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IMPACT OF A STRUCTURED EDUCATIONAL PROGRAM ON NURSES' KNOWLEDGE AND PRACTICE IN THIRD AND FOURTH STAGE LABOR MANAGEMENT

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ABSTRACT

The third and fourth stages of labor are critical periods in maternal care, during which timely and evidence-based nursing interventions are essential for preventing postpartum hemorrhage (PPH) and other maternal complications. The nurses are key stakeholders in the implementation of Active Management of the Third Stage of Labor (AMTSL) and in the immediate postpartum period monitoring mothers. But lack of knowledge and clinical practices can affect the quality of maternal health care. It has been known that structured education programs are effective methods to improve nurses' competency and encourage compliance with evidence-based practice.

To evaluate the impact of a structured educational program on nurses' knowledge and practices regarding the management of the third and fourth stages of labor at a tertiary care hospital.

The study employed a quasi-experimental pretest-posttest design in which 65 registered nurses in labor room and postnatal wards of Lahore General hospital Lahore, The participants were selected by non-probabilistic purposive sampling technique. Structured questionnaire and observation checklist were used to gather the data, which were modified and validated from previous instruments. 20 multiple-choice questions were used to assess nurse knowledge and 15 practice items were used to assess the clinical practices on the questionnaire. After baseline assessment, a structured educational program was provided using interactive lectures, demonstrations, media and educational handouts. Post Testing was carried out using the same tools. SPSS version 26.0 was used for data analysis. Participant descriptors were summarized with descriptive statistics, and Chi-square tests and paired sample t tests were used to evaluate intervention efficacy and associations between variables. P-values < 0.05 were deemed to be statistically significant.

Results of the 65 respondents, 70.8% were female, 40.0% qualified with a BS Nursing and 41.5% had 1-5 years experience in obstetrics. Before the intervention, only 9.2% of nurses had good knowledge and none had a good practice level. After the educational program, the number of nurses who had good knowledge and good practice scores were 56.9% and 64.6% respectively. The mean knowledge score increased significantly from 11.49 ± 2.06 to 16.78 ± 1.74 ($t = 32.93$, $p < 0.001$). Similarly, the mean practice score improved significantly from 8.35 ± 1.87 to 13.14 ± 1.17 ($t = 30.12$, $p < 0.001$). There were no statistically significant relationships between the demographic characteristics and the posttest knowledge or practice outcomes ($p > 0.05$).

The structured educational program proved to be quite successful in boosting the knowledge and practices of nurses in the management of third and fourth stage of labor. There was an improvement in theoretical knowledge and clinical skills after the intervention. Continuing nursing education should include competency-based educational programs that are regularly offered to reinforce evidence-based maternity care and maternal health care outcomes, along with refresher training.

Keywords: Active Management of the Third Stage of Labor, AMTSL, Postpartum Hemorrhage, Nursing Education, Knowledge, Practice, Maternal Health, Fourth Stage of Labor, Educational Intervention, Nurses.

INTRODUCTION

The third and fourth phase of labor is a crucial area of intrapartum care since it is the most critical phase of the health of all women as they risk postpartum hemorrhage (PPH) and other life-threatening complications are the highest during this period.(Organization, 2025). Globally, PPH is the leading cause of death to the mother, with approximately 25% of all maternal deaths due to this complication occurring during this phase.(Say et al., 2014) Third and fourth stage labor is the decisive moment of obstetric care since, at this phase, the risk of postpartum bleeding is high.(Begley et al., 2019)

The management of the third and fourth stages of labor represents a critical period in obstetric nursing where timely evidence-based nursing interventions are crucial in preventing postpartum hemorrhage PPH is the most common cause of maternal death worldwide (PPH). More than 25% of all maternal deaths is caused by postpartum hemorrhage, and the main cause of this condition is uterine atony. Active management of the Third Stage of Labor (AMTSL) is a proven strategy and has been shown to lower the risk of PPH by ~60% than expectant management. (Mohammed & Aliwi, 2023)

In a quasi-experimental study, interns trained with competency-based training were found to gain significantly in their management skills for the third stage of labor than interns who were trained with conventional training. In the same vein, the use of high fidelity simulation has been established to improve clinical competence by enabling nurses to simulate complex situations in a safe and controlled setting. Simulation training helps develop critical thinking and decision-making ability, which will allow nurses to be effective during situations of uterine atony or retained placenta. These training sessions not only enhance technical abilities but also help to build confidence and alleviate anxiety around obstetric emergencies.(Hashem et al., 2022)

The effect of these educational activities is not just limited to the short term for the students, but has long-term implications for clinical practice and patient care. Research that assess the impact of the nursing care plan on the nurses' performance during third stage of labor has shown that there was great improvement in the implementation of evidence-based nursing care plans. After structured teaching, improvement was seen in the knowledge scores, and consistency in AMTSL components like timely administration of uterotonic, and Blood loss quantification by nurses. The exact measurement of blood loss is very important to have in order to diagnose PPH early, but it is a difficult task and it is not fully mastered and standardized. Educational sessions have been found to enhance the skills of the maternity nurses of detecting early signs of PPH and prompt them to take adequate action, which helps to minimize the chances of complications.(Elzeblawy Hassan et al., 2024)

Research has shown that nursing knowledge and practice shortcomings are some of the most significant contributors to maternal mortality that can be avoided, particularly in healthcare systems with limited resources. Poor training, poor access to refresher training and institutional support often serve as obstacles to the use of evidence-based obstetric practices.(Seacrist et al., 2018; Vogel et al., 2019)

A Nigeria study showed that the competency-based simulation training and continuing professional development (CPD) programs were effective in ensuring that the standard of care provided by obstetricians remained high and that the incidences of maternal morbidity were also reduced.(Oladapo et al., 2009). The maternal mortality ratio in Pakistan is very high, at 186 deaths in 100,000 live births.(C. A. Ameh et al., 2019) According to the Pakistan Demographic and Health Survey (PDHS), a large percentage of maternal deaths can be avoided by means of a better quality of obstetric and nursing care. (Mahmood & Sultan, 2006).

Nevertheless, a study on different tertiary hospitals in Pakistan has shown significant differences in the knowledge of nurses about AMTSL and postpartum surveillance guidelines, with the necessity to implement the targeted interventions and train nurses on both the theoretical and practical aspects of the uterotonic administration and post-surgery observation. Developed educational programs, specific to the clinical environment of the nurses, have been demonstrated to produce significant positive outcomes in clinical competence, confidence, and adherence to the standards of care. They encourage critical thinking, increase decision making skills and develop accountability among nurses. Moreover, these interventions are also associated with building the culture of safety within the institution that will minimize unnecessary maternal complications and increase patient satisfaction.(AlWassit & Kouira, 2024; Wake & Wogie, 2020)

Rationale of the Study

The third and fourth stages of the labor are also very critical in the safety of the mother because improper management of the situation can lead to complications that can lead to the demise of the mother such as postpartum bleeding. Nurses should be in the middle of the system of surveillance, the recognition of risks, and timely interventions; however, the gap in knowledge and clinical practice is likely to compromise the quality of the received care. Planned learning program gives a structured platform to enhance the amount of knowledge among the nurses and practical skills through the evidence based learning and practical learning. They should enhance their laboratory management skills to reduce the complications to be avoided in these periods of labor and mortality. The study will be used to assess the efficacy of this training to present evidence to justify the ongoing professional development activities and assist to achieve improved maternal outcomes and nursing excellence in tertiary care uni**ts.**

Significance of the Study:

This study is important for improving the quality of maternal and newborn care by enhancing nurses' knowledge and clinical practices related to the management of the third and fourth stages of labor. Effective nursing care during these critical stages is essential for preventing postpartum hemorrhage, identifying early maternal complications, and ensuring timely interventions that can reduce maternal morbidity and mortality. By strengthening evidence-based nursing practices through a structured educational program, this research aims to enhance clinical competence,

promote patient safety, and improve immediate postpartum outcomes for mothers.
In the local context of Pakistan, where opportunities for continuous professional education among nursing staff may be limited, evaluating the effectiveness of a structured educational intervention within a tertiary care hospital can provide valuable insights for policymakers and hospital administrators. The findings may support the development of standardized training programs and protocols for obstetric nursing practice. Internationally, this study contributes to the growing body of evidence emphasizing the role of targeted educational strategies in improving intrapartum and postpartum nursing care and advancing global standards of maternal health and patient-centered practice.

Objective and Purpose of the Study

To determine the effect of a systematic educational program on the knowledge and practice of nurses in terms of the third and fourth stage of labor management at a Lahore General hospital,Lahore

Question of the Study

Is there any effect of a systematic educational program on the knowledge and practice of nurses in terms of the third and fourth stage of labor management at a tertiary care hospital.

METHODOLOGY

Research Design

The proposed research utilized a quasi-experimental pretest- post-test approach to measure the efficacy of an educational program on the knowledge and practices of nurses with regard to the management of the third and fourth stages of labor. A structured questionnaire and observational checklist were used to determine the knowledge and practices of the participants before and after the intervention.

3.2 Clinical Settings

This research was done in the labor room and postnatal wards of Lahore General Hospital, Lahore, Pakistan. The selection of these departments can be explained by the fact that they directly offer intrapartum and postpartum care, which made it possible to determine how effectively nurses manage the third and fourth stages of labor in practice.

3.3 Sample Size

There were 65 nurses enrolled. The sample size was calculated by determining the prevalence of 61.2% (Faustine et al., 2025) that were good in knowledge in nurses taking 10% margin of error and 90% confidence level by following the following formula:

$$n = \frac{z^2 - \frac{\alpha}{2} p(1-p)}{d^2}$$

Where;

p= prevalence of good in knowledge amongst nurses was = 61.2%

d= Marginal error set at 10%

α= 0.05

Z= Standard normal deviation for 90% confidence interval

n= Number of patients = 65

3.4 Sampling Technique

The nurses in labor and post-natal wards were recruited using a non-probability purposive sampling method because they meet the inclusion criteria and are willing to take part.

3.5 Duration of Study

The study took a total of six months which comprise of ethical approval, data collection, intervention delivery, posttest, data analysis and report writing.

3.7 Data Collection Procedure

The proposed research utilized a quasi-experimental pretest- post-test approach to measure the efficacy of an educational program on the knowledge and practices of nurses with regard to the management of the third and fourth stages of labor. The information was gathered by interviewing nurses operating in the Lahore labor and postnatal wards, Lahore General Hospital Lahore. Once an ethical permission has been received by the Institutional Review Board and the consent of the university, the qualified nurses were informed about the purpose and objectives of the study and the study procedures. Written informed consent was taken from participants.

Data aggregation was done in three phases. During the pretest phase, the participants were asked to complete Section A and Section B and then their practices were observed in terms of the clinical practice through the use of Section C when giving care. Then followed the intervention phase which was an educational training program designed by the researcher and given by the researcher. The intervention addressed the evidence-based practices in the management of the third and fourth phases of labor such as uterotonic administration, controlled cord traction,

uterine massage, maternal monitoring, postpartum hemorrhage prevention measures, and infection control measures. The program comprised interactive lectures, demonstrations, multimedia presentation and hand outs, in small groups in a span of two consecutive weeks, each session took about 90 minutes.

The posttest was held after the training in the same structured questionnaire and observational checklist to determine the improvement of knowledge and practice. The principal investigator was responsible in data collection to ensure consistency and accuracy, as well as keep the confidentiality.

3.8 Data Collection Tool:

Section A: Demographic Information: The variables were the age, gender, qualification, years of experience in obstetric care, previous training on Active Management of the Third Stage of Labor (AMTSL), and working unit (labor room or postnatal ward).

Section B: Knowledge Assessment Questionnaire included 20 multiple-choice items evaluating theoretical knowledge of the third and fourth labor stages.26 It had 5 broad areas:

Overview of AMTSL and its goals (Items 1-3)

Pharmacologic treatment and timing of uterotonic (Items 446) use. Identification of the separation of the placenta and controlled cord pulling (Items 710). Immediate maternal postpartum (Items 11-17) and uterine tone monitoring and valuation.

Diagnosis and management of postpartum complications (Items 1820)

The correct responses received 1 point each and the total score was 20. The scores were used as Good (>75%), Moderate (50–74%), and Poor (<50%) knowledge.

Section C: Practice Observation Checklist included 15 questions assessing the actual clinical practices of the nurses once managing the third and fourth stages of labor.26 The checklist comprised three domains, i.e.:

Application of AMTSL items (Items 1 -7),

Maternal surveillance and post-partum care (Items 8-12), and Infection prevention, professional conduct (Items 13-15).

Scoring Method:

Every properly conducted procedure received the designation of 1 point, whereas any omissions or wrong practices received the designation of 0 points. The overall practice score was 15, as Good (≥80%), Moderate (6079%), and Poor (<60%).

A structured questionnaire and observational checklist based on a validated tool applied in a prior study (Muyanga & Joho, 2022) [26] was used to assess the knowledge and practices of the participants prior to and following the intervention to refer to the aspects related to the fourth stage of labor. The tool was separated into three parts to make sure it was thoroughly evaluated.

RESULTS:

Table 4.2 Age Distribution of Nurses (n=65)

Variable	Mean ± SD	Minimum	Maximum
Age (years)	35.89 ± 8.58	22	49

Prior to the educational intervention, most nurses demonstrated moderate knowledge (73.8%), while only 9.2% exhibited good knowledge. Following the intervention, the proportion of nurses with good knowledge increased substantially to 56.9%, and no participant remained in the poor knowledge category, indicating a marked improvement in knowledge regarding management of the third and fourth stages of labor. (Table 4.3, Figure 4.1)

Table 4.3 Pretest and Posttest Knowledge Categories (n=65)

Category	Pretest n (%)	Posttest n (%)
Poor	11 (16.9)	0 (0.0)
Moderate	48 (73.8)	28 (43.1)
Good	6 (9.2)	37 (56.9)
Total	65 (100)	65 (100)

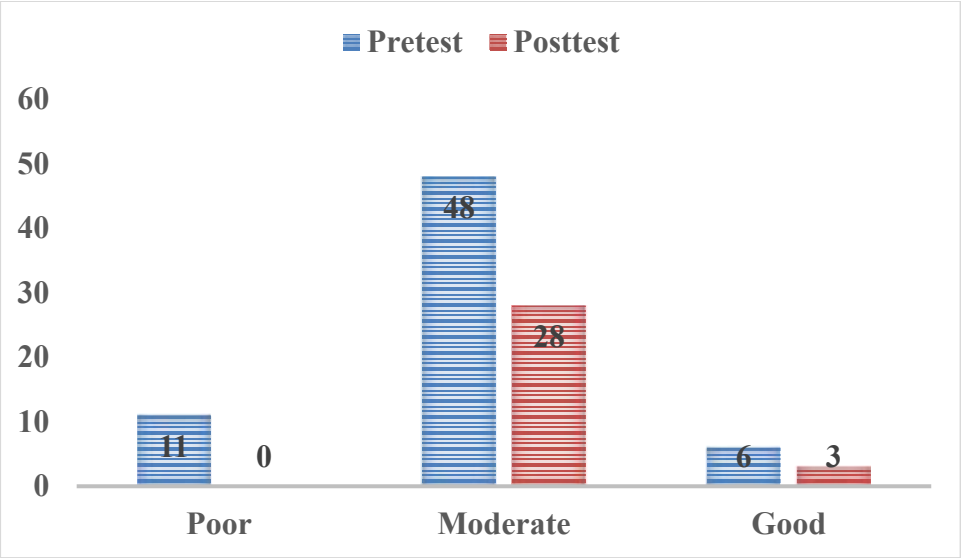

Figure 4.1 Comparison of Pretest and Posttest Knowledge Categories

At baseline, nearly half of the nurses demonstrated poor practice (49.2%), and none achieved a good practice level. Following the educational intervention, 64.6% of nurses attained good practice scores, while no participant remained in the poor practice category, demonstrating a substantial enhancement in clinical performance. (Table 4.4, Figure 4.2).

Table 4.4 Pretest and Posttest Practice Categories (n=65)

Category	Pretest n (%)	Posttest n (%)
Poor	32 (49.2)	0 (0.0)
Moderate	33 (50.8)	23 (35.4)
Good	0 (0.0)	42 (64.6)
Total	65 (100)	65 (100)

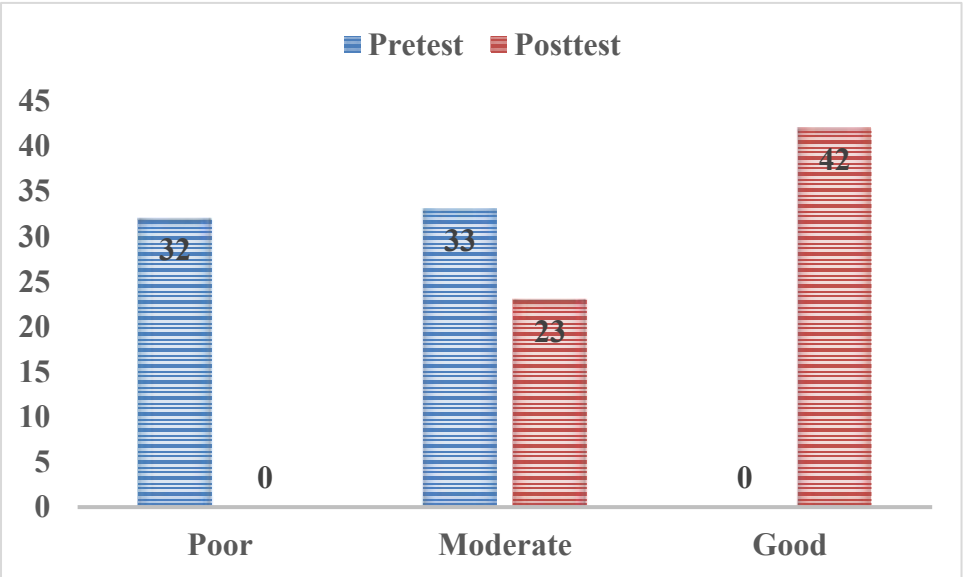

Figure 4.2: Comparison of Pretest and Posttest Practice Categories

The mean knowledge score increased from 11.49 ± 2.06 before the educational intervention to 16.78 ± 1.74 after the intervention. The mean increase in knowledge score was 5.29 points. Paired sample t-test revealed a highly significant improvement in knowledge scores following the intervention ($t = 32.93$, $p < 0.001$), indicating that the structured educational program effectively enhanced nurses' knowledge regarding the management of the third and

fourth stages of labor.
(Table 4.5)

Table 4.5 Comparison of Pretest and Posttest Knowledge Scores (n = 65)

Variable	Pretest Mean ± SD	Posttest Mean ± SD	Mean Difference	t-value	p-value
Knowledge Score	11.49 ± 2.06	16.78 ± 1.74	5.29	32.93	<0.001*

*Paired Sample t-test; $p < 0.05$ considered statistically significant.

The mean practice score improved from 8.35 ± 1.87 at pretest to 13.14 ± 1.17 at posttest. The mean increase in practice score was 4.79 points. The paired sample t-test demonstrated a highly significant improvement in nurses' clinical practice following the educational intervention ($t = 30.12$, $p < 0.001$), confirming the effectiveness of the structured educational program in improving evidence-based practices related to the management of the third and fourth stages of labor.
(Table 4.6)

Table 4.6 Comparison of Pretest and Posttest Practice Scores (n = 65)

Variable	Pretest Mean ± SD	Posttest Mean ± SD	Mean Difference	t-value	p-value
Practice Score	8.35 ± 1.87	13.14 ± 1.17	4.79	30.12	<0.001*

*Paired Sample t-test; $p < 0.05$ considered statistically significant.

There was no statistically significant association between gender and posttest knowledge category ($\chi^2=0.010$, $p=0.919$). Both male and female nurses demonstrated comparable levels of knowledge following the educational intervention. (Table 4.7, Figure 4.3)

Table 4.7 Association between Gender and Posttest Knowledge Category (n=65)

Gender	Moderate n (%)	Good n (%)	Total	χ^2	p-value
Male	8 (42.1)	11 (57.9)	19	0.010	0.919
Female	20 (43.5)	26 (56.5)	46		
Total	28	37	65		

Figure 4.3: Gender vs Posttest Knowledge Category

No significant association was observed between prior AMTSL training and posttest knowledge category ($\chi^2=0.371$, $p=0.543$). Knowledge gains were similar among nurses regardless of previous training exposure. (Table 4.8, Figure 4.4)

Table 4.8 Association Between Prior AMTSL Training and Posttest Knowledge Category (n=65)

Prior Training	Moderate n (%)	Good n (%)	Total	χ^2	p-value
No	13 (39.4)	20 (60.6)	33		
Yes	15 (46.9)	17 (53.1)	32	0.371	0.543
Total	28	37	65		

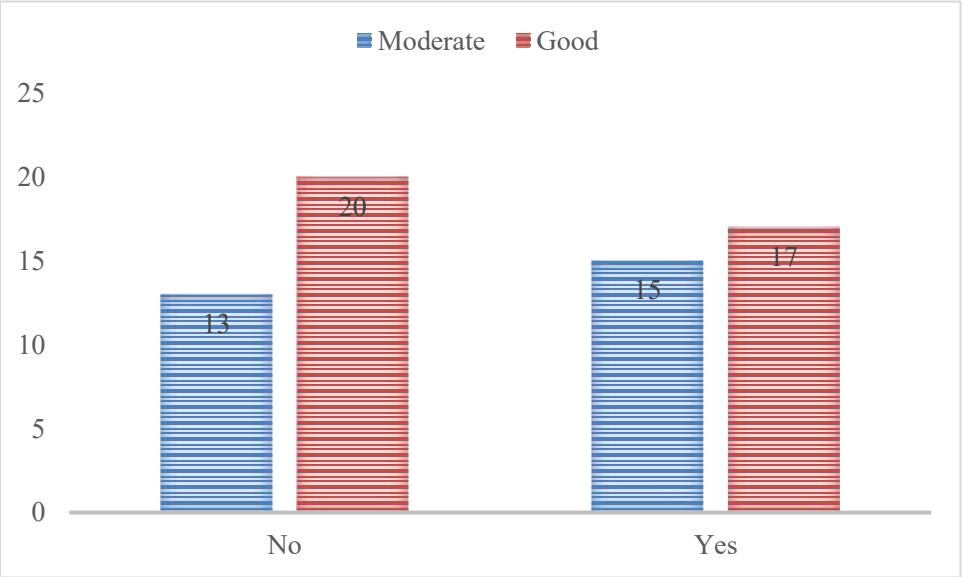

Figure 4.4: Prior AMTSL Training and Posttest Knowledge

Gender was not significantly associated with posttest practice category (χ^2=0.530, p=0.466). Improvements in practice were observed among both male and female nurses. (Table 4.9, Figure 4.5)

DISCUSSION

The third and fourth stages of labor are important aspects of maternal care as they are reported the most dangerous period for the occurrence of postpartum hemorrhage (PPH), the most common cause of maternal mortality globally. Nursing roles during the third stage of labour, the use of Active Management of the Third Stage of Labour (AMTSL), and the fourth stage of labour, monitoring closely are vital and also have a major impact on the outcomes. The present study was designed to assess the knowledge and practice of the nurses on the management of third and fourth stage of labour following a structured educational programme in a tertiary care hospital. The results showed that the educational intervention had a significant effect on the knowledge and practice scores which increased after the intervention, thus emphasizing the effect of structured education in improving nursing competency. Demographic profile of the participants showed that majority were female (70.8%), qualified with BS Nursing (40.0%) and with experiences of 1-5 years in obstetrics (41.5%). In total, 49.2% of the respondents mentioned previous AMTSL-related training. The results of the study are similar to the nursing staff profile found in maternity care organizations where women make up the bulk of health care workers providing care to women and newborns. (Abdulaziz & Mohammed, 2024; Begley et al., 2010)

Significant improvements were noted in nurses' knowledge after the implementation of the structured educational program. The percentage of nurses with good knowledge level rose significantly from 9.2% to 56.9% and none of the participants were in the poor knowledge level group. Furthermore, the mean knowledge score increased from 11.49 ± 2.06 to 16.78 ± 1.74. This difference was found to be highly significant ($t = 32.93$, $p < 0.001$), indicating that the intervention was effective. This discovery aligns with previous research and evidence that have shown that structured educational program is extremely effective in enhancing nurses' knowledge of obstetric care protocols and emergency management procedures. (Almutairi et al., 2025)

The post intervention results showed an amazing improvement in practice. At the end of the educational program, 64.6% of the nurses had good practice scores and no participant had the poor practice score. The mean practice score rose significantly from 8.35 ± 1.87 to 13.14 ± 1.17; this is a 4.79-point improvement per average. This improvement was found to be highly significant by the paired sample t-test ($t = 30.12$, $p < 0.001$). The findings show that the intervention was effective and improved theoretical knowledge and translated this knowledge into action in clinical

practice. This significant improvement in practice is due to the competency-based education programme. Simulations, supervised skill sessions and discussions of actual clinical situations probably bolstered the confidence and competency of nurses to implement AMTSL procedures appropriately. Educational simulation and competency-based methods have been shown to enhance technical skills, critical thinking and decision-making skills in obstetric emergencies among nurses throughout all of past studies.(Mottola et al., 2013)

AMTSL training before the test was not significantly related to knowledge or practice domains after the test. While it is possible that this training would provide some sort of "cognitive jump start" or otherwise give an edge to participants based on their prior training, the results here suggest that the structured educational intervention did help improve outcomes, regardless of prior training. The outcome may be due to the systematic and holistic approach of the intervention, which provided all participants with the same evidence-based information and practical training. Ameh et al. found that good educational programs have the potential to significantly enhance competency in healthcare providers regardless of their prior learning experience. Again, there was no significant relationship between work unit and knowledge or practice outcomes at posttest. The intervention was equally effective for nurses in labor rooms and nurses in the postnatal units. This discovery indicates the program's suitability to a wide range of settings and its potential to enhance competency in a variety of clinical situations in maternity health care. (C. A. Ameh et al., 2019)

The results of the present study have significant implications to nursing practice, nursing education, and maternal health care policy. Better knowledge and clinical skills of nurses can directly impact on quality of care in the 3rd and 4th stages of labour. The timely administration of uterotonic agents, accurate estimation of blood loss, and good postpartum monitoring, with early recognition of complications are important interventions that will significantly help to prevent maternal complications and deaths. Thus, promoting nurses' competency through structured educational programmes is an important way of enhancing the maternal health outcomes and the maternal health goals in the world. In general, the results are quite positive and emphasize the importance of implementing structured educational programs in the framework of other routine learning experiences for midwives and other practitioners in maternity care. The competency of nurses should be maintained and enhanced through the use of regular refresher courses, competency assessment, simulation-based learning, clinical audit and supportive supervision. Continuous professional education can boost not only the skills of individual practitioners, but also promote a culture of patient safety and evidence-based practice in healthcare organizations. Investing in promoting nursing education at tertiary facilities will help them to enhance maternal health care services, increase the uptake of the AMTSL guidelines and ultimately minimize maternal preventable complications and deaths

CONCLUSION

The present study has shown that the structured educational programme was effective in enhancing the knowledge and practices of the nurses in the management of third and fourth stages of labour. Before the intervention some nurses had moderate knowledge and practice levels, with a high proportion of nurses having poor knowledge and practice levels. A large improvement was found in the knowledge score and practice score after the educational program. There were no significant correlations between the demographic characteristics and the posttest results, indicating that the educational program was effective at no matter what type of participants. The results of this study confirm that educational, structured interventions have potential to successfully improve nursing competency in both genders, both trained and not trained, and across various work units.

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