Assessing the Effectiveness of Training and Education on the Knowledge about active Management of 3rd Stage Labor by Nurses and Midwives

Salma Memon, Bushra Imdad, Amina Aziz, Farhana Aziz, Farzana Memon, Shehla Naeem Zafar

ABSTRACT

OBJECTIVE: To Assess the Effectiveness of Educational Training on Knowledge and practice about Active Management of 3rd Stage of Labor by Nurses and Midwives.

METHODOLOGY: A quasi-experimental study was conducted among nurses and midwives in January-June 2020. The participants for the study were selected based on a non-probability convenient sampling technique. In total, 140 nurses and midwives participated in the study (70) in the interventional group and 70 in the control group. Data collection was done via the adopted questionnaire, and the sample size was calculated through an open epi version 3.0 using the Randomized Clinical Trials formula.

RESULTS: In this study, in the intervention group, most women were 18-25 years old, whereas only 2.9% of women were over 40 years old in our study. Age group and previous training on the AMTSL variable are significantly associated with the study group variable. There was a significant mean difference in post-knowledge between the control and intervention groups. Furthermore, there was a significant mean difference in post-practice between both groups. The overall post-test Knowledge of nurses revealed that the intervention group had a better understanding than the control group.

CONCLUSION: It is concluded from this study that training and education about active management of the third stage of labor (AMTSL) are as highly effective as post-test Knowledge, and post-training practice scores were higher than pre-test scores.

KEYWORDS: AMTSL, Nurse, Knowledge. Labor, Practice, Postpartum Hemorrhage

INTRODUCTION

Labor is a physiological birth process of the baby, umbilical cord and placenta from the uterus. At the first stage of labor, the cervix is fully dilated by approximately 10 cm (2 inches). The second stage starts when the cervix is dilated and the baby is born[1]. The third stage of labor, which begins instantly subsequent birth of the infant, comprises the parting and detachment of the placenta from the uterine wall and terminates with the complete expulsion of the placenta and membrane. Uterine atony is the leading cause of death in women due to postpartum haemorrhage[2].

Women who face severe illness due to loss of blood may do so not only from the impacts of acute anemia but also from the treatment that a severe hemorrhage may require (such as removal of the placenta manually, transfusion of blood, or usual anaesthesia[3]. There is a direct effect of management of the third stage of labor on maternal outcomes such as blood loss, the need for manual removal of the placenta, and postpartum haemorrhage[4]. Active management includes the management of prophylactic oxytocin before placenta delivery, early cord clamping and cutting, and gentle cord traction[5].

Proper management of the 3rd stage of labor is critical because PPH mainly presents during that stage[6]. For the 3rd stage of labor, two types of management are widespread; expectant and active. Active management includes the administration of various prophylactic interventions in a mixture of oxytocin before placenta delivery, early cord clamping and cutting, and gentle cord traction[5].

Under the expectant management of the third stage of labor, it becomes difficult/challenging to handle due to less available resources and setup, insufficient preplanning, availability of drugs, instruments, well-trained clinicians and adequate emergency care[7]. It has been identified globally and endorsed that active management of the 3rd stage of labor (AMTSL) is simple and an applied intervention to decrease the occurrence of postpartum haemorrhage[8].

Many maternal deaths occur because of PPH, where birth attendants lack the necessary facilities to secure

and manage PPH. Therefore, PPH remains among the top five maternal mortality causes; therefore, AMTSL must be provided complete attention to minimize maternal mortality. It was imperative to conduct this research to identify the issues and increase the Knowledge of nurses and midwives on AMTSL working at tertiary care hospitals. It will undoubtedly help reduce morbidity and mortality rates as no research has been conducted in this area, whereas most areas in Sindh suffer from PPH.

METHODOLOGY

A quasi-experimental study was conducted in January -June 2020 among midwives and nurses. Study participants were selected from the Gynecology & Obstetrics Units of Dr Ruth Pfau Hospital and Dow Hospital, Karachi.

Participants were selected based on the non-probability convenient sampling technique. The sample size was calculated through Open Epi version 3.0 by using the Randomized Clinical Trials formula. A total of 140 participants (70 in control and 70 in the intervention group) were selected. Nurses and Midwives with work experience of at least six months and also working in Gynecology & Obstetrics Units were included in this study. Nurses and Midwives who have not worked in Gynecology & Obstetrics Units were excluded from this study. The training session was delivered by a qualified professional, conducted for an hour and repeated three times a week for different participants. The session provided information about the protocol AMTSL and the step-by -step component of active management of third-stage labor.

A quasi-experimental study design was employed to evaluate the Knowledge of AMTSL. Data collection was done via the adopted questionnaire[9.] Data were analyzed in SPSS version 22. A paired sample t-test was applied to compare the mean baseline.

RESULTS

Table I compares demographic characteristics and Knowledge of active management of the third stage of labor among nurses and midwives between control and intervention groups. Among the control group, 20 (28.5%) were of the age group between 31-40 years, 19 (27.1%) of the age group from 26-30 years, 16 (22.9%) of the age between 18-25 years, and 15 (21.4%) were in the group aged >40 years. While in the intervention group, the majority of participants, 39 (55.7%), were in the age group between 18-25 years, 15 (21.4%) in the age group 26-30 years, 14 (20%) of age between 31-40 years, and 2 (2.9%) were in the group aged >40 years. That was statistically significant with a p-value of <0.05.

The majority of participants in either group were registered, midwives or nurses. Among the control group, there were 45 (64.3%) R/N or staff nurses, 16 (22.9%) were diplomas in midwifery, and 9 (12.9%) were BSN/ Post RN BSN. Whereas among participants included in the intervention group, there were 45 (64.3%) R/N or staff nurses, 16(22.9%) were BSN/ Post RN BSN, and 9 (12.9%) were diploma in midwifery. The majority of participants enrolled in a study of both groups, 48 (68.6%) in the control group and 45 (64.3%) had no previous knowledge related to active management of the third stage of labor. Among the control group,61 (87.1%) participants, while 70 (100%) members of the intervention group had not previously attended any training sessions on ATML.

Participants had different levels of education. Midwives only have a one-year diploma, and a nurse midwife studies for a four-year diploma, which is longer than a midwife because a BSN nurse studies six years; there is a difference in educational competencies with different groups and backgrounds, that why it affects work competencies.

TABLE I: COMPARISON OF DEMOGRAPHIC AND KNOWLEDGE OF AMTSL BETWEEN CONTROL AND INTERVENTION GROUPS

Study Groups	Control		Intervention		Chi-Square test
Statistics	Fre-quency	Percent-age	Fre-quency	Percent-age	P-value
Age(years)					
18 – 25	16	22.9%	39	55.7%	
26 – 30	19	27.1%	15	21.4%	<0.001
31 – 40	20	28.6%	14	20.0%	
> 40	15	21.4%	2	2.9%	
Education					
BSN / Post RN BSN	9	12.9%	16	22.9%	
R/N or Staff Nurse	45	64.3%	45	64.3%	0.141
Diploma in midwifery	16	22.9%	9	12.9%	
Do you have any previous knowledge related to AMTSL?					
Yes	22	31.4%	25	35.7%	0.591
No	48	68.6%	45	64.3%	
Have you attended any training on AMTSL?					
Yes	9	12.9%	0	.0%	0.002
No	61	87.1%	70	100.0%	

Table II compares the mean Knowledge and practice evaluation scores regarding AMTSL between the control and intervention groups before and after the

Salma Memon, Bushra Imdad, Amina Aziz, Farhana Aziz, Farzana Memon, Shehla Naeem Zafar

training session. The control group's mean score on the pre-knowledge test was 12.6±4.2, while the intervention group's mean score was 10.5±4.2 with a p-value of<0.05. Among the control group, the mean knowledge test score post-training session was 13.6±4.0, while in the intervention group, the mean post-knowledge score was 17.9±3.4. That was statistically significant with a p-value of <.001. In the control group, the mean score of the pre-practice test was 22.3±9.5, while in the intervention group, the mean score was 24.3±6.7. Among the control group, the mean knowledge test score post-training session was 25.3±6.90, while in the intervention group, the mean post-knowledge score was 32.2±3.4. That was statistically significant with a p-value of <.001.

Figure I show the comparison of knowledge scores regarding AMTSL between the control and intervention groups. Among the control group in the pre-knowledge test, 36 (51.4%) participants had scores below average, 14(20%) had a score of good, 12(17.1%) had scores on average, and 8(11.4%) had scores in the very good category. While among the intervention group, a pre-knowledge score of 51 (72.9%) was below average, 10(14.3%) was average, 5(7.1%) was good, and 4(5.7%) had scores in the very good category.

TABLE II: COMPARISON OF MEAN KNOWLEDGE AND PRACTICE SCORE OF AMTSL BETWEEN CONTROL AND INTERVENTION GROUP

Study Groups	Control		Intervention		t-test
Statistics	Mean	SD	Mean	SD	P-value
Pre Knowledge	12.6429	4.25640	10.5143	4.21434	0.003
Post Knowledge	13.6143	4.04071	17.9714	3.49315	<0.001
Pre-Practice	22.3714	9.59947	24.3571	6.75028	0.159
Post- Practice	25.3286	6.90247	32.2000	3.46243	<0.001

FIGURE I: COMPARISON OF THE PRE-KNOWLEDGE SCORE OF AMTSL BETWEEN CONTROL AND INTERVENTION GROUP
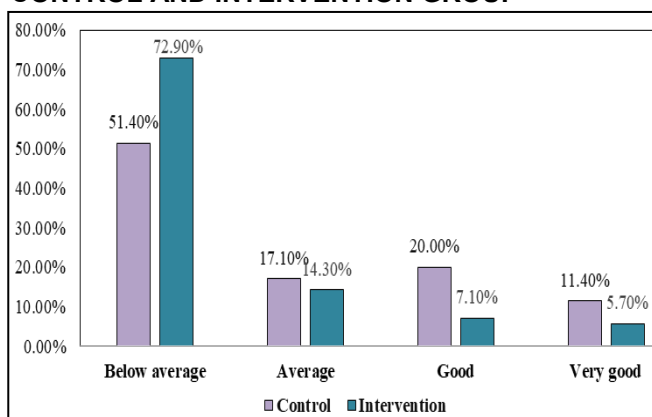

Figure II compares post-knowledge scores regarding

AMTSL between control and intervention groups. Among the control group in the post-knowledge test, 22(31.4%) participants had scores below average, 23 (32.9%) had a score of good, 16(22.9%) had scores on average, and 9 (12.9%) had scores in the very good category. While among the intervention group, a post-knowledge score of 31(44.3%) was very good, 28 (40%) was good, 7(10%) was below average, and 4 (5.7%) had a score in the average category. That is statistically significant with a p-value of <0.001.

FIGURE: II: COMPARISON OF THE POST-KNOWLEDGE SCORE OF AMTSL BETWEEN CONTROL AND INTERVENTION GROUP
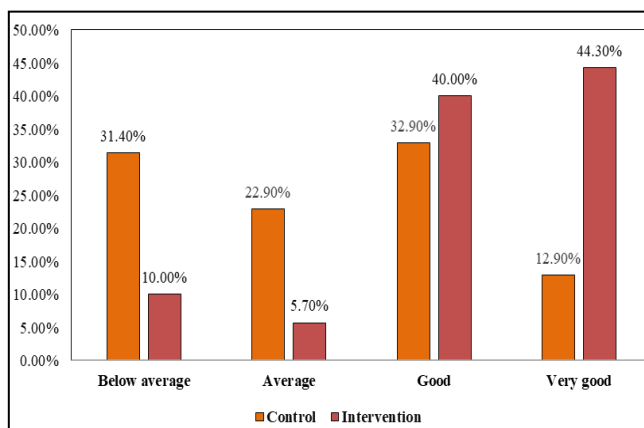
DISCUSSION

The third Stage of Labor is uncertain and unpredictable, at the same time, the event may be successful and rejoicing or bring complications that may be faced during this stage, such as Post-Partum Hemorrhage and Uterine inversion. These complications have become very dangerous to maternal lives all over the world. Global advocacy groups describe maternal mortality as "avoidable" and "preventable" this might be because over 70% of maternal deaths are due to five major complications (hemorrhage, sepsis, unsafe abortion, eclampsia and obstructed labor) and the clinical means to prevent either end from this complications[10].

This study's intervention group consisted of women aged 18-25, whereas only 2.9% of women were more significant than 40 years. Like Civil and Dow hospitals, Karachi is multi-specialty-based, leading to more young nurses gaining clinical expertise for better opportunities in their future endeavors.

On the other hand, according to a survey conducted in 2002, 628 registered nurses were included at 45 years of age; as a result, the mean age of the registered nurses was 44.6 years[11].

In the study, the age group and previous training on the AMTSL variable showed significant association with the study group variable. Obstetric care providers

aged 20-30 years were 3.86 times more likely to practice AMTSL than others because obstetric care providers in the 20–30 age range have adequate Knowledge due to their graduation year, sufficient skills, and practice recall bias is low. As a result, they can do AMTSL more readily than their counterparts[12].

A study conducted among staff nurses working in the KLES Hospital to evaluate the efficacy of a Teaching program on Knowledge of active management of the third stage of labor in the prevention of Postpartum Hemorrhage, where 100% of nurses were diploma holders. Similarly, postpartum hemorrhage is the prominent reason for parental death in Africa. Postpartum hemorrhage (PPH) is the major complication related to the third stage of labor, which is explained as after birth, blood loss $\geq$ 500ml within 24 hours, the majority of pregnancy-associated deaths occurred due to hemorrhage[13]. Irrespective of the fact that active management lowers the occurrence of postpartum hemorrhage, expectant management is also widely practiced[14]. This study showed a significant mean difference in post-knowledge between control and intervention groups. Furthermore, there was a significant mean difference in post-practice between both groups.

This study came across to the point that there was a significant mean difference between pre and post-knowledge, for the control group, and this trend continued for the intervention group as well. Further the study revealed that there was a significant mean difference between pre and post-practice, for the control group, and this trend continued for the intervention group as well.

Moreover, this study has also compared pre and post knowledge levels according to the level of below average, average, good, and very good. The overall pre-test knowledge of nurses revealed that only 17.1% and 20% of nurses had good AMTSL expertise in control and intervention groups, respectively. This finding was in accord with a study where only 22.2% of nurses had good pre-test knowledge regarding AMTSL. These results also align with studies conducted in Himachal Pradesh, India, among nurses, midwives, and doctors. According to the pre-test results, 80% of participants had poor Knowledge of AMTSL[15].

The overall post-test Knowledge of nurses revealed that the intervention group had a better understanding than the control group. Furthermore, the broad post-test practice of nurses showed that the intervention group had 2.5% higher highly competent practice than the control group participants. Significant variations were also found for post-test Knowledge and practice between control and intervention groups. These findings accord with Mercer SW 2006[16.] And Deepaty GP 2008[17.] studies where improvement was observed in post-test Knowledge. Moreover, a recent study assessed the education program's effectiveness with the help of an informational booklet[18]. Further it was also found that training related to active management of the third stage of labor was significantly associated with the knowledge and practice level of midwives[7].

We discovered a substantial difference between pre- and post-knowledge levels in the control group, and the intervention group showed a similar trend. For the control group, there was no discernible difference in pre- and post-practice levels (incompetent, competent, and highly competent).

However, a difference was observed for the intervention group. This inadequate Knowledge may be attributed to the absence of personal interest in being well-informed about new developments in practices. Therefore, it is necessary to improve participants' learning by educating them on the active management of the third stage of labor.

CONCLUSION

The knowledge level of midwives was highly correlated with training related to active management of the third stage of labor and midwives' degree of practice in this area. The practice level of midwives in active management of the third stage of labor was substantially correlated with their level of education, training in active management of the third stage of labor, and level of Knowledge.

To effectively contribute to AMTSL and save women's lives, midwives should raise their academic standards, increase their Knowledge, and sharpen their abilities. All midwives should receive training from healthcare organizations, and the local government should raise the educational requirements for midwives.

We suggest that midwives and nurses get scheduled, timely, and sufficient on-the-job training, mentorship, and supportive supervision of AMTSL. The curriculum for nurses working in labor wards should be evaluated, and the training should be directed toward them. Additionally, more studies on large-scale interventions should address the Knowledge and skill gaps related to AMTSL.

LIMITATIONS:
Nurses and Midwives who have not worked in Gynecology & Obstetrics Units were excluded from this study. Moreover, the private sector was also not considered for this study.

Ethical Permission: University of Health sciences IRB letter No. IRB-1312/DUHS/Approval/2019, dated 01-08-2019.

Conflict of Interest: The authors have no conflict of

Salma Memon, Bushra Imdad, Amina Aziz, Farhana Aziz, Farzana Memon, Shehla Naeem Zafar

interest to declare.

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AUTHOR CONTRIBUTIONS

Memon S: Idea and conceptualization, Principle investigator
Imdad B: Writing and analysis
Aziz A: Manuscript Write-up
Aziz F: Data collection
Memon F: Data collection
Zafar SN: Data interpretation

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