

The effect of midwifery continuing care on childbirth outcomes

Fahimeh Sehhatie¹, Maryam Najjarzadeh¹, Vahid Zamanzadeh², Alehe Seyyedrasooli³

ABSTRACT

Background: Continuation of delivery care by a midwife, and establishing a relationship between the midwife and the delivering woman, is so important for women, and preserving such relationship increases woman's calmness and self-confidence. The current research aims at studying the effect of midwifery continuing care during delivery on delivery outcomes.

Materials and Methods: This study was a quasi-experimental research conducted on childbearing women referring to Tabriz 29 Bahman Hospital. One hundred women were randomly assigned to either experimental ($n = 50$) or control ($n = 50$) group. In the experimental group, the women were cared exclusively with a midwife from the active phase continuously, while in the control group, women were cared with several midwives conventionally. The birth outcomes were recorded in both valid and reliable groups (checklists). Data were analyzed using SPSS version 13.0.

Results: Type of delivery was the same in both the groups ($P = 0.051$). In the experimental group, grade of the perineal lacerations was lower ($P = 0.001$); also, in this group, less oxytocin was used in the labor stage ($P = 0.001$).

Conclusions: The results showed that providing one-to-one delivery care and continuous attendance of the midwife on the bedside of delivering woman had positive effect on improvement of birth outcomes. So, providing the choice of one-to-one care for women in delivery rooms must be considered where it is logistically possible.

Key words: Care, continuity, delivery, midwife

INTRODUCTION

Delivery is a natural and physiologic process, but a painful and exhausting phenomenon both for mother and those who care her.^[1] This process constitutes a very important physiologic event of woman's life with significant physical, mental, and emotional effects. Delivery is accompanied by pain, mental stress, probable physical injuries, and rarely, death.

Midwives are responsible to provide care and support for delivery of mothers in non-complicated deliveries. Quality and the way of providing midwifery cares are among the factors affecting childbirth outcome. Midwife's functions and actions during this critical stage of woman life may lead to different outcomes ranging from life to death and from health to physical injuries, with significant effects on the mental and emotional health of mother and child.^[3,4]

Delivery care is a process that aims to maintain the health of mothers and children and facilitates their normal growth and development later in life. According to Yanger,^[1] care is based on friendly behaviors and attitudes which must have several characteristics. These indications are introduced as five valuable "Cs" including communication, condolence, continue, commitment, and courage.^[5] In conventional delivery cares within delivery departments, generally a midwife is responsible for providing care for several delivering women and she mostly needs to do clinical care including monitoring of fetal heart rate and progress of delivery, prescribing drugs, recording delivery data, etc. Precise observational studies in several hospitals have shown that in most of the cases, the women are left alone during delivery and the midwives only spend one-fourth of their time in the bedside of women in delivery room (this time is very short for establishing a continuing and sympathetic relationship with delivering woman),^[6] while being alone during delivery causes fear, anxiety, and forlornness in the delivering women.^[7] Commission of Health Care in 2007 announced based on a review that 46% of women are left alone during labor, which causes worry in them.^[8] In the aforementioned conditions, the woman fears from being alone and also fears from pain, distress, contempt, being naked, and losing control on their behavior, their child's health and death. Facing these fears,

¹Department of Midwifery, Faculty of Nursing and Midwifery, ²Nursing, Faculty of Nursing and Midwifery, ³Department of Nursing, Faculty of Nursing and Midwifery, Tabriz University of Medical Sciences, Tabriz, Iran

Address for correspondence: Ms. Maryam Najjarzadeh, Department of Midwifery, Faculty of Nursing and Midwifery, Uremia University of Medical Sciences, Uremia, Iran.
E-mail: Maryam.najjarzadeh@Gmail.com

anxieties, and tension resulting from predicting negative events is an experimental turning point in delivery, and the delivering woman shall benefit from continuing support and companionship for confronting with them.^[9] The policy of providing continuing midwifery care in England's midwifery centers includes providing personal support to women during labor and delivery through one-to-one care (one midwife to one delivering woman) at the first and second stages of delivery. The benefit of this policy is a continuous, persuasive, and responsive support for woman during delivery.^[8] On the other hand, fear is the most important factor in causing severe pains and influences normal progression of delivery.^[10] Abnormal progression of delivery is the most common reason of primary cesarean.^[2] One of the preventive methods in difficult and prolonged deliveries is providing proper support and precise care of woman during delivery.^[11] Stress causes muscle contraction and, consequently, increases the severity of pain and the pain increases mother's stress and anxiety. This may lead to slowing fetal heart rate and prolonging the second phase of delivery by causing a defective cycle. Thus, a natural delivery may change to a difficult and troubled delivery.^[12] The presence of a caring person (preferably midwife) at the bedside of parturition (delivering) woman can facilitate the contractile activities and uterine bloodstream by decreasing mother's anxiety.^[13] The results of Hodnett's study in 2007 showed that the childbirth outcomes of women receiving continuous care during labor were improved significantly compared to the conventional care group.^[13] Meanwhile, continuing attendance of midwife, and so, continuing of care in all phases of delivery reinforces woman's body ability in producing endogenous analgesics or endorphins.^[14] These endorphins provide comfort, cause drowsiness, and increase euphoria.^[15] Unnecessary intervention of midwifery such as induction, premature amniotomy, and perineal laceration are amongst the important factors that decrease satisfaction, and may deteriorate the midwifery care outcomes and cause improper experiences^[16] for mothers and midwives. But continuing care may lead to less delivery stimulation and induction, shorter duration of labor, decrease in midwifery surgical operations, lower episiotomy and cesarean, and less need to apply labor's pain-relieving drugs, and thus, to a more physiologic delivery.^[17]

Other benefits of continuing care are increasing vaginal delivery, decreasing infection in mother and child, more satisfaction of mother and midwifery, and increasing breast feeding.^[8]

This research was planned to study the effect of continuing delivery care on several childbirth outcomes such as type of delivery, perineal laceration, using oxytocin for stimulating delivery, and duration of delivery stages.

MATERIALS AND METHODS

This research was a quasi-experimental study and was conducted on parturition (delivering) women referring to Tabriz 29 Bahman Hospital in 2009. According to a primary study, 84 samples were defined, and finally, the number was increased to 100. Convenience sampling was used to enroll study participants. Those parturition (delivering) women, who referred for vaginal delivery and satisfied the requirements for the study, were selected. The inclusion criteria included willingness for participating in the study, not having indications of abnormal delivery (e.g. not having multiple pregnancies, risky pregnancy, placenta or amniotic fluid problems), not having cesarean record, having normal pelvic diameters, height over 145 cm, not having mental diseases or problems in which the mother cannot communicate with others (such as deafness and blindness), not using any unauthorized drugs, being in active phase of delivery, estimated weight of fetus likely to be less than 4000 g, live and full-term fetus, not having premature laceration in fetal membranes for more than 12 h, not having any unnatural bleeding from the vagina, number of pregnancies should be less than 5, mother's age ranging 18-35 years, not having internal surgical diseases, and not having any risk for fetus (such as me conium defecation or fetal distress). The exclusion criteria included mother's refusal of receiving continuing care and any emergency cases of mother and fetus, caring for which was beyond the responsibility of midwife. According to pre-recorded information in admission office of Tabriz 29 Bahman Maternity Hospital (research location), from a total of about 400 women who are admitted monthly in the delivery unit, at least 100 meet all the inclusion criteria for the current study. Based on the allocated data collection duration for this study (3 months), two series of 50 random numbers based on the serial number of admission in the delivery unit from among 300 delivering women who were predicted to be admitted in next 3 months were selected. The first series of women were allocated to routine care group and the second series to continuing care group randomly. According to the pre-planned arrangements during the data collection stage when a delivering woman from the experimental group was enrolled (at any time), the researcher was contacted to attend the delivery unit as soon as possible, and therefore, she provided the before, during, and after delivery cares by continuing attendance on the patient's bed and initializing a one-to-one care. In the routine care group, when the delivering woman was enrolled in the study, she received the necessary cares by a group of unknown midwives and the midwives were not obliged to attend on a specific patient's bedside. Conventionally, in the labor room, four to five midwives are responsible to provide care for the delivering woman, and the delivery may be

supported by one midwife and episiotomy excision repair done by another midwife. In general, the total number of midwives who provide care during delivery may reach five to six persons. While in the experimental group, only one midwife provided all cares and attended on the delivering woman's bedside continuously.

Allocating samples in the two groups was completely random and all contextual factors that seemed to have an effect on results [such as mothers' age, rank of pregnancy, type of delivery (full term vs. pre term), abortion, gestational age, etc.] were considered and compared in the two groups. However, the differences were not significant statistically. The delivery outcomes of both groups were recorded in the prepared checklist. The checklist included three sections: section 1 included personal and social information, section 2 was related to history of earlier pregnancies (number of pregnancies, previous delivery and abortion, pregnancy age at the time of delivery, and mother's age), and the third section was related to the outcome of the current delivery. Content validity of the prepared checklist was assessed based on the viewpoints of informants, and Cronbach's alpha coefficient was used to test its reliability. The data analysis was done by SPSS version 13; *t*-test was used for comparing the amount of applied oxytocin during labor and Mann-Whitney U test for comparing the type of delivery and laceration of delivery canal in the two groups. $P < 0.05$ was considered significant in this study.

It shall be reminded that there was no limitation regarding use or non-use of oxytocin, its dose, and doing or not doing episiotomy in the two groups, and all of these were based on the delivering mothers' needs and their health conditions, and after receiving confirmation from on-call physicians and midwives. Since all research samples had the requirements for vaginal delivery and none of them were previously willing to have cesarean, choosing the type of delivery was done based on the needs and conditions of the delivering woman and on-call physicians' diagnosis. This research project has been ethically and scientifically approved by Research Deputy of Tabriz University of Medical Sciences.

RESULTS

The data are presented in [Tables 1-3]. The social characteristics of the individual research subjects showed that majority of the patients were in the age range of 21-27 years (54%). Mean age of mothers was same in both groups ($P = 0.55$). Most of patients were housewives (95%) and there was no statistically significant difference between the two groups ($P = 0.64$) regarding the mothers' occupation. Also, 91% of the patients' husbands were self-employed and the rate was not statistically different in the two groups ($P = 0.29$). Most of the patients studied up to secondary

Table 1: Comparing the types of delivery between the two groups (N = 100)

Variable	Group		P test	
	*Control (50)	*Experimental (50)		
Type of delivery	Natural	44	49	0.051
	Cesarean	6	1	

*Based on number

Table 2: Comparing the level of perineal laceration in the two groups (n = 93)*

Variable	Group		P test
	Control (44)	Experimental (49)	
Healthy perineal	2 (1)	4 (2)	0.001
Perineal laceration level 1	24 (12)	54 (27)	
Perineal laceration level 2	38 (19)	34 (17)	
Perineal laceration level 3	22 (11)	6 (3)	
Perineal laceration level 4	2 (1)	0	

*Based on percent and number (one in the experimental group and six in the control group were excluded from this study due to cesarean delivery; it is worth noting that none of cesarean parturition women underwent episiotomy)

Table 3: Comparing the amount of oxytocin used in labor between the two groups (N = 100)

Variable	Group		P test	
	*Control (50)	*Experimental (50)		
Dose of oxytocin	First phase	0.60±3.45	1.7±0.94	0.001
	Second phase	0.8±0.48	0.17±0.04	0.001

*Based on mean and standard deviation and international unit (the oxytocin infused in 1 l serum was calculated)

level and only 4% were illiterate. The levels of patients' education were different in the two groups ($P = 0.001$). The educational level of the patients' husbands was mostly in the secondary level and 3% were illiterate. The educational levels of patients' husbands were same in both the groups ($P = 0.075$).

Reproductive profile of the research subjects was as follows. Considering the number of pregnancies, 78% in the experimental group and 72% in the control group had referred with first pregnancy. Considering the number of deliveries, 80 % in the experimental group and 82% in the control group did not have delivery record. Also, 88% in the experimental group and 84% in the control group did not have abortion record. Considering the pregnancy age, the average of pregnancy age in the experimental group was 39.54 ± 0.81 and in the control group was 39.63 ± 0.9 . Regarding the mothers' age, the average of mothers' age in the experimental group was 23.8 ± 49.79 and in the control group was 24.6 ± 33.22 .

The majority of women (i.e. 98%) in the experimental group and 88% in the control group had vaginal delivery.

The results of Mann–Whitney U test showed that although the number of cesareans in continuing care group was less, this difference was not significant statistically between the groups ($P = 0.051$).

The results of independent *t*-test showed that the amount of Oxytocin used in the first phase in both groups had a statistically significant difference ($P = 0.001$), such that in the continuing care group, the average dose was 0.94 ± 1.7 unit and in the conventional care group, it was 3.45 ± 0.6 unit. Meanwhile, the applied oxytocin in the second phase was significantly different in both groups (0.001), such that in the continuing care group, the average dose was 0.04 ± 0.17 unit and in the conventional care group, it was 0.48 ± 0.8 unit.

The laceration type in the experimental group was mostly of level 1, while in the control group, it was mostly done in level 2. In the experimental group, there was no level 4 laceration, but it was done in one case in the control group. The results of Mann–Whitney U test showed that the level of perineal laceration had significant difference between the two groups (0.001).

DISCUSSION

This study showed that childbirth outcomes may improve by providing continuing delivery cares by midwives and this causes less injury in the perineal area of the delivering women. The study findings showed that almost in all delivering women who had received continuing care, the performed perineal laceration was at level 2 or less, while the laceration was in this level only among two-thirds of the women in the conventional care group and the remaining had deeper lacerations. Similar studies had been conducted investigating the level of perineal laceration, and the results of Saultz and Albedaiwi (2004) showed that perineal laceration in the conventional care group had a statistically significant difference with the continuing care group. It also must be noted that episiotomy incision in the continuing care group was less than in the conventional care group.^[18] Hodnett's study in 2008 which was done on two groups of conventional and continuing care showed that in the continuing care group, the dosage of drug for reduction of delivery pain, need for neonatal resuscitation, and need to do episiotomy were less, but the vaginal or perineal laceration was high.^[19] Even though the continuing attendance of midwife in continuing care in all delivery phases strengthens the ability of woman's body in producing endocrine or endorphin analgesics^[14] and the endorphins cause comfort, drowsiness, and increase euphoria,^[18] these studies showed that the effects of other factors such as non-accurate monitoring of the perineal area, or Ritgen maneuver,

large size of fetuses' head, race of the studied samples, or other reasons in increasing the perineal laceration should not be ruled out completely.

The current study showed that less oxytocin is required during delivery in continuing midwifery care. This is concurrent with the results of Page *et al.* that indicated less oxytocin use for delivery induction in the continuing care group compared to the conventional care group.^[3] Not interfering in different phases of natural delivery (such as using oxytocin for induction and stimulating natural birth) is one among the important aspects of midwifery care and philosophy. The midwives sometimes face with conditions in which they are obliged to interfere potentially, while midwifery's function and occupation is based on natural pregnancy and delivery.^[20] These interventions with accepted and recognized complications are only proposed when their advantages outweigh their disadvantages.^[21]

Although the type of delivery in the two groups of continuing and conventional care was not significantly different, the number of cesarean deliveries in the continuing care group was less than in the conventional care group. The results of Page *et al.* and Campbell showed that the type of delivery in the two groups of continuing and conventional care was the same, which is consistent with the results of the present study (3 and 22). The study by Benjamin *et al.* (2000) showed that the type of delivery in the two groups of conventional care and delivery care with less caregiver (continuing care) had significant difference, which is inconsistent with the results of the present study. Such an observation may result from the selected retrospective design or the sample size^[16] of the study.^[17] Several factors are involved in determining the delivery type; fear is the most important factor in creating severe pains and causing non-progression of natural delivery.^[10] Non-progression of delivery is the best known reason for primary cesarean.^[2] So, it seems essential to provide sufficient care by a midwife during labor to decrease the rate of cesarean delivery and surgical complications for the mother and newborn. Although based on the findings of this study continuing care did not decrease the rate of cesarean delivery significantly, it is worth to at least consider its efficacy in future complementary studies. In a systematic review by Johantgen *et al.* from 1990 to 2008 in America which was entitled "Comparison of delivery and labor care provided by certified nurse-midwives and physicians," the results showed that care processes such as using epidural Anesthesia, stimulating delivery, and doing episiotomy were applied less by nurses and midwives than physicians. The perineal laceration among mothers who were cared by the first group was less and their breast feeding was higher, but the childbirth outcomes based on the type of birth attendants were not statistically significant.^[23] These findings are consistent with the results of the present study.

CONCLUSION

The results showed that providing one-to-one delivery care and continuous attendance of the midwife on the bedside of delivering woman had positive effect on improvement of birth outcomes. So, providing the choice of one-to-one care for women in delivery rooms must be considered where it is logistically possible.

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