« Short Communication»

Active phase length and related effective factors for admitted women in 22 Bahman Hospital, Masjid Solaiman, Iran, 2012

Zahra Pajouhideh[1], Solmaz Mohamadi[1], Parvin Abedi[2*], Elham Maraghi[3]

1-MS.c in Midwifery, Department of Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
2-PhD in Community Nutrition, Assistant Professor in Midwifery Department of Reproductive Health Research Center, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
3-PhD candidate in Biostatistics, Department of Epidemiology and biostatistics Department, Health Faculty, Tehran University of Medical Sciences, Tehran, Iran.

⋆*Corresponding author:*
Zahra Pajouhideh; Department of Midwifery, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran.
Tel: 09163132793
Email: parvinabedi@ymail.com

Abstract

Background: The changes in the active phase length may lead to dangerous consequences for the mother as well as the baby. The primary aim of this study was to evaluate the effective factors related to the length of active phase in women who admitted in 22 Bahman Hospital in Masjid Solayman, Iran.

Materials and methods: A crosssectional study was carried out on 390 women in the reproductive age who admitted in to 22 Bahman hospital in Masjid Solayman, Iran. during four months, 2011-2012. The inclusion criteria were, singleton fetus, normal vaginal delivery and term pregnancy. Data were collected using a questionnaire, a check list and cornometer. Data was analysed using Mann-Whitney and Independent t-test.

was 3.14 hours and in the multiparous women was 2.18 hours. The length of active phase was significantly related to premature ruptured membrane in the nuliparous women ($p<0.001$), the time of placenta expulsion (p-0.02). Whereas, in the multiparous women the length of active phase was significantly related to the premature ruptured membrane ($p=0.006$), placenta abruption ($p=0.04$), perticipated delivery ($p=0.04$) and uterineatony ($p=0.01$).

Conclusion: The length of active phase could be affected by premature rupture of membrane, placenta abruption, perticipated delivery and uterine atony and the time of placenta expulsion. By decreasing these factors, the length of active phase will decrease as well.

Keywords: Active phase, premature rupture of membreane, placenta abruption, percitipated delivery

►*Please cite this paper as:*
Pajouhideh Z, Mohamadi S, Abedi P, Maraghi E. Active phase length and related effective factors for admitted women in 22 Bahman Hospital, Masjid Solaiman, Iran,2012. Jentashapir J Health Res 2013;4(4): 327-332

Received: 13.06.2012 **Accepted: 19.12.2012**

Introduction

The active phase of labour is an important stage in the labour process. Any change in the length of this stage, could lead to dangerous outcome for baby and mother. The active phase of labour is defined; when the cervix dilation is 3-4 centimeter in the presence of uterine contraction (1). The progress of this stage in the nulliparous women is 1.2 centimeters and is 1.5 cen per hour in the multiparous women respectively (1). In a study by Jones *et al*., on 240 women who gave birth vaginally, the average of active phase in the nulliparous women was 6.2 hours with SD of 3.6 hours (2). The effective factors in the active phase length is including; using analgesic, epidural analgesia and the inappropriate situation of fetus (1). Gao *et al*., in 1997 found that; heavier babies, abnormal presentation and the increase in the latent phase of labour were reasons for arrest in the active phase of labour (3). With By increasing the active phase length there is might be unpleasant consequences. In a study by Yvonne *et al*,. in 2001, on 3620 women, results showed that women with the length of phase one labour more than 24 hours, showed more percentages of cesarean section, postpartum bleeding, chrioamnionities and more admission of neonates in the Intensive Care Unite (4). Regarding the fact that with increasing the length of active phase, the delivery consequences will also increase The aim of the present study was to evaluate the related factors with the length of active phase in nulliparous and multiparous women in Masjid Solyman, Iran.

Materials and methods

This was a cross-sectional study which conducted in 2012 and 390 eligible women who admitted in the 22 hospital of Masjid Solayman, Iran recruited. The inclusion criteria were; regular uterine contractions, dilation of cervix 3-5 cm, term pregnancy with singleton fetus. Women with preeclampsia, diabetes, twin pregnancy, intra uterine growth retardation ((IUGR), decrease or increase in the amniotic fluid, elective cesarean section were excluded from study. All women gave written consent for participation in the study. Data was collected by a midwife using a checklist, a chronometer and a questionnaire for collecting socio-demographic characteristics. The length of active phase in nulliparous as well as in multiparous women recorded using a chronometer. Data entry was done using SPSS ver 18 and descriptive, independent t-test and Mann-Whitney U test were used to analyze data.
pregnancy with singleton fetus. Women with preeclampsia, diabetes, twin pregnancy, intra uterine growth retardation ((IUGR), decrease or increase in the amniotic fluid, elective cesarean section were excluded from study. All women gave written consent for participation in the study. Data was collected by a midwife using a checklist, a chronometer and a questionnaire for collecting social -demographic characteristics. The length of active phase in nulliparous as well as in multiparous women recorded using a chronometer. Data entry was done using SPSS ver 18 and descriptive, independent T-test and Mann-Whitney U test were used to analyze data.

Results

Of 390 women, 131 (33.6%) were nulliparous and 259 (66.4%) were multiparous. The mean age in nulliparous and multiparous women were 23.7 and 28.7 years, respectively. The social-demographic and midwifery information of participants are listed in Table 1. Results showed that there was a significant relationship between premature rupture of membrane, the expulsion time of the placenta and the length of active phase in nulliparous women

(p<0.001 and p=0.02). In multiparous women there was a significant relationship between premature rupture of membrane, uterine atony and placenta abruption and the length of active phase (p<0.05) (Table 2).

Table 1 : Pregnancy status in nulliparous women and Multiparous

Variables	Nulliparous		Multiparous	
	M±SD	P value	M±SD	P value
Age of mother	23.7±4.4	0.99	28.7±5.7	0.49
Birth weight (g)	3276±424	0.55	3529±403	0.49
Time of placental removal *	6.09±6.22	0.02	4.7±4.8	<0.001
During the active phase of labor **	3.14±1.18	-	2.18±1.12	-

M±SD: mean ± Standard deviation
P value: Significance level
*****: At this Time of placental removal was calculated in minutes
******: During active phase in this study was calculated based on hour

Table 2 : The mean duration of the active phase of labor with some pregnancy outcomes in nulliparous women

mean duration of the active phase / Effective factors		Equal or less than 3.14 hour	more than 3.14 hour	P value
Gender	Male	*42(75%)*	*14(25%)*	*0.04*
	Female	*43(57.3%)*	*32(42.7%)*	
First Apgar	less than 7	*14(70%)*	*6(30%)*	*0.37*
	more than7	*67(63.2%)*	*39(36.8%)*	
Five-minute Apgar	less than 7	*4(100%)*	*0(0%)*	
	more than7	*77(63.1%)*	*45(36.9%)*	*0.29*
Rupture of Membrane Amniotic fluid	yes	*83(72.2%)*	*32(27.8%)*	
	No	*2(12.5%)*	*14(87.5%)*	*<0.001*
Meconium defication	yes	*13(81.3%)*	*3(18.8%)*	
	No	*72(62.6%)*	*43(37.4%)*	0.17
Accelerated delivery	yes	*2(100%)*	*0(0%)*	*0.54*
	No	*83(64.3%)*	*46(35.7%)*	
Atoni uterus	yes	*3(75%)*	*1(25%)*	*1*
	No	*82(64.6%)*	*45(35.4%)*	
Placental abruptio	yes	*3(100%)*	*0(0%)*	*0.55*
	No	*82 (64.1%)*	*46(35.1%)*	

Table 3: The mean duration of the active phase of labor with some pregnancy outcomes in Multiparous women

mean duration of the active phase / Effective factors		Equal or less than 2.18 hour	more than 2.18 hour	P value
Gender	Male	*93(68.9%)*	*42(31.1%)*	*0.16*
	Female	*93(76.9%)*	*28(23.1%)*	
First Apgar	less than 7	*45(7083.3%)*	*9(16.7%)*	*0.03*
	more than7	*129(68.3%)*	*60(31.7%)*	
Five-minute Apgar	less than 7	*11(78.6%)*	*3(21.4%)*	*0.76*
	more than7	*164(71.3%)*	*66(28.7%)*	
Rupture of Membrane Amniotic fluid	yes	*184(73.9%)*	*65(26.1%)*	*<0.001*
	No	*2(25%)*	*6(75%)*	
Meconium defication	yes	*27(81.8%)*	*6(18.2%)*	0.21
	No	*159(71%)*	*65(29%)*	
Accelerated delivery	yes	*12(100%)*	*0(0%)*	*0.04*
	No	*174(71%)*	*71(29%)*	
Atoni uterus	yes	*34(89.5%)*	*4(10.5%)*	*0.01*
	No	*152(69.4%)*	*67(30.6%)*	
Placental abruptio	yes	*16(94.1%)*	*1(5.9%)*	*0.04*
	No	*170 (70.8%)*	*70(29.2%)*	

Discussion

The results of the present study showed that the length of active phase was 3.14 ± 1.18 hours that was in line with the average of active phase of labour in nulliparous women which described by Friedman 4.9±3.4 (1). The average of active phase of labur in multiparous women was 2.18 hours that was in line with a study that conducted by Jones in 1998 on 240 nulliparous and multiparous women in Spain and the mean of active phase of labour in nulliparous women was 6.2 and in multiparous women was 4.4 hours (2). In another study by *et al.,* on 791 normal vaginal delivery during six months, results showed that; newborn' weight, age and parity of women were effective factors on the duration of labour pain in nulliparous women. So that in the older nulliparous (30-34 years) and mulltiparous (35-39 years) the length of found that the early rupture of membrane in the first stage of labour was a risk factor for increasing cesarean section (6). The percipitated labour is accompanied by complications such as; placental abruption, meconium stain, postpartum bleeding and low APGAR score (7). In the present study there was a significant relationship between placenta abruption and the length of active phase (in placenta abruption the length of active phase was shorter). The present results were in line with the results of study which was conducted by Eyal *et al.,* and showed that; percipitaed labour was associated with the highest rate of maternal morbidity (8). *et al.,* in 1999 has performed a study and the results showed that; whatever the length of the first stage of labour will increase, the uterine atony and tireness also will increase (9). The current results are similar to Tillett *et al.,* when the mean of active phase was increased; the uterine atony also was increased. In the present study there was a significant relationship between length of active phase and the time of placenta exit in this way that with decreasing the length of active pahse the length of placenta exit the first stage of labour were longer than that in younger women, however there was no relationship between age and the second stage of labour. The results also indicated that the length of first and second stage of labour was longer in the case that nonate was weighing more than 4 kg that is not in line with oure study (5). This discrepancy might be due to the fact that there was not any neonate more than 3.5 kg in the present study and the mean of age also was lower than that in the Islamian *et*'s study. In the present study there was a significant relationship between the premature rupture of membrane and the length of active phase in the nulliparous and multiparous women. Whatever the duration of membrane ruptured increase, the length of active phase also will be increased that was in line with other studies (13-14-15). In the Lee Sung *et al*.'s study in 2009, they also decreased. In percipitated labour, the mean of placenta exit time was shorted as well as the length of third stage of labour. These results were in line with other studies (7). A study showed that in the percipitated labour, the possibility of remaining of placenta tissuewas increased (8). In Conclusion the results of this study revealed that; the length of active phase could be affected by premature rupture of membrane, placental abruption, perticipated delivery and uterine atony and the time of placenta expulsion. By decreasing these factors, the length of active phase will decrease as well.

Acknowledgment

We would like to thank all staffs of 22 Bahman Hospital in Masjid Solayman who co-operated wit us in time of data collection. Thanks also extended to the Vice Chancellor in Deputy Affairs in Ahvaz Jundishapur University of Medical Sciences for finantial support of this research work.

References

1- Cunningham FG, Leveno KJ, Hauth JC, Wenstrom KD, Spong CY, et al, eds. Normal labor and delivery. In: Williams Obstetrics. 23rd ed. New York: MC Graw-Hill, medical; 2010. P. 504-94 .
2-Jones M, Larson E. Length of normal labor in women of hispanic origin. J Midwifery Womens Health 2003;48(1):2-9.
3- Albers LL, Schiff M, Gorwoda JG. The length of active labor in normal pregnancies. Obstet Gynecol 1996;87(3):355-9.
4- Gao Y, Wu B. [Causes of active phase arrest]. Zhonghua Fu Chan Ke Za Zhi 1997;32(6):333-5. [In Chinese]
5-Cheng YW, Delaney SS, Hopkins LM, Caughey AB. The association between the length of first stage of labor, mode of delivery, and perinatal outcomes in women undergoing induction of labor. A J Obstet Gynecol 2009;201(5):477.e1-77.
6-Islamian L. [Association duration the active phase of labor and The Factor Influencing it]. J Med 1997;(5):57 - 60. [In Persian]
7- Cunningham FG, Spong CY, Bloom SL, Leveno KJ, Rouse DJ, Hauth JC, Wenstrom KD. Dystusia - Abnormal labor. Williams Obstetrics. 23rd ed. New York: MC Graw Hill, medical; 2010. P. 602-3.
8- Lee SM, Lee KA, Lee J, Park CW, Yoon BH. "Early rupture of membranes" after the spontaneous onset of labor as a risk factor for cesarean delivery. Eur J Obstet Gynecol Reprod Biol 2010;148(2):152-7.
9-Gonzalez-Quintero VH, Tolaymat L, Mulller AC, Izquierdo L, O'sullivan MJ, Martin D. Outcomes of pregnancies with sonographically detected nuchal cords remote from delivery. J Ultrasound Med 2004;23(1):43-7.
10-Hoseinian Zakaria M. The Factors Influencing in birth infant with the low Apgar score. Med J Tabriz univ Med 1389;32(4):21-6. [In Persian]
11- Nasiri Omidi F. Association relationship between the stage of labor and Apgar score of primiparous woman [dissertation]. Isfahan: Isfahan Med Univ; 1994. [In Persian]
12-Cunningham FG, Leveno KJ, Hauth JC, Wenstrom KD, Spong CY, Bloom SL. Diseases and disorder infant and neonatal. Williams Obstetrics. 23rd ed. New York: MC Graw Hill, medical; 2010. p. 799-800
13-Lee KA, Mi Lee S, Jin Yang H, Park CW, Mazaki-Tovi S, Hyun Yoon B, et al. The frequency of meconium-stained amniotic fluid increases as a function of the duration of labor. J Matern Fetal Neonatal Med 2011;24(7):880–5.
14- Sheiner E, Levy A, Mazor M. Precipitate labor: higher rates of maternal complications. Eur J Obstet Gynecol Reprod Biol 2004;116(1):43-7.
15-Tillett J, Hanson L. Midwifery triage and management of trauma and second/third trimester bleeding. J Nurse Midwifery 1999;44(5):439-48.