Competency-Based Education: Effect on the Performance of Intern Nursing Students in Active Third Stage of Labor Management

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Abstract

Background: Active management of the third stage of labor is a low-cost, evidence-based preventive intervention that is easy to implement and very successful in reducing postpartum hemorrhage in facility-based deliveries. The **aim** of the study was to investigate the effect of competency-based education on the performance of intern nursing students in the active third stage of labor management. **Design**: A quasi-experimental study design was used. **Sample**: Ninety female intern nursing students who completed their internship year at Menoufia University's Faculty of Nursing in the academic year 2023-2024 were chosen as a convenient sample. **Setting**: The labor unit at Menoufia University Hospital in Egypt was the study's setting. **Instruments**: The knowledge evaluation questionnaire, an observational checklist of intern nursing students' practices, and a structured self-administrated questionnaire were utilized to gather data. **Results**: The results showed that before the intervention, the study and control groups had good total knowledge levels of 17.8% and 15.6%, respectively, compared to 91.1% and 13.3% after the intervention. Furthermore, before the intervention, 62.2% and 68.9% of the study and control groups had competent practice levels; following the intervention, both groups had 95.5% and 66.7%, respectively. **Conclusion**: The intern nursing students' knowledge and practices about active management of the third stage of labor were improved by competency-based education post-intervention than pre-intervention. **Recommendations**: Competency-based education is strongly advised to be included in the clinical training section of the maternity nursing curriculum and other maternity nursing subjects as proactive measures to enhance the practice of intern nursing students regarding active management of the third stage of labor.

Keywords: active third stage of labor management, competency-based education, interns nursing students' performance.

Introduction

Parturition has been recognized as the physiological process by which the products of conception are expelled outside the uterus (**Gabbe et al., 2023**). Furthermore, the period between the fetus's birth and the membranes and placenta being delivered is known as the third stage of labor (TSL), according to **Arulkumaran (2023).** Additionally, he believed that because of the possibility of severe postpartum hemorrhage (PPH), this was the stage in which the woman was most in danger (**Arulkumaran, 2023).**

According to **Magann et al. (2023),** the TSL is deemed extended if the placenta does not separate within 30 minutes of birthing. Also, they stated that TSL normally lasts between 10 and 30 minutes. They also observed that there is a six-fold increase in PPH when the third stage of labor lasts longer than 30 minutes, and that if the third stage of labor lasts longer than 18 minutes, there is a high risk of PPH.

The World Health Organization **(WHO) (2023)** defines PPH as more than 500 milliliters of blood lost after vaginal delivery or more than 1000 milliliters after caesarean delivery. Also, **Hofer et al. (2023)** referred to PPH as primary when it happens within 24 hours after delivery and secondary when it occurs between 24 hours and 6 weeks following delivery.

Consequently, PPH is the leading cause of maternal mortality and morbidity worldwide, according to **Badr and Abd Elhameid (2022),** which has a severe negative impact on human and economic capital, especially in underdeveloped nations. They also discussed the fact that it has grave repercussions, including severe anemia, shock, renal impairment, coagulation abnormalities, Sheehan's syndrome, and even death. This is especially true in developing nations, where women lack access to high-quality healthcare because of budgetary limitations. Therefore, they added that the third stage of labor should be the beginning of basic PPH prophylaxis.

Kongnyuy and Broek (2022) and **Mathai et al. (2022)** concluded by describing how active management of the third stage of labor (AMTSL) consists of three parts: giving a uterotonic medication as soon as the fetus is born, regulating cord traction (CCT) during contractions to deliver the placenta, and massaging the uterine fundus following placenta delivery.

Moreover, **Gasparini et al. (2023)** provided evidence that the primary transitional stage between academic study and a professional nursing career is a nursing internship. Additionally, they demonstrated how this procedure closes the theory-practice gap among recently trained professionals by allowing new nursing professionals to use academic knowledge in clinical practice. Additionally, they demonstrated how clinical learning aids in the development of a professional identity, role-playing, reality-sensing, and the acquisition of reflective, effective, and cognitive nursing abilities by nursing students.

Otherwise, **Oroszi (2022)** emphasized that contemporary teaching techniques like the competency-based education (CBE) model should be used to train intern nursing students. Likewise, he emphasized that the CBE model is an advanced technique in teaching, learning, and assessment that focuses on students' mastery of specific skills or competencies rather than their acquisition of knowledge or completion of conventional coursework. Consequently, he indicated that this approach emphasizes the development of practical skills and knowledge that can be applied directly to real-world situations.

Furthermore, as **Muzeya and Julie (2022)** clarified, competency-based education is a student-centered, performance-based strategy that enhances students' performance abilities to certain standards by practice and demonstration. Additionally, they proposed that it contributes to raising the relevance of a student's education to a future career. In a similar line, they suggested that the students must actively participate in all facets of care to exhibit proficiency in AMTSL.

Furthermore, internships, according to **Metwally and Mohamed (2021),** provide students with a well-planned monitoring experience that enables them to use their knowledge and abilities in a professional setting, improve their performance, and preserve the effectiveness of healthcare organizations. As a result, according to **Ramadan et al. (2022),** intern students should be extremely educated and skilled carers for women's safety and well-being.

Significance of the study

According to **Ramadani (2023),** the third stage of labor is the most perilous stage for women because of the possibility of PPH. Additionally, he showed that PPH is still the most frequent birth-related complication, and when diagnosis and treatment are delayed, it significantly increases maternal morbidity and mortality. He disclosed that PPH impacts approximately 5–10% of deliveries globally.

Additionally, records show that the maternal mortality ratio in Egypt was 17 deaths for every 100,000 live births. PPH accounts for almost 20% of them, according to **Vlassoff et al. (2020).**

Furthermore, by emphasizing performance and abilities, **Tan et al. (2023)** said that competency-based education is an emerging trend in nursing education that enables students to advance and master skills at their profession. They clarified as a result that it has been extensively utilized in nursing, engineering, pharmacy, and medicine. However, they showed a development in the knowledge and practical abilities of the students as well as a rise in their level of learning satisfaction.

The aim of the study

The aim of this study was to investigate the effect of competency-based education on the performance of intern nursing students in the active third stage of labor management.

Research Hypotheses:

- Intern nursing students who follow competency-based education are expected to exhibit higher knowledge scores concerning the active third stage of labor management than those who do not follow.

- Intern nursing students who follow competency-based education are expected to exhibit higher practice scores concerning the active third stage of labor management than those who do not follow.

Operational definitions:

Competency-Based Education refers to the structured learning material and collections of information, facts, and concepts that follow a set of directions, usually with built-in

reinforcements and evaluations of learning, to improve intern nurses' knowledge and practices regarding the active management of the third stage of labor (Robertson & Schumacher, 2023). Operationally, it refers to a systematically organized, planned, and developed teaching strategy designed and created by the researchers in the form of educational sessions and explanatory videos presented on CD to provide information for intern nursing students concerning active management of the third stage of labor for enhancing their knowledge and improving their practices.

According to **Nikpeyma and Saeedi (2023), performance** is the action, accomplishment, or fulfilment of nurses' obligations in relation to the tasks that have been delegated to them. Response times and throughput can be used to gauge performance. Operationally, it refers to the skills and knowledge that interns in nursing need to provide advanced care to actively manage the third stage of labor.

Method

Research Design: To conduct the current study, a quasi-experimental research design with study and control groups receiving pre- and post-tests was used. It is research that resembles experimental research but is not true experimental research. Although the independent variable is manipulated, participants are not randomly assigned to conditions or orders of conditions. In a pretest-posttest design, the dependent variable is measured once before the treatment is implemented and once after it is implemented (**Cook & Campbell, 1979**).

Research Setting: The labor unit at Menoufia University Hospital in Egypt served as the study's setting. Menoufia University Hospital came into existence in 1993. Comprising four buildings—one separate (the oncology building) and three linked (the main building, the emergency hospital, and Suzan Mubarak Hospital)—it is a university-affiliated hospital with a primary focus on education.

 Sample Size Calculation: Based on an analysis of related prior research that looked at the same results and discovered important discrepancies, the sample size was determined (**Hung et al., 2023**). The following formula (**Fisher and Yates, 2023**) has been used to determine the

sample size at a power of 80% and CI of 95%. Ninety female intern nursing students participated in the study, 45 in each group.

$$n = \frac{z^2 \times \hat{p}(1-\hat{p})}{\varepsilon^2}$$

where ε represents the margin of error, z is the z score, the sample size is denoted by n, and the population percentage is $\hat{p}$.

Study group (Group 1): It is composed of "45" female intern nursing students who followed the competency-based education approach and attended the educational sessions about the active third stage of labor management.

Control group (Group 2): It is composed of "45" female intern nursing students who had not attended the educational sessions and had not given any information.

Sample Type:

A convenient sample of intern nursing student's female who completed their internship year at Menoufia University's Faculty of Nursing during the academic year 2023/2024, spending one month in the labor unit.

Sample Procedure:

The total study participants were 90 female intern nursing students taken from the above-mentioned hospital. The chosen intern nursing students were then divided into two groups (groups 1 and 2) at random (using a straightforward randomization approach). Ninety-nine intern nursing students were instructed to select a sheet of paper with even and odd numbers on it. Group 1 was made up of students who chose an odd number, and Group 2 was made up of those who chose an even number. By using this method, bias and sample contamination were prevented.

Instruments for collecting data: Three instruments that the researchers designed based on pertinent literature studies were used to gather data for the current investigation. These instruments were as follows:

Instrument I: A self-administered questionnaire: Based on a review of recently published relevant literature (Anderson et al., 2021; Obermeyer et al., 2022), the researchers

created a specially constructed, self-administered questionnaire to gather the required data about the study participants. It consisted of the following and was presented as closed-ended questions:

Part I: The demographic attributes of the research participants include information about age, domicile, attendance at any workshops related to normal labor, attendance at any seminars pertaining to normal labor, and experience working in a private hospital.

Instrument II: Knowledge Assessment Questionnaire: The researchers created a multiple-choice questionnaire containing 14 questions to assess female intern nursing students' level of knowledge concerning AMTSL based on a review of recently published relevant literature (**Guerrero et al., 2021; Lei et al., 2022; Hung et al., 2023**). The definition and duration of the third stage of labor (TSL), indications of placental separation, mechanisms of placental delivery, significance of placental examination, complications of TSL, acronyms and components of AMTSL, the name of the uterotonic drug used, the recommended dosage and method of administration, the timing of drug administration, and harmful practices to avoid when performing AMTSL were just a few of the topics covered in the questions. Both groups utilized these questions before and after the competency-based teaching methods.

Knowledge's Scoring System: Knowledge queries were identified and assigned codes correspondingly. Every item was given a number: (1) for accurate responses and (0) for incorrect and unknown answers. The total knowledge score was categorized as follows, using the methodology of Ramadan et al. (2022): A good knowledge score is defined as more than 75% of the total score. The average knowledge score is between 60 and 75 percent of the total score. Below 60% of the total knowledge score indicates a poor knowledge score.

Instrument III: Observational Checklist of Practices of Intern Nursing Students: It was adopted from **Lami and Deksisa (2021)** and the **FIGO and ICM Guidelines (2022).** It included 44 items to assess female intern nursing students' practices regarding AMTSL. The items were classified into nine subdomains,

including immediate postpartum care (7 items), infection prevention (6 items), care after placenta delivery (5 items), components of AMTSL (administration of a uterotonic drug (2 items), emotional support (2 items), preparation (6 items), and immediate newborn care (3 items). For both groups, these tools were used both before and after the competency-based education strategies.

The practice's scoring system was established, and the questions were classified appropriately. Every item was evaluated with a point system that went from not done (1), incompetently done (2), and competently done (3). The practice total score was categorized as follows, using **Kaur & Siddiqui's (2022)** methodology. Incompetent practice: less than 60% of the total practice score; and 60–100% of the total practice score is considered competent practice.

Validity: Three experts from the Faculty of Nursing's Maternal and Newborn Health Nursing Department and two experts from the Faculty of Medicine's Obstetrics and Gynecology Department were consulted to ascertain the validity of the instruments. They examined the tools to ensure internal validity and correctness of content. They were also asked to rate the items' clarity and completeness. Modifications and suggestions were integrated into the instruments.

Reliability: Test-retest reliability was employed by the researchers to ensure that the instruments were consistent. On two or more occasions, they gave the same individuals identical tools in comparable settings. Utilizing Cronbach's alpha to confirm the test's reliability, the researchers discovered that every coefficient was acceptable and desirable. With a reliability coefficient of r = 0.90 for the knowledge assessment questionnaire and 0.85 for the observation checklist, the instruments were considered reliable.

Administrative Approval Letters: Before beginning data collection for the study, official letters were obtained from the Menoufia University Faculty of Nursing Dean and presented to the Menoufia University Hospital Director. The director of the setting officially granted authorization to conduct the study. The director of the research setting received a thorough explanation of the reasoning behind the current investigation. Menoufia University's

Faculty of Nursing approved the Committee on Research and Ethics.

Ethical considerations:

Methods for guaranteeing ethics were considered when conducting the study on confidentiality. When introducing themselves and outlining the goal of the study to the study sample participants, the researchers were able to win their cooperation and consent to be recruited for the study. On closed sheets, female intern nursing students were given numbers rather than names to protect confidentiality. All female intern nursing students were told that their study-related data would be kept private and used exclusively for statistical analysis. It was explained to every female intern nursing student that participation in the study was entirely optional and that they were free to leave at any time. It was open to any participant to ask any question about the study details.

A pilot study: Pilot Study: Nine intern nursing students, or 10% of the total study participants recruited from the hospital above, participated in the study. A preliminary study was carried out to ascertain the research instruments' correctness, relevance, clarity, and ease of use. The study also sought to determine whether the research was feasible, how long data collection would take, and whether there were any questionnaire problems, such as unclear or confusing questions, that would make data collection more difficult. The intern nursing students who took part in the pilot study were taken out of the sample to make the required adjustments and guarantee the stability of the findings.

Study Fieldwork: The current study was conducted from June 2023 to November 2023, a period of six months. Based on the intern nurses' day shifts, the researchers visited the setting three times a week (on Saturday, Sunday, and Thursday) from 9:00 a.m. to 3:00 p.m. The phases listed below were followed during the conduct of this study:

1. Preparatory phase

A thorough evaluation of all accessible literature, journals, books, and electronic dissertations was conducted about the field of research. Additionally, a survey of the literature was conducted to create a knowledge base pertinent to the research field (**Obermeyer et al., 2022**).

2. Interviewing and assessment phases:

Interviewing the study and control groups was part of this phase. To prevent bias, the control group was interviewed before moving on to the study group. The researchers greeted the students, gave introductions to each student in each of the two study groups, and gave them all the information they needed to know about the research study, including its goals, schedule, frequency of sessions, length, and activities. The sample was drawn in accordance with the hospital's delivery unit allocation policy, which called for the monthly enrollment of 15 intern nursing students.

A self-administered questionnaire and an AMTSL knowledge assessment were used to gather data from both groups. Also, a practice observational checklist was used to monitor the AMTSL practices of intern nursing students. To assess the impact of competency-based education on intern nursing students' performance with relation to active management of the third stage of labor, the data collected during this phase served as the baseline for subsequent comparisons. For each intern nursing student in both groups, the interview schedule took an average of thirty to sixty minutes to complete. The study participants recorded their responses to the instruments they used, with the items in the instruments given in Arabic.

3. Planning phase:

Based on the requirements of the study group and assessments of the literature, the researchers created the CBE. To address the lack of knowledge and practice about AMTSL among the observed female intern nursing students, it was created in the form of instructional sessions and instructional films. It addressed AMTSL-related knowledge and procedures. Additionally, this strategy is meant to serve as a manual and point of reference for intern nursing female students. The CBE model's objectives were created, with two overarching goals split into four sessions, each of which had its own set of goals.

General objective:

Each intern nursing student in the study group was able to have a thorough understanding of the third stage of labor and clinical practices related to AMTSL procedure phases after the CBE model sessions.

Specific objectives:

After completing the CBE model sessions, every study group intern nursing student was able to:

-Identify the third stage of labor.

-Determine how long the third stage of labor lasts.

-List the symptoms that indicate placental detachment.

-Explain the placental delivery method.

-List the benefits of placental examination.

-Enumerate the third stage of labor's problems.

-Determine the AMTSL abbreviation.

-List the elements that make up AMTSL.

4. Phase of implementation: This stage was carried out exclusively for the study group, and the researchers implemented the CBE model to guarantee that the information provided regarding AMTSL was reliable, consistent, and comprehensive. There were four planned educational sessions per week: one theoretical and three practical. The theoretical session covered the basics of the third stage of labor, including its definition, duration, signs of placental separation, mechanism of placental delivery, significance of placental examination, complications of TSL, acronym for AMTSL, three main sequential components of AMTSL, primary goal of AMTSL, name of the uterotonic drug used in AMTSL, recommended dosage, recommended route, recommended time of drug administration, and harmful practices when performing AMTSL. The steps of the AMTSL technique were explained during practical sessions; the first session covered emotional support (two items), preparation (six items), and immediate newborn care (three items).

Throughout the birth and the first few days after giving birth, the woman receives emotional support in the form of assurances and an explanation of what transpired. A clean gown, overshoes, and eyeglasses should be worn; hands should be washed with soap and water and dried; sterile surgical gloves should be worn; at the conclusion of the first stage of labor, the woman should be asked to empty her bladder (a catheterization is only required if the woman is unable to urinate and her bladder is full); and assistance in assuming a comfortable position (semi-sitting or squatting) should be provided. The newborn must be dry, his breathing must be patent (resuscitation is necessary if the fetus is not crying or breathing at least thirty times per minute within 30 seconds of birth), the mother must be kept in skin-to-skin contact with the newborn, and the newborn must be wrapped in a warm towel.

The AMTSL procedure's components were covered in the second session. Within a minute of delivery, administer a uterotonic drug (2 items), palpate the uterus to ensure no further fetus is present, and inject 10 IU of oxytocin intramuscularly (if the woman is receiving an IV infusion, administer a 5 IU IV bolus gradually). After that, perform controlled cord traction (CCT) (9 items), clamp and cut the cord approximately two to three minutes after delivery, place the palm of the non-dominant hand above the woman's pubic bone on her lower abdomen, maintain a slight cord tension, gently pulling the cord during the contraction while applying abdominal counterpressure, repeat the step if the maneuver fails within 30 to 40 seconds, holding it and gently twisting to deliver the membranes, gently inspecting the cervix and upper vagina if the membranes are cut, and transferring the placenta into a kidney basin are all important birthing techniques. Subsequently, perform uterine massage (4 items): massage the fundus as soon as possible until it becomes hard; make sure it contracts; repeat the massage if it becomes soft; and instruct the woman on how to perform it.

Infection prevention (6 items), immediate postpartum care (7 items), and placenta care (5 items) were covered in the third session. The immediate postpartum care involves cleaning and repair of any lacerations or tears in the lower vagina and perineum, repairing any episiotomy (if one has been done), checking the placenta's maternal surface and membranes for completeness and anomalies, discarding the placenta, putting the woman at ease, estimating blood loss, and helping her start nursing within the first hour of giving birth. Infection control measures include discarding waste products in a leak-proof container before taking off gloves, discarding needles and sharps in a container designated for that purpose, cleaning gowns with a decontaminating solution, submerging the instruments in a 0.5% chlorine solution, taking off gloves, and washing hands with soap, water, and dryness. Following placenta delivery, care includes keeping an eye on the mother and her newborn for the first two hours following delivery, providing routine care for the mother

and newborn continuously, and documenting any findings and treatments given.

The researchers used PowerPoint to deliver each session, accompanied by videos that served as explanations. Each session lasted between sixty and one hundred and twenty minutes, with talk breaks based on the participants' accomplishments, advancements, and comments. Using basic, concise, understandable Arabic language, orientation was given to all intern female nursing students on the CBE model (including its general objectives, specific objectives, and contents) at the start of the first session. This was done to accommodate their varying educational backgrounds and comprehension abilities. To make sure students recalled the instructions, each session began with a review of the prior one that introduced the goals for the current one and reinforced the knowledge they had gained.

The researchers let the study group know when the next session would be starting at the conclusion of each one. Additionally, the researchers emphasized the most crucial parts and provided the study group with a summary of most of the material. At the conclusion of each session, the researchers also addressed the queries raised by the students to clear up any misconceptions or incorrect information. A variety of instructional techniques, including PowerPoint presentations, instructional videos, group discussions, lectures, demonstrations, re-demonstration, and brainstorming, were employed in the implementation process.

❖ **Evaluation phase:**

The control group was evaluated first, followed by the study group to prevent bias. The participants in the study were subjected to this evaluation twice: once prior to the intervention, during the pre-test, using instruments I, II, and III for both groups; and once again following intervention, at the conclusion of the internship period in the labor unit, using instruments II and III for both groups. The researchers created instructional videos and PowerPoint presentations for the control group participants based on the standards of research ethics to ensure optimum benefit.

Data Analysis

Qualitative data were presented in the form of frequency distribution tables, numbers, and percentages. The chi-square test ($\chi2$) was used to study the association between two qualitative variables. Pearson's correlation (r) test to measure the association between quantitative variables. A P-value of ≤0.05 was considered statistically significant.

Numbers, percentages, and frequency distribution tables were used to display the qualitative data. The study employed the chi-square test ($\chi2$) to examine the correlation between two qualitative variables. To assess the relationship between quantitative variables, use Pearson's correlation (r) test. P-values less than 0.05 were regarded as statistically significant.

Results:

The demographic details of the intern nursing students under study are displayed in **Table 1**. It becomes clear that the same age group of 22–23 years old made up 95.6% and 97.8%, respectively, of the analyzed individuals in the study and control groups. Furthermore, 66.7% of the control group and 77.8% of the study group were rural residents. Regarding participation in prior training programs and attendance at any workshops pertaining to regular labor, all study participants in both the control and study groups were 100% non-participants in prior training programs and workshops connected to normal labor. Regarding prior hospital experience, it was found that 93.3% and 88.9%, respectively, of the participants in the study and control groups had no prior hospital experience. As a result, there were no statistically significant variations in the demographic traits of the two groups that would have indicated group homogeneity.

Table 2 presents the level of knowledge of the intern nursing students under study with respect to the active third stage of labor management both prior to and following the intervention. It emphasizes that, prior to the intervention, all knowledge items did not show statistically significant differences between the two groups (P>0.05 for each). After the intervention, there were, nevertheless, statistically significant differences (P <0.0001) in all knowledge items between the two groups.

The study and control groups' overall knowledge levels are depicted in **Figure 1** both before and after the intervention. It shows that prior to the intervention, 17.8% and 15.6% of the participants in the study and control groups, respectively, had good total knowledge levels;

following the intervention, 91.1% and 13.3% of the participants in the study and control groups had the same level of knowledge.

The overall mean practice scores for AMTSL in the study and control groups are displayed in **Table 3** both before and after the intervention. It emphasizes that, prior to the intervention, there were no statistically significant differences (P>0.05 for each) between the two groups' overall mean practice scores. Nonetheless, after the intervention, there were highly significant statistical differences in the total mean practice score between the two groups (P<0.0001 for each).

The study and control groups' overall practice levels are depicted in **Figure 2** both before (pre) and after the intervention. In the study and control groups, 62.2% and 68.9% of the participants, respectively, had competent

practice levels prior to the intervention; following the intervention, 95.5% and 66.7% of the individuals, respectively, in the study and control groups, had the same level of practice.

The correlation between Intern Nursing Students' Total Knowledge and Practices Scores regarding AMTSL in the Study Group before and after the Intervention **(Table 4)**. Also, the Pearson correlation for the total knowledge and practice scores regarding AMTSL before the intervention was (r=0.880 and 0.880, respectively; P<0.001 for each) and after the intervention was (0.958 and 0.958, respectively), demonstrating a highly statistically significant positive correlation. This indicates that higher knowledge scores were linked to higher practice scores.

Table 1: The demographic Traits of the Intern Nursing Students Under Study (n=90)

Variables	Study group n=45		Control group n=45		χ^2	P –value
	No.	%	No.	%		
Age (years)						
- 22-23 years	43	95.6%	44	97.8%	0.345	
- $\geq$ 24 years	2	4.4%	1	2.2%		0.557
Place of residence						
- Rural	35	77.8%	30	66.7%	1.38	0.239
- Urban	10	22.2%	15	33.3%		
Attendance at any workshops related to normal labor					*a	*a
- No	45	100.0%	45	100.0%		
Participation in previous training courses					*a	*a
- No	45	100.0%	45	100.0%		
Experience in a private hospital					0.549	0.459
- Yes	3	6.7%	5	11.1%		
- No	42	93.3%	40	88.9%		

* a No statistics are computed because attendance at any workshops related to normal labor and participation in previous training courses are constant.

Table 2: The Studied Intern Nursing Students' Level of Knowledge regarding the Active Third Stage of Labor Management (Pre- & Post-intervention) (n=90).

Variables	Before the intervention				X²	P-value	After the intervention				X²	P-value
	Study group (n=45)		Control group (n=45)				Study group (n=45)		Control group (n=45)			
	No.	%	No	%			No.	%	No.	%		
Definition of TSL: - Incorrect answer & don't know - Correct answer	25 20	55.6 44.4	22 23	48.9 51.1	0.401 ns	>0.05	3 42	6.7 93.3	23 22	51.1 48.9	21.635 **	< 0.001
Duration of TSL: -Incorrect answer & don't know - Correct answer	28 17	62.2 37.8	25 20	55.6 44.4	0.413 ns	>0.05	4 41	8.9 91.1	27 18	60.0 40.0	26.031 **	< 0.001
Signs of placental separation: -Incorrect answer & don't know - Correct answer	30 15	66.7 33.3	32 13	71.1 28.9	0.207 ns	>0.05	3 42	6.7 93.3	30 15	66.7 33.3	34.880 **	< 0.001
Mechanisms of placental delivery: -Incorrect answer & don't know - Correct answer	27 18	60.0 40.0	30 15	66.7 33.3	0.431 ns	>0.05	5 40	11.1 88.9	30 15	66.7 33.3	29.221 **	< 0.001
Importance of placental examination: -Incorrect answer & don't know - Correct answer	19 26	42.2 57.8	22 23	48.9 51.1	0.403 ns	>0.05	3 42	6.7 93.3	24 21	53.3 46.7	23.333 **	< 0.001
Complications of TSL: -Incorrect answer & don't know - Correct answer	21 24	46.7 53.3	20 25	44.4 55.6	0.045 ns	>0.05	1 44	2.2 97.8	18 27	40.0 60.0	19.281 **	< 0.001
An abbreviation of AMTSL - Incorrect answer & don't know - Correct answer	40 5	88.9 11.1	38 7	84.4 15.6	0.385 ns	>0.05	6 39	13.3 86.7	40 5	88.9 11.1	51.403 **	< 0.001
Components of AMTSL - Incorrect answer & don't know - Correct answer	41 4	91.1 8.9	39 6	86.7 13.3	0.450 ns	>0.05	5 40	11.1 88.9	42 3	93.3 6.7	60.965 **	< 0.001
The primary aim of AMTSL is - Incorrect answer & don't know - Correct answer	37 8	82.2 17.8	36 9	80.0 20.0	0.073 ns	>0.05	3 42	6.7 93.3	36 9	80.0 20.0	49.276 **	< 0.001
Name of the utero-tonic drug used in AMTSL - Incorrect answer & don't know - Correct answer	31 14	68.9 31.1	28 17	62.2 37.8	0.443 ns	>0.05	4 41	8.9 91.1	31 14	68.9 31.1	34.083 **	< 0.001
Dose of the utero-tonic drug - Incorrect answer & don't know - Correct answer	37 8	82.2 17.8	40 5	88.9 11.1	0.809 ns	0.368	2 43	4.4 95.6	39 6	86.7 13.3	61.329 **	0.000
Route of administration - Incorrect answer & don't know - Correct answer	29 16	64.4 35.6	30 15	66.7 33.3	0.049 ns	0.824	2 43	4.4 95.6	33 12	73.3 26.7	44.930 **	0.000
Time of administering the utero-tonic drugs - Incorrect answer & don't know - Correct answer	34 11	75.6 24.4	33 12	73.3 26.7	0.058 ns	0.809	3 42	6.7 93.3	34 11	75.6 24.4	44.105 **	0.000
Harmful practices when performing AMTSL: -Incorrect answer & don't know -Correct answer	36 9	80.0 20.0	40 5	88.9 11.1	1.353 ns	0.245	4 41	8.9 91.1	40 5	88.9 11.1	57.628 **	0.000

NB: ns= not statistically significant (p>0.05)   ** = highly statistically significant (p≤0.001).

Figure 1: The Study and Control Groups' Overall Knowledge Levels Both before and after the Intervention (Pre and Post intervention).
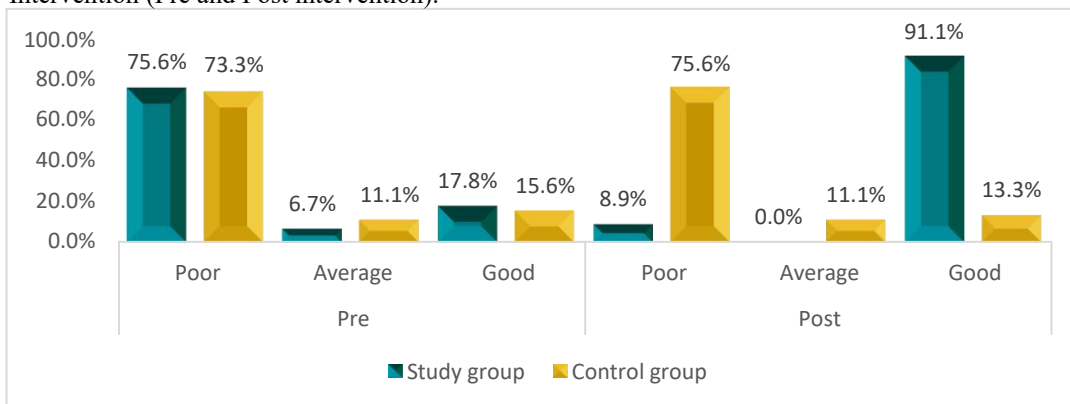

Table (3): Overall Mean Practice Scores for the Active Third Stage of Labor Management before (pre) and after the Intervention (post) in the Study and Control Groups (n=90)

Variables	Pre		t test & P- value	Post		t test & P- value
	Study group Mean± Sd	Control group Mean± Sd		Study group Mean± Sd	Control group Mean± Sd	
Emotional support	3.86±1.43	4.00±1.39	0.446ns >0.05	5.66±.87	4.02±1.37	6.766** < 0.001
Preparation	11.77±3.48	11.86±3.53	0.120ns >0.05	17.42±2.16	11.48±3.46	9.744** < 0.001
Immediate newborn care	5.64±1.59	5.51±1.70	0.383ns >0.05	8.51±1.32	5.37±1.68	9.814** < 0.001
AMTSL step 1: Administration of a uterotonic drug	3.66±1.46	3.75±1.43	0.291ns >0.05	5.77±0.76	3.68±1.42	8.652** < 0.001
AMTSL step 2: Controlled cord traction	15.57±5.50	15.42±5.48	0.134ns >0.05	25.24±4.52	15.24±5.21	9.713** < 0.001
AMTSL step 3: Uterine massage	7.55±1.75	7.68±2.13	0.324ns >0.05	11.53±1.63	7.46±1.97	10.655** < 0.001
Immediate postpartum care	13.57±3.62	14.04±3.32	0.636ns >0.05	19.93±2.90	13.82±3.16	9.546** < 0.001
Infection prevention	11.68±3.05	11.80±2.83	0.179ns >0.05	17.33±2.13	11.51±3.01	10.583** < 0.001
Care after the placenta delivery	9.82±2.76	10.02±2.92	0.333ns >0.05	14.22±2.23	9.80±2.81	8.249** < 0.001

Figure 2: The Study and Control Groups' Total Practice Levels before (pre) and after the Intervention (post)
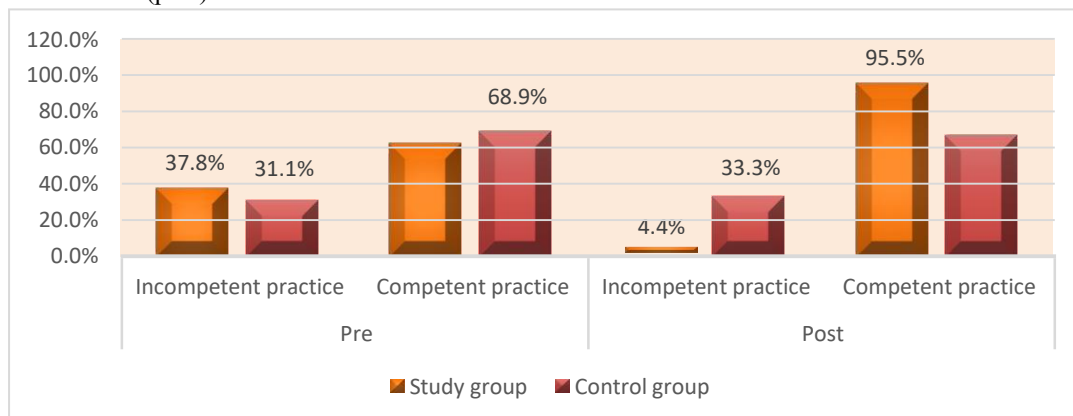

Table (4): Correlation between Intern Nursing Students' Total Knowledge and Practices Scores regarding AMTSL in the Study Group before and after the Intervention (n=45)

Correlations			
		Total Practice	**Total Knowledge**
Before the intervention	Pearson Correlation	0.880**	0.880**
	Sig. (2-tailed)	< 0.001	< 0.001
After the intervention	Pearson Correlation	0.958**	0.958**
	Sig. (2-tailed)	< 0.001	< 0.001
**. Correlation is significant at the 0.01 level (2-tailed).			

Discussion:

Maternal morbidity and mortality from postpartum hemorrhage are frequently linked to a prolonged third stage of labor. As a result, employing a competency-based education strategy to actively manage the third stage of labor can prove to be a life-saving measure. The primary health care providers who oversee implementing it are intern nursing students. Hence, strengthening their skills through effective education in the management of obstetric emergencies is crucial **(Heins et al., 2023).**

The results of this study made it clear that, about demographic traits, almost four fifths of the participants in the study and control groups were between the ages of twenty-two and twenty-three. Furthermore, almost two-thirds of the control group and over three-quarters of the study group were rural residents. Regarding involvement in prior training sessions and attendance at any workshops

pertaining to regular labor, every study participant in both the control and study groups had neither attended nor taken part in any prior training sessions.

Regarding prior hospital experience, it was found that over four-fifths of the study participants in both the study and control groups had no prior hospital experience. As a result, there were no statistically significant variations in the sociodemographic traits of the two groups. These results guarantee the homogeneity and comparability of the two study groups.

These results were consistent with research undertaken by **Shadap et al. (2023) in Gangtok, Sikkim, India, and by Oyetunde and Nkwonta (2024)** on two hundred intern nursing students in Nigeria. They concluded that there were no appreciable variations in the sociodemographic traits between the intervention and control groups. The fact that the two groups in these experiments

were similar and homogeneous may perhaps have contributed to this agreement.

The current study results showed that, about the participants' level of knowledge regarding active management of the third stage of labor, there were no statistically significant differences between the two groups across all knowledge items prior to the intervention. After the intervention, there were, however, highly statistically significant differences in all knowledge items between the two groups. The study group's participants may have improved their knowledge because they actively participated in the educational sessions and maintained good communication with the researchers who assisted them in learning. Additionally, the intern nursing students benefited greatly from the competency-based education approach in learning about active management of the third stage of labor. The goal of knowledge improvement is to apply that information to practice; better practices are typically the result of improved knowledge **(Stwart and Abidi, 2024).**

These results corroborated the research conducted in London by **Ullah et al. (2023)** and the investigation conducted in Canada by **Ferreira et al. (2022)**. After attending the educational sessions, they discovered that the research group's overall knowledge items on the active management of the third stage of labor significantly increased in comparison to the control group.

Furthermore, their results were like those of **Stephen et al. (2021) and Devangamath and Raddi (2022),** who carried out their research in Tanzania and Belgaum, Karnataka, respectively. They concluded that, in comparison to the control group, the study group's knowledge ratings for nursing students improved considerably across all dimensions following the intervention. The concordance between the current study's findings and those of other research may indicate how well competency-based education works to increase intern nursing students' awareness and knowledge retention over time.

Less than one-fifth of study participants in both the study and control groups had good total knowledge scores prior to the intervention, according to the study's results regarding the study group's total knowledge score regarding the active third stage of labor management. However, after the intervention, there was a highly significant improvement among more than four-fifths of the study group compared to less than one-fifth in the control group. Therefore, these results could be regarded as showing that the research group members' level of knowledge increased as a result of the competency-based education strategy addressing the active third stage of labor management being implemented.

Furthermore, these results were in excellent agreement with the research conducted in Assiut, Egypt, by **Mahmoud and Omran (2023) and Mccoy (2022),** who looked at his studies in Nevada. They stated that following intervention, the maternity nurses in the experimental group saw an improvement in their level of knowledge, which went from poor to average too good. These results also aligned with those of **Olufemi et al. (2023),** who reviewed their research conducted in Nigeria and showed that participants in the intervention group had very low pre-test scores regarding active third stage of labor management, indicating poor knowledge levels, which improved to a good level following the program. The concordance between the present study's findings and those of earlier research may indicate how well competency-based education contributes to participants' knowledge, which in turn may have a major impact on their future success.

Conversely, the results of this study contradicted those of **Wake and Wogie (2021),** who looked at their research in the Tigray Region of Northern Ethiopia and found that over half of the sample knew just a moderate amount about actively managing the third stage of labor. This discrepancy could be explained by the sample's composition of more knowledgeable public health nurses.

Less than one-fifth of the study participants in the study and control groups had competent practice scores prior to the intervention, according to the current study results regarding the total practice scores of the studied participants for the active third stage of labor management. Nonetheless, following the intervention, there was a highly significant improvement in more than four-fifths of the study group compared to less than a fifth of the control group. The study group's participants' improved practice may have resulted from the intern nursing students' recognition of the significance and accessibility of implementing all advised instructions in the competency-based education regarding the active third stage of labor management.

These results were consistent with those of **Kimario and Otieno (2022),** who conducted research in **Tanzania, and Kunst et al. (2023),** who conducted research in Germany. They showed that in the pre-intervention phase, fewer than 25% of participants had a satisfactory overall practice score, whereas in the post-intervention phase, a significant majority of participants were more likely to have satisfactory total practice scores.

Furthermore, these results aligned with those of **Kadam et al. (2022),** who carried out research in Maharashtra and reported that following competency-based education, the intervention group's total practices score significantly increased in comparison to its pre-intervention state. The similarity between the current study's findings and those of earlier research may indicate how well competency-based education influences students' behaviors, which in turn affects their future academic success.

The results of the current study showed that there was a highly statistically significant positive correlation between total knowledge and practice scores regarding AMTSL before and after the intervention. This correlation coefficient was found among the study group's intern nursing students. This indicates that higher knowledge scores were linked to higher practice scores. This could be attributed to the fact that any competency-based education increases knowledge and in turn changes their practices positively.

These results corroborated those of **Hashem et al. (2023), who** investigated their research in Egypt, and **Faidah et al. (2022),** who carried out their research in Benghazi, Libya. They stated that there was a strong direct association between the general degree of knowledge and the active third stage of labor management practices. Additionally, these results were in line with those of **Uysal (2022),** who conducted his research in Turkey and reported that, about the items of active third stage of labor management, both pre- and post-intervention, there was a significant association found between having good/fair knowledge, positive attitudes, and good practices.

The similarities between the current study's findings and those of earlier research may indicate that competency-based education programs are beneficial in helping study group members become more knowledgeable and proficient in their practices. The current study's findings, which

showed that the study group had better knowledge and highly satisfied practices scores after the intervention (competency-based education) than the control group, helped to attain this goal.

Conclusion:

The researchers concluded that the intern nursing students who adhered to competency-based education demonstrated better knowledge scores for the active third stage of labor management than those who did not, based on the results of the current study. Additionally, compared to those who did not follow the competency-based teaching, the intern nursing students who did so had higher knowledge scores for the active third stage of labor management. As a result, the introduction of competency-based teaching improved the knowledge and skills of intern nursing students on the active third stage of labor management compared to pre-intervention. Therefore, the study findings failed to accept the null hypothesis.

Recommendations:

Based on the findings and analysis of this study, the following suggestions can be made: It is strongly advised that competency-based education be included in the clinical training portion of the maternal nursing curriculum as well as in other maternity nursing courses. This will actively help intern nursing students become more knowledgeable about the active third stage of labor management. Regular evaluations of continuous competency-based education are necessary to enhance intern nursing students' knowledge and proficiency in administering high-quality nursing care for the third stage of labor management. Creating plans to identify and address the obstacles that intern nursing students face when attempting to use the active third stage of labor management in practical settings.

Suggestions for further studies

More research is required to assess the effectiveness of CBE as a teaching approach in undergraduate nursing programs It is strongly advised to replicate the current study in a different nursing course and in different regions of Egypt using a larger representative probability sample size to gain greater generalizability of the results. Examination of elements including self-efficacy, communication abilities, and achievement motivation that impact students' competency

levels. Assessment of students' progress in attaining competencies from graduation to being newly qualified nurses by a longitudinal study (follow-up study). Evaluation of the competencies that students have acquired from graduation to becoming newly qualified nurses through a longitudinal study (follow-up study). Offer competency-based education in the form of preservice and in-service coaching programs to raise the competency level of newly recruited nurses.

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