hour was 57.0000±9.48683, 52.1429±6.99293 for study and control group, respectively. The mean effacement at the sixth hour for the study group was 91.0000±5.67646, and for the control group was 87.1429±4.68807. A statistically significant difference was also observed in relation to fetal descent among the two groups P=.000 (f=159.427). The same pattern was observed in relation to the frequency of contractions P=.000 (f=57.390).* ***Conclusion:*** *It can be concluded that walking during active phase of the first stage of labor can enhance the progress of cervical dilatation, effacement, fetal descent, and intensity of uterine contraction. Accordingly, it can shorten the active phase and second stage of labor. It also proved to be safe for the fetus as well as the newborn after delivery.*

Keywords: Walking during labor, Effect of Walking on Progress of Labor

Introduction

More and more women in the developed world and developing countries are giving birth in health facilities and usually lie in bed during the whole first stage of labor. However, when these women are encouraged, they will choose a number of different positions as the first stage progresses. Elsewhere in cultures not influenced by Western society, women progress through first stage of labor while upright, standing, sitting, kneeling or walking around, with no evidence of harmful effects to either the mother or the baby. The attitudes and expectations of healthcare staff, women and their partners have shifted with regard to pain, pain relief and appropriate behavior during labor and childbirth. A woman semi-reclining or lying down on the side or back during the first stage of labor may be more convenient for staff and can make it easier to monitor progression and check the baby. Fetal monitoring, epidurals for pain relief, and use of intravenous infusions also limit movement [(1,2)].

On the other hand, factors that contribute to maternal and fetal wellbeing are becoming an increasingly common requirement for both the birth attendance and the women themselves[(3)].

Among the numerous available practices, the vertical position during labor has received special attention, as it is a simple, inexpensive intervention that allows for a wide variety of positions. In prehistoric times, delivery was regarded as a central event of human existence, a part of human life. The same concept is still present in the understanding of the world's primitive societies. Women from different cultures of ancient societies used to give birth to their children standing, walking, crouching or sitting which made delivery more tolerable, dilatation less painful and the chance of perineal injuries decreased. Numerous drawings, dating back as far as antiquity, prove that vertical delivery was common in those early days of mankind[(4)].

Mobilization (walking) and adoption of the upright position during labor are part of the recommendations of the World Health Organization. WHO classified freedom in position and movement throughout labor and encouragement of non-supine (upright) position in labor as practices that are demonstrably useful and should be encouraged. It was proposing a return to non-invasive techniques, avoiding the use of unnecessary interventions, and guaranteeing health benefits for the parturient and her child[(5)].

Aim of the Study

This study aimed to determine the effect of walking during active phase of labor on progress of labor among primiparae.

Research Hypothesis:

Parturients who walk during the active phase of labor exhibit more positive progress of labor than those who do not walk.

Materials and Method

Materials

Design: A quasi-experimental research design was adopted.

Setting: This study was conducted at labor and delivery unit affiliated to El-Sabeen Maternity Hospital- Sana'a - Republic of Yemen.

Subjects: A convenience sample of **120** primiparae; in their active phase of labor (4-7 cm cervical dilatation) with the following criteria: In spontaneous labor, 37 to 42 weeks of gestation, A single viable fetus in cephalic presentation, Intact membranes, No medical or obstetric risk factors, Woman's age: 20- 34 years and willing to participate in the study. The study subjects were randomly assigned into two groups. Group 1 was the control group and group 2 was the study group.

Tools: Two tools were used to collect the necessary data.

Tool I: The Partograph:

Is a graphic representation of the events of labor plotted against time used to assess the progress of labor in terms of: cervical dilatation, descent of fetal head, uterine contractions and fetal condition and maternal condition[6].

Tool II: Hand Held Doppler:

It was used to assess the fetal heart rate every 30 minutes.

In addition to women's Socio-demographic characteristics such as age, level of education, occupation, origin, marital status, type of family, beside the clinical characteristics such as duration of pregnancy in weeks, medical follow up of current pregnancy as well as the place and frequency of follow up were also added.

Method

The study was executed according to the following steps:

1. Approval to carry out the study was obtained from the responsible authority of El-Sabeen Maternity Hospital after clarification of purpose of the study to collect the necessary data.

2. The tools for data collection were developed after reviewing the related literature then these tools were tested for content validity.
3. The purpose of the study was explained to each participant then the verbal consent for participation in the study was obtained.
4. After development of the tools, a pilot study was carried out on a sample of 10 women excluded from the sample to test the feasibility of the study and applicability of the tool
5. Participants were randomly assigned to one of the two groups:

Group 1, control group followed the hospital routine and progress of labor was monitored every hour by the researcher. ***Group 2,*** study group, was assisted by the researcher to walk for 20 minutes and rest for another 20 minutes alternately during the whole active phase (4-7cm cervical dilatation). The progress of labor for these women was assessed hourly. The women were returned back to bed when they felt tired, membranes ruptured, or any abnormality was encountered such as: signs and symptoms of maternal distress, fetal distress or vaginal bleeding…etc.

Both groups were assessed for progress of labor hourly i.e. assessment of cervical dilatation and degree of effacement and descent of fetus by performing the vaginal examination by the researcher, examining uterine contractions for frequency, duration, as well as fetal and maternal condition (vital signs and drugs taken). The fetal heart rate was monitored using hand held Doppler every 30 minutes and any abnormalities were recorded.

Statistical Analysis

Data analysis was carried out by using (SPSS version 13) program. The collected data was categorized, coded, computerized, tabulated and analyzed. The following statistical measures were used: frequency and percentage used for describing and summarizing categorical variables**.** Appropriate testes were used such as chi-square, student t. test and Monte-Carlo technique, to measure the difference between groups. Repeated measure model was used to test the progress of labor and One way ANOVA test.

Results

Mean age was **21.22±2.92** years for the study group compared to **21.43±3.50** years for the control group. Mean gestational age for the

study group was **39.47± 1.065** and **39.35± 1.086** for the control group. All of the study subjects **(100%)** reported having been followed up during pregnancy, **36.7%** of the study group and **43.3%** of control group visited antenatal clinics less than 4 times, while a proportion of **63.3%** of the study group and **56.7%** of the control group had more than 4 ante-natal visits.

Figure (1) reveals that the mean cervical dilatation for the study and control group at the first hour was 4.0429±.11339 & 4.0000±.00000 while at the sixth hour it was 8.2286±.89576, 7.0200±.07746, respectively. There was a statistically significant difference in the progress of cervical dilatation between the two groups **P=.001 (f=15.480).**

According to figure (2) the mean cervical effacement at the first hour was 57.0000±9.48683, 52.1429±6.99293 for study and control group, respectively, and it was 91.0000±5.67646 and 87.1429±4.68807 at the sixth hour, respectively. There was a statistically significant difference in the progress of cervical effacement among the groups **P=.000 (f=210.747)**

Figure (3) shows that the mean fetal descent at the first hour was -1.9000±.31623, and 1.7500±.45227 among the study and control group, respectively. And it was 1.1000±.73786 and 4167±.51493 at the sixth hour among the study and control group respectively. There was a statistically significant difference in the fetal descent with the progress of labor between both groups as **P=.046 (f=4.544)**

According to Figure (4) the mean duration of contraction of the study and control group was 27.5000±2.63523 and 31.9231±6.30425, respectively, and 49.0000±8.09664 and 58.4615 ±13.28919 at the sixth hour, respectively. No statistically significant difference in the duration of contraction was observed between both groups as **P=.179 (f=1.937).**

Figure (5) shows that the mean frequency of uterine contractions at first hour was 2.0000±.00000 and **2.3077 ± .48038** for the study and control group, respectively and **3.5000±.52705** and **3.9231 ± .49355** at the sixth hour, respectively.

The intensity of uterine contractions in the first hour was mild among the majority of the study group (93.3%) and control group (98.3%). While in the second hour, mild intensity was found among the majority of the control (78.3%) group compared to only 53.3% of the study group. Moderate intensity was noticed during the second hour among 46.7 % and 21.7 of the study and control group, respectively with statistically significant difference between both groups $\mathbf{X^2 = 8.336,}$ P= **.004**.

More than two third (78.1%) of the control group had mild contractions during the third hour. Meanwhile, only 10.0% of the study group has strong intensity with statistical significant difference between the two groups **X^2 = 17.881, P=.000.** While in the fourth hour the majority (83.3%) of the study group had moderate intensity, one quarter (14.8%) of them had strong intensity, while in the control group 86.7% had moderate intensity, 11.7% had strong intensity.

During the fifth hour, 70.6% and 94.1% of the study and control group respectively had moderate intensity. Whereas 29.4% and 5.9% of the study and control group respectively had strong intensity. The differences was statistically significant as **X^2= 6.476, P=.011 (Table 1)**

According to table (2) the median duration of active phase for the study group was 4 hours. Whereas it was 5 hours for the control group with statistically significance difference between them **Z= -4.836, P=.000**. The duration of second stage for study group was 72 and 95 minutes for the study and control group respectively. The differences in such duration was statistically significant between both groups as **Z=2.976, P= .003.** As for the duration of third stage of labor, it was noticed that both groups had the same median 10 minutes.

Discussion

The present study revealed a statistically significant difference between the study and control groups regarding the progress of cervical dilatation, in favor of the former one.

This finding is not in line with a study conducted by Read et al (1981). He concluded that labor progress was slightly but not significantly better among the ambulatory group[(7)].

The result of the present study is also not in accordance with the findings of Hemminki et al (1985), who conducted a study on Ambulation versus oxytocin in protracted labour. He reported that among the ambulant group, the cervical dilatation was somewhat smaller among those who received intravenous oxytocin compared to those who did not and the difference was not statistically significant[(8)].

This discrepancy between the two former studies and that of the present study may be related to the fact that most of their study subjects were not confine to walking, because midwives made the suggestion but did not insist. The mothers moved as they wished. Whereas in the present study all women in the study group were encouraged to walk regularly and consistently

A statistically significant difference regarding the cervical dilatation was

observed between women who walked during the active phase of labor and those who followed the routine hospital care. This result may be attributed to the fact that walking and the upright positions during the active phase of labor enhance the uterine contractions and make them stronger and increase its efficiency to dilate the cervix. As a result, they push the baby forward and downward into the cervix and helps in taking up and thinning of the cervix. The gravity also plays an important role in pushing the baby downward and more dilatation and effacement of the cervix.

Walking of laboring women during the active phase of labor seemed to be useful for the descent of fetal head, as shown by the results of this study as there was a statistical significant difference between those who walked and those who did not. This result is in line with the results of Liu (1988) who found a considerable difference in mean scores on fetal head decent among those who used the upright position. This could be explained by the effect of gravity with the upright position [(9)].

No statistically significant difference was found between both groups regarding the frequency of uterine contractions. This finding is in agreement with the finding of Menendez (1975) who found that there was no significant modification in the frequency of the contractions in relation to the women's positions. Frequency of contractions remained unchanged or tended to diminish[(10)].

Also this finding is congruent with Hagym (1998) who found that the frequency of uterine contractions was less in the stage of dilatation in vertical position, while their intensity increased with no significant difference[(4)].

The results of the current study revealed significant difference between the study and the control group which showed that contraction intensity was increased when laboring woman walk during the first stage of labor. This result is in line with Menendez (1975) who found that the intensity of uterine contractions increased significantly in the standing position. Contractions are more efficient in the vertical and sitting positions when compared to the horizontal position. This means that the work of the uterus results in more dilatation when the woman is vertical or sitting than when she is in horizontal position[(10)].

Also this study indicated that walking during the active phase of labor has influenced its duration. The median duration of the active phase in the study group was significantly one hour shorter than the control group. This is similar to the finding of Ben Regaya et al (2010) [(11)],

who studied the role of ambulation during labor; found that ambulation reduced significantly for about 34% the duration of the first stage of labor, also Abbaszadeh (2008) [(12)] who reported the same finding and concluded that the upright position decreases the length of the first stage of labor. Thus, laboring women can be encouraged to follow an upright position during their first stage of giving birth to a child.

An older study done by Diaz et al (1980) reported a similar finding in which the median duration of first stage of the vertical group was shorter by 34% than horizontal group. Moreover, another randomized prospective study' verified positive effects previously reported. Women who were ambulated had shorter labor as compared to control subjects who assumed a lateral recumbent position[(13,14)].

The shortening of first stage of labor among the walking group could be explained by the fact that vertical position makes the intensity of uterine contractions higher in intensity and thus more efficient, the fetal head is better synclitism and the pelvic diameter is wider to facilitate the passage of fetus.

Unfortunately this finding does not match the result of Bloom et al (1999) who indicated that there was no statistically significant difference between the study group (walking group) and control group (usual-care group) which they permitted to assume their choice of supine, lateral, or sitting positions during labor. But Bloom on the other hand, concluded that walking in labor did not harm but gave no benefits[(15)].

Again, it is interesting to notice that the median duration of second stage was significantly reduced among in the study group than in the control group. This is in line with Kish (2008) who found that the time of second stage of labor among primiparae was significantly different between the experimental group who walked more than 1/2 course of labor and the control group who did not walk. This could be explained by the fact that upright position promote productive contractions, thus enhance the progress of labor[(16)].

The finding of the present study also was found to be in accordance with the Allahbadia (1992) who reported that, there was a mean difference of 20 minutes less in duration of second stage among the study group who was kept ambulatory throughout the first stage of labor and control group who was kept in the supine position[(17)].

The similarity between the Kish, Allahbadia results and the result of the present study may be attributed to the similarity between the samples of the three studies. As they are all primiparas, nearly

of the same age and all women in the study groups were ambulated during the first stage of labor. Walking and upright position was held to be of advantage because the cervix was stimulated by the weight of the fetus. The vertical posture assumed by the vast majority of women in the first and second stages of labor is such as harmonize with the mechanism of labor.

Furthermore, the same result confirms the available relevant literature trend which exhibits that walking during first stage of labor has advantages on the second stage of labor. Stewart (1984) had conducted a study to assess the influence of maternal posture on the progress and efficiency of labor which found that women who were wholly ambulant had shorter first and second stage of labor and required less analgesia[18].

It was furthermore revealed by the findings of the present study that there was no statistically significant difference between the study and the control group in relation to the median duration of the third stage of labor. This finding is in line with a study done by Abbaszadeh (2008) who reported that there was no significant difference in the duration of third stage of labor[12].

Another study done by Flynn (1978), confirms the finding of the present study and the author concluded from his results that there was no significant difference between the ambulant group and recumbent in relation to the duration of placental separation phase [19].

Conclusion

It can be concluded that walking during the first stage of labor can enhance the progress of cervical dilatation, effacement, fetal descent, and intensity of uterine contractions and so it can shorten the active phase and second stage of labor.

Recommendations

Based on the findings of the present study, the following recommendations are suggested:

1. Labor suites and birthing units should be designed to leave room for women in labor to walk and sit in pleasant surroundings.
2. Walking during first stage of labor should be emphasized in maternal-infant nursing curricula of nursing schools.
3. Walking should be recommended in the hospital protocol for management of labor, therefore walking should not be discouraged.

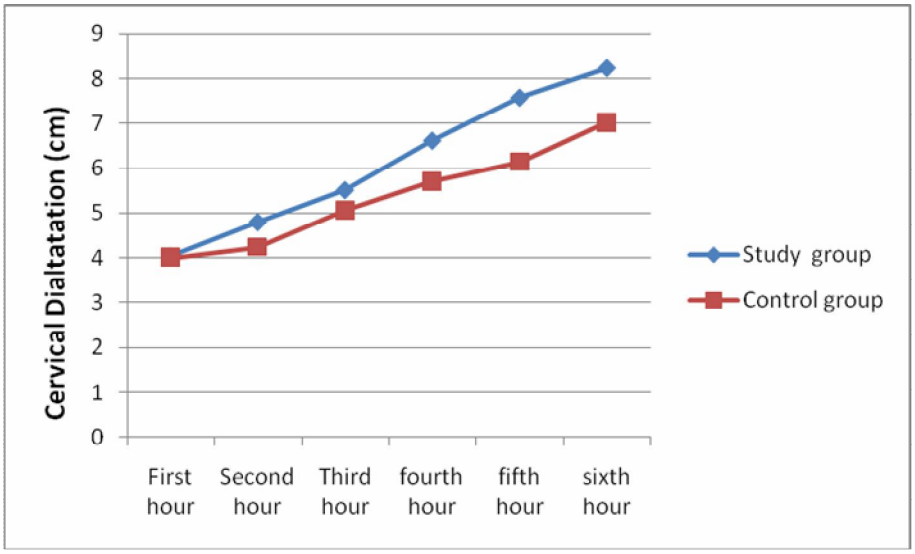

Figure (1) Distribution of the study subjects according to progress of cervical dilatation

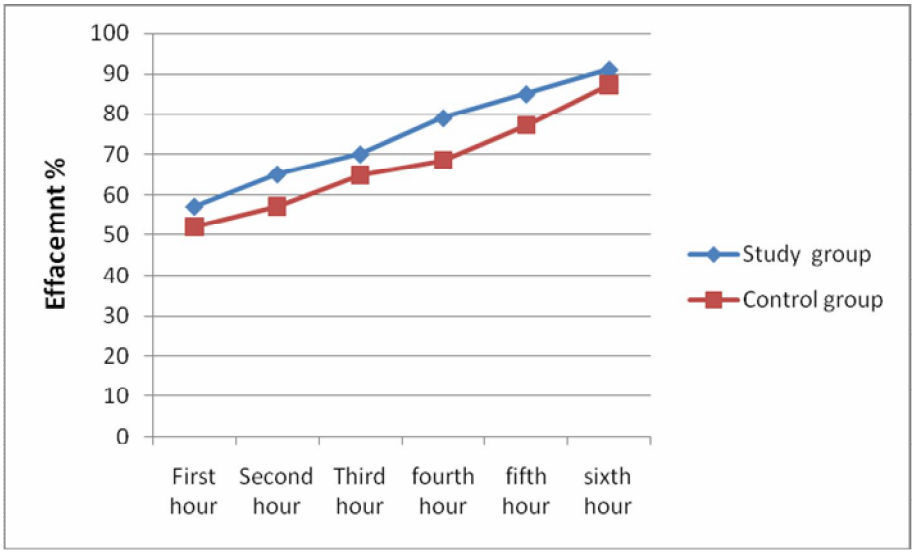

Figure (2) Distribution of the study subjects according to progress of cervical effacement

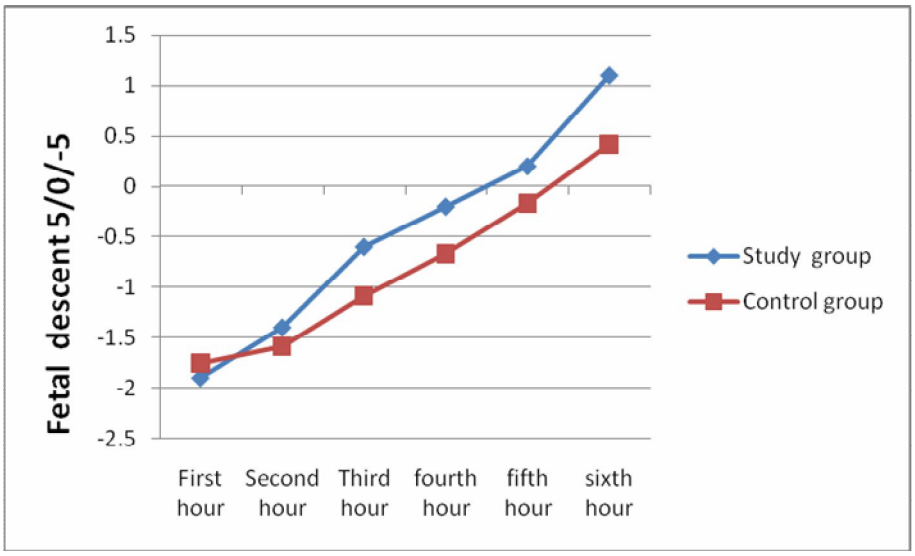

Figure (3) Distribution of the study subjects according to progress of fetal descent

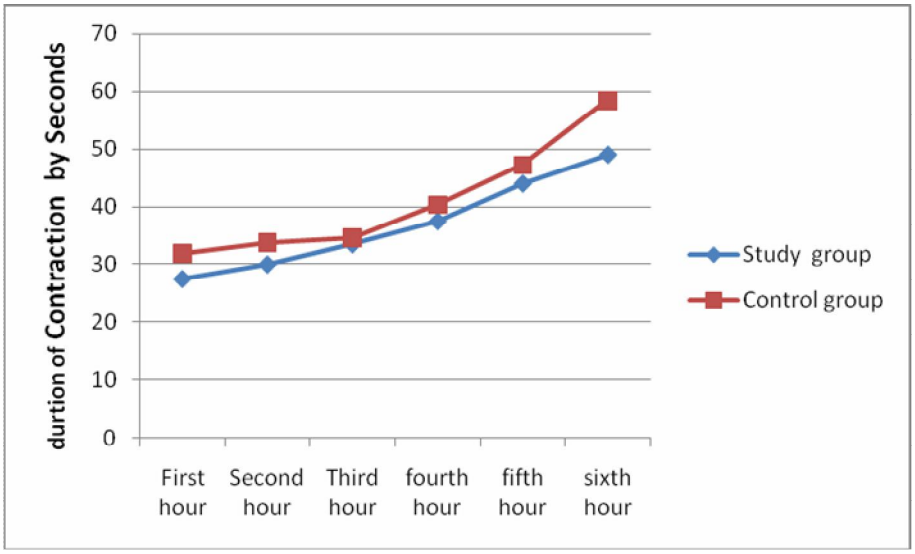

Figure (4) Distribution of the study subjects according to progress of the duration of uterine contractions.

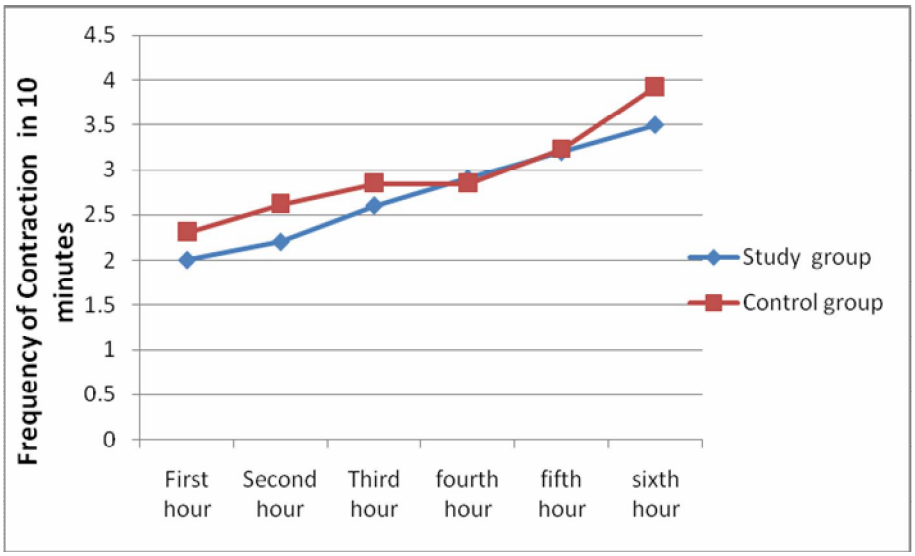

Figure (5) Distribution of the study subjects according to progress of the frequency of uterine contractions.

Table (1): Distribution of the study subjects according to the intensity of uterine contractions

Intensity of contractions	Study group n= 60		Control group n= 60		Total		Test of significance	
	No	%	No	%	No	%	X^2	P. value
First hour:								
Mild	56	93.3	59	98.3	115	95.8	1.878	.171
Moderate	4	6.7	1	1.7	5	4.2		
Total	60	100.0	60	100.0	120	100.0		
Second hour:								
Mild	32	53.3	47	78.3	79	65.8	8.336	**.004***
Moderate	28	46.7	13	21.7	41	34.2		
Total	60	100.0	60	100.0	120	100.0		
Third hour:								
Mild	7	11.7	25	78.1	32	26.7	17.881	**.000***
Moderate	47	78.3	35	58.3	82	68.3		
Strong	6	10.0	0	0	6	5.0		
Total	60	100.0	60	100.0	120	100.0		
Fourth hour:								
Mild	1	1.9	1	1.7	2	1.8	.257	.880
Moderate	45	83.3	52	86.7	97	85.1		
Strong	8	14.8	7	11.7	15	13.2		
Total	54	100.0	60	100.0	114	100.0		
Fifth hour:								
Moderate	24	70.6	32	94.1	56	82.4	6.476	**.011***
Strong	10	29.4	2	5.9	12	17.6		
Total	34	100.0	34	100.0	68	100.0		
sixth hour:								
Moderate	4	44.4	5	38.5	9	40.9	.079	.779
Strong	5	55.6	8	61.5	13	59.1		
Total	9	100.0	13	100.0	22	100.0		

* Difference is statistically significant at the ≤0.05 level

X^2 = chi-square

Table (2) Distribution of the study subjects according to the durations of active phase, second, and third stage of labor

durations of active phase, second, and third stage	Study group n=60	Control group n=60
	Median	Median
Duration of active phase	4 hours	5 hours
Z	**-4.836**	
P. value	**.000***	
Duration of second stage	72 minutes	95 minutes
Z	**2.976**	
P. value	**.003***	
Duration of third stage	10 minutes	10 minutes
Z	**1.234**	
P. value	**.214**	

* Difference is statistically significant at the ≤0.05 level

Z of Mann-Whitney test

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