

The Effects of Education on the Use of Partogram to Control the Quality of Care Offered by Midwives

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Abstract: Midwives have an important role in health promotion and well being among mothers well being. The aim of this study is to determine the effects of education on use of partogram to improve the quality of care provided for mothers. This was a semi-empirical study with a one-group design conducted through pretest and posttest. The participants were 53 midwives, who were working in the maternity unit during the study. They were also responsible for recording the delivery procedure and controlling the parturient during the entire delivery process. Participants were randomly selected. Data collection was collected using a partogram, a sheet recording for information and a questionnaire asking for demographic characteristics of the samples. The checklist used in this study consisted of 4 parts: The quality of recording maternal; fetus health status; delivery process and also; the quality of delivery management. The results revealed that a significant difference between offering education on how to use a partogram and the method of recording uterus contractions, dilatation, fetus heart beats, status of vaginal bleedings, amniotic liquid, mother's vital signs, drug usage, urine examinations, suitable number of vaginal examinations, recording the time of amniotomy and oxytocin administration ($p < 0.0001$). The results of this study indicates that education is effective on enhancing the quality of care offered by midwives and suggests that attention should be given to education on the partograms, at all levels. It also highlights that partograms should become a part of the educational program for midwifery students and also part of regular educational programs.

Key words: Partogram, education, the quality of midwifery care, control

INTRODUCTION

From a physical and emotional point of view, labor is a special stage both for the mother and the child and although it is a natural procedure it is considered a potential risk. Each year, 200 million women become pregnant. Each year at least 585000 of these pregnancies (1600 each day) lead to maternal death and on a par with each death, at least 15 women suffer from chronic side effects and deficiencies for the rest of their lives (WHO, 2001).

Each minute, a mother dies as a result of pregnancy side effects and 60-80% of these deaths are caused by bleeding, infection, dystocia and prolonged labor, rupture of the uterine and preeclampsia. It must be said that with the death of half a million parturient, at least 1 million children will be left without a mother.

As the core of a family and the factor of guaranteeing family's health and success, the mother's death will cause non-compensating damage to the family and society.

Murphy (2001) believes that tiredness of mothers, infertility, risk of uterine rupture, vesico vaginal or cervico-vaginal fistulas, extensive perineal injuries, cystocele and rectocele and urocephalia are of the undesired side effects of prolonged labor, which will bring severe disputes with the spouse and may even cause the family to fall apart (Pettersson *et al.*, 2000).

Each year, 8.1 million infants die and millions of them suffocate, suffer convulsion and mental paralysis and bear physical or mental disorders for the rest of their lives.

Because of dystocia, the rate of infant mortality rises from 47-294 in every 1000 live births. The world health organization has announced that death caused by suffocation and injuries during delivery is for the cause of

more than one third of infant mortality. This organization also states that dystocia increases the chance of death at the time of birth by 5 folds (WHO, 2001).

Fifty nine percent of maternal deaths happen in Asia. In Iran and Tehran the maternal mortality rate are 37 and 61/100000, respectively and also infant mortality rate is between 16-20/1000 live births. The partogram not only is easy to use and inexpensive, but it also is the best graphical tool for midwives in order to monitor the mother and the fetus during the labor process (Theron, 1999).

Swedish researchers believe that one of the main causes of the low rate of maternal and infant deaths in their country is due to valuing the role of midwives and the frequent use of a partogram.

Time consuming, delivery process, administration of labor induction and oxytocin dosage and frequency of vaginal exams are the important reason for using partogram (Wacker *et al.*, 1998). Preventing maternal mortality program indicates that a partogram will show the exact time of membrane rupture and is considered as an early warning system, which will help to make on-time decisions (Theron, 1999).

The American women's college of midwifery recommend to all midwives to use the partogram entirely during the labor process because correct recording is a reliable tool to estimate midwife's operation. In spite of the aforementioned important factors, the partogram is not used all over the world (Carolynn *et al.*, 2000). Thus, educating midwives to use the partogram correctly is a necessity. This will enhance the quality of midwifery care in effectiveness and utilization aspects in health system. An educated and up to date midwife has a significant role in diagnosis and managing the complicated deliveries, which are the causes of 36% of maternal mortalities. Educating midwives based on their multidimensional duties, will assist them to manage and apply new techniques and give them the necessary skills for the required services of the 21st century and it further helps them to use the results of researches (Theron, 1999).

A committee was held in Niamey in 1989, which was called the safe motherhood and its goal was to reduce the maternal mortality rate by 50%. This committee, which was under the authorization of the World Health Organization, UNICEF and nongovernmental institutions announced that: partogram is the most important procedure (intervention) for the enhancement of the maternal and newborn well-being. Achieving such a goal can not be possible without the collaboration of educated personnel (Peterson *et al.*, 2000).

MATERIALS AND METHODS

Among the 4 public hospitals: Baharloo, Ziyadeian, Akbar Abadi and Hedayat, 53 eligible subjects were selected according to randomized sampling methods in this study. All the subjects were working in the labor ward and were responsible for recording the first and second stage of delivery process.

The inclusion criteria for the patient in this study are as listed:

- Not having any history of medical and surgical disorders that may interrupt the vaginal delivery process.
- Cervical dilation more than 3 cm.
- Absence of caesarian section in their history.
- Absence of fetal distress.
- Term fetus with the cephalic presentation.

In this study, data was collected by partogram, checklist and questionnaire. The partogram were filled by a midwife, who was in charge of the delivery management. The checklist completed by the researchers, who observed and registered the quality of midwife's operation. The checklist consisted of 4 sections:

- Recording of the mother's condition such as: Vital sign, urine analysis, vaginal bleeding and drug administration.
- Quality of data registration on fetus well-being such as: Fetal heart rate pattern, cephalo molding.
- Quality of recording the labor process such as: Cervical dilation, contractions and presenting part descending.
- Recording the quality of labor management by the midwife such as: Vaginal exam, time of amniotomy and oxytocin administration. Questionnaire was filled out through an interview and it included: Age, level of education, years of experience in delivery ward and knowledge about partogram.

In the pretest, each midwife drew 5 partograms for 5 deliveries. Then using the information-recording sheet, the quality of care offered by midwives including the quality of recording maternal and infant health, the quality of recording the delivery procedures and the quality of delivery management were assessed. Educational classes were taken through three 30 min sessions in a period of one month in 3 sessions. Like the pretest, every participant completed 5 partograms of 5 deliveries and then they filled the checklists in order to register the quality of the mother and the fetus care during the labour and delivery management.

The outline for the educational classes was organized based on teaching a brief history of partogram and method of data registration.

To evaluate the checklist, each variable was given 0 or 1 value. For the (Yes answers) the calculated score was 1 and for (No answers) it was 0; for the answers (Not applicable) we did not consider any score.

The aggregate scores of the total responses were calculated as listed: the total number of correct responses was divided by the total score and then multiplied by 100; the number of yes responses was the standard for measuring the quality of care. The total score for each checklist was collected and then the score for each midwife was derived after analyzing the 5 partograms before the training course and the 5 partograms after it. Based on the scores, the quality of care was categorized into 3 groups: satisfactory (75-100%), almost satisfactory (50-75%) and unsatisfactory (0-50%).

The non-parametric Wilcoxon statistical test was used to test the relationship between the education and the manner of recording care.

RESULTS

In this study, 75.5% of the participants had a bachelor degree, 69.8% did not have any information about the partogram and 30.2% had 10-15 years of work experience and aged between 30-35.

Table 1 demonstrates that 58.5% of the subjects whose quality of recording before training was

unsatisfactory, managed to make almost satisfactory recordings after education and 17% made satisfactory recordings.

About 24.5% of the subjects who had almost satisfactory recordings managed to make satisfactory recordings after training. With $p < 0.0001$, the Wilcoxon statistical test showed a significant progress in the quality of recording the fetus health status after the training.

Table 2 illustrates that 7.5% of the subjects who did not have satisfactory recordings before education managed to make almost satisfactory recordings after the training, 50.9% made satisfactory recordings and 35.9% who had almost satisfactory recordings managed to make satisfactory recordings after the training. Overall, 5.7% remained unchanged. With $p < 0.0001$, the Wilcoxon statistical test showed a significant difference in the manner of recording the maternal health status after education.

Table 3 demonstrates that 35.8% of the subjects who did not satisfactorily record the delivery procedure before the training remained the same even after training and 49.1% managed to make almost satisfactory recordings and 13.2 made satisfactory recordings. All those who made almost satisfactory recording before the training remained unchanged. No satisfactory recording was observed before the training; however, 13.2% of the recordings were satisfactory after the training. With $p < 0.0001$, the Wilcoxon statistical test showed a significant progress in the quality of recording the delivery procedure after the training.

Table 1: Distributions of the quality of recording the fetus health status by midwives in delivery block before and after the training

	Unsatisfactory		Almost satisfactory		Satisfactory		Total		Test result
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	
After training/ Before training									
Unsatisfactory	0	0	31	58.5	9	17.0	40	75.5	Z = 6.831
Almost satisfactory	0	0	0	0.0	13	24.5	13	24.5	p < 0.0001
Satisfactory	0	0	0	0.0	0	0.0	0	0.0	The difference after training is significant
Total	0	0	31	58.5	22	41.5	59	100.0	

The Wilcoxon statistical test showed a significant progress in the quality of recording the fetus health status after the training

Table 2: Distributions of the manner of recording the mother's health status by midwives before and after the training

	Unsatisfactory		Almost satisfactory		Satisfactory		Total		Test result
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	
After training/ Before training									
Unsatisfactory	0	0	4	7.5	27	50.9	31	58.4	Z = 6.353
Almost satisfactory	0	0	0	0.0	19	35.9	19	35.9	p < 0.0001
Satisfactory	0	0	0	0.0	3	5.7	3	5.7	The difference after training is significant
Total	0	0	4	7.5	49	92.5	53	100.0	

With $p < 0.0001$, the Wilcoxon statistical test showed a significant difference in the manner of recording the maternal health status after education

Table 3: Distributions of recording the delivery procedure by midwives before and after the training

	Unsatisfactory		Almost satisfactory		Satisfactory		Total		Test result
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	
After training/ Before training									
Unsatisfactory	19	35.8	26	49.1	7	13.2	52	98.1	Z = 5.340
Almost satisfactory	0	0	1	1.9	0	0	1	1.9	p < 0.0001
Satisfactory	0	0	0	0.0	0	0	0	0.0	The difference after training is significant
Total	19	35.8	27	51.0	7	13.2	53	100.0	

The Wilcoxon statistical test showed a significant progress in the quality of recording the delivery procedure after the training

Table 4: Distributions of delivery management by midwives before and after the training

After training/ Before training	Unsatisfactory		Almost satisfactory		Satisfactory		Total		Test result
	No.	(%)	No.	(%)	No.	(%)	No.	(%)	
Unsatisfactory	0	0.00	14	33.30	8	19.1	22	52.4	Z = 4.22
Almost satisfactory	6	14.30	6	14.30	4	9.5	16	38.1	p<0.0001
Satisfactory	2	4.75	2	4.75	0	0.0	4	9.5	The difference after
Total	8	19.05	23	52.35	12	28.6	42	100.0	training is significant

With $p<0.0001$, the Wilcoxon statistical test showed a significant difference in the delivery management

Table 4 illustrates that 33.3% of the subjects who did not satisfactorily manage a delivery before the training course entered the almost satisfactory group after they were trained and 19.1% made satisfactory management after the training.

About 9.5% of those who managed a delivery almost satisfactorily had satisfactory management after the training and 14.3% did not show any difference. About 14.3% entered the unsatisfactory group. With $p<0.0001$, the Wilcoxon statistical test showed a significant difference in the delivery management.

DISCUSSION

Findings in this study indicated that training effects the quality of recording the fetal health status ($p<0.001$) including the fetal heart and amniotic fluid monitoring. The mentioned are the two most important factors for early determination of fetal distress. However, training did not have any effect on molding the registration. This may be due to the fact that training is not a routine for midwives in Iran even though, it is one of the most important predicting factors in delivery dystocia.

Training has a major effect on quality recording of mother's health status ($p<0.001$) precise recording of vaginal bleeding leads to on time diagnosis of placenta previa, abruption placenta or coagulation disorders. Correct registration of urinal tests contributes to fine management of upper and lower infection of urinal tract that may be preeclampsia after protein exertion.

Therefore, training on how to record the mentioned items can also lead to increased accuracy in the care offered to the parturient and decrease higher than required drug prescriptions by uninformed personnel. The correct recording of mother's health status plays an important role in enhancing correct decision-making and continuous care and career development of midwives. All midwives believe that managing a delivery without the use of a partogram is a blind act.

The results of this study showed that with a $p<0.0001$, training has a positive effect on the quality of recording the delivery procedure. It should be said that training has positive effects on recording the dilatation

curve, making shifts in the curve and recording uterus contractions; however, no positive effect was observed on the recording of the descent curve of presenting part ($p<0.059$). This result and the result of Dr. Pettersson's study may be due to the manner of measuring and recording the fetus descent of the presenting part in a partogram. Because the fetus descent of the presenting part is measured using the width of the thumb and the other four fingers when put together. This method of vaginal examination is more accurate because otherwise those with less experience will mistake the fetus molding for the real descent. High workload of the personnel, difficulty of the mentioned method and the infrequency (not-common) of the method in our hospitals may be the reasons why no change was observed in the above objective. We believe that offering more qualitative training on how to measure the descent of the presenting part is of high importance. Because the measurement of the descent and uterus contractions are the basic parts of a partogram, they play a very important role in the early diagnosis of prolong labor. The results of this study demonstrate that education affects the quality of delivery management in cases such as oxytocin usage, the number of vaginal examinations and the time of amniotomy ($p<0.0001$). Nevertheless no significant relationship between education and patient referrals to a physician was observed ($p<0.076$). Because of the natural-delivery management system of our hospitals, separating cases that were referred to a physician and noted in the world health organization partogram is almost impossible; such cases only occur in places where midwives act independently in centers far from a specialist.

CONCLUSION

This study indicated that overall, training has been effective in recording information on a partogram, enhancing mental knowledge and the midwives ability in clinical interventions. Correct use of a partogram is the key factor in offering high quality care during the delivery and educating midwives can enhance their mental knowledge, practical ability, vision and quality of care.

RECOMMENDATIONS

Because using a partogram is uncommon, especially in Iran, introducing the partogram to the health and clinical authorities of women's hospitals is recommended. Regular educational workshops should be organized for all midwives in hospitals, delivery centers and in rural areas. The responsibility of all labor emergency wards because using a partogram is uncommon, especially in Iran, partogram be introduced to and delivery rooms should be given to midwives in order to support the use of partograms. A WHO partogram should be used at all levels. The value of partogram lines, partogram's referral points and also the effects of education on reducing maternal-infant mortality rate, the number of caesarians, the time of each delivery stage and the number of dystocia and prolonged labor may be considered for further studies.

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REFERENCES

- Carolynn, A. *et al.*, 2000. Midwives as primary care providers. *J. Midwifery Womens Health*, 45 (1): 81-83. PMID: 10772740.
- Murphy, D.J., 2001. Failure to progress in the second stage of labour. *Curr. Opin. Obstet. Gynecol.*, 13 (6): 557-561 (Review). PMID: 11707657.
- Peterson, K. *et al.*, 2000. Evaluation of an adapted model of the world health organization partograph used by Angolan midwives in a peripheral delivery unit. *Midwifery*, 16 (2): 82-88. PMID: 11151554.
- Theron, G.B., 1999. Effect of the maternal care manual of the perinatal education programme on the ability of midwives to interpret antenatal cards and partograms. *J. Perinatol.*, 19 (6 Pt 1): 432-435. PMID: 10685273.
- Wacker, J. *et al.*, 1998. Introduction of a simplified round partogram in rural maternity units: Seno province, Burkina Faso. *West-Afr. Trop. Doct.*, 28 (3): 146-152. PMID: 9700277.
- WHO, 2001. Mother baby package: Implementary safe motherhood in countries, Geneva, Department of Reproductive Health and Research.