

Maternity nurses' practices for the first stage of normal labor: An instructional package

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Abstract

The labor process is a critical and transformative experience for women, requiring respectful and evidence-based nursing care. Maternity nurses play an essential role through continuous assessment, advocacy, emotional support, and the promotion of physiologic childbirth. Effective nursing practices combine technical competence with empathetic and culturally sensitive care, contributing to improved maternal outcomes. Instructional packages have been recognized as effective educational strategies for enhancing the quality of maternity care, particularly during the first stage of labor. Therefore, this study aimed to evaluate the effect of an instructional package on maternity nurses' practices regarding the first stage of normal labor. A quasi-experimental one-group pretest–posttest design was utilized. The study was conducted in the labor units of Beni-Suef University Hospital and Beni-Suef Specialist Hospital. A convenience sample of 50 maternity nurses participated in the study. Data were collected using two tools: (I) a structured interviewing questionnaire in the Arabic language to assess nurses' general characteristics, and (II) an observational checklist to evaluate nurses' competency in practices related to the first stage of labor. The findings revealed that 56.0% of the participating nurses were aged between 20 and 29 years, 54.0% resided in rural areas, 66.0% graduated from technical nursing institutes, and 56.0% had less than five years of professional experience. Nurses' incompetency rates markedly decreased from 64.0% before implementation of the instructional package to 14.0% after the intervention. Incompetent practices were more prevalent among rural nurses in both the pre- and post-intervention phases. Moreover, incompetency rates declined among nurses with secondary school and bachelor-level education after the instructional package. Incompetent practices were also more common among nurses with less than five years of experience. The study concluded that the instructional package significantly improved maternity nurses' practices during the first stage of normal labor, enhancing competency levels across different demographic and professional characteristics. Periodic in-service training programs are recommended to strengthen nursing care during labor and to expand the use of instructional packages to the second and third stages of childbirth.

Keywords: maternity nurses' practices, first stage of normal labor, instructional package, nursing competency, maternal care.

As práticas dos enfermeiros obstétricos no primeiro estágio do trabalho de parto normal: Um pacote instrucional

Resumo

O processo de trabalho de parto é uma experiência crítica e transformadora para as mulheres, exigindo cuidados de enfermagem respeitosos e baseados em evidências. Os enfermeiros obstétricos desempenham um papel essencial por meio da avaliação contínua, defesa dos direitos da paciente, suporte emocional e promoção do parto fisiológico. Práticas eficazes de enfermagem combinam competência técnica com cuidados empáticos e

culturalmente sensíveis, contribuindo para melhores desfechos maternos. Os pacotes instrucionais têm sido reconhecidos como estratégias educacionais eficazes para melhorar a qualidade da assistência materna, especialmente durante o primeiro estágio do trabalho de parto. Portanto, este estudo teve como objetivo avaliar o efeito de um pacote instrucional sobre as práticas dos enfermeiros obstétricos relacionadas ao primeiro estágio do trabalho de parto normal. Foi utilizado um delineamento quase experimental com pré-teste e pós-teste em um único grupo. O estudo foi conduzido nas unidades de parto do Beni-Suef University Hospital e do Beni-Suef Specialist Hospital. Participaram do estudo 50 enfermeiros obstétricos selecionados por amostragem de conveniência. Os dados foram coletados por meio de dois instrumentos: (I) um questionário estruturado de entrevista em língua árabe para avaliar as características gerais dos enfermeiros, e (II) um checklist observacional para avaliar a competência dos enfermeiros nas práticas relacionadas ao primeiro estágio do trabalho de parto. Os resultados revelaram que 56,0% dos participantes tinham entre 20 e 29 anos, 54,0% residiam em áreas rurais, 66,0% eram formados em institutos técnicos de enfermagem e 56,0% possuíam menos de cinco anos de experiência profissional. As taxas de incompetência dos enfermeiros reduziram significativamente de 64,0% antes da implementação do pacote instrucional para 14,0% após a intervenção. As práticas incompetentes foram mais prevalentes entre enfermeiros residentes em áreas rurais tanto nas fases pré-quanto pós-intervenção. Além disso, as taxas de incompetência diminuíram entre enfermeiros com formação de nível secundário e bacharelado após a aplicação do pacote instrucional. As práticas incompetentes também foram mais frequentes entre enfermeiros com menos de cinco anos de experiência. O estudo concluiu que o pacote instrucional melhorou significativamente as práticas dos enfermeiros obstétricos durante o primeiro estágio do trabalho de parto normal, elevando os níveis de competência em diferentes características demográficas e profissionais. Recomenda-se a implementação periódica de programas de treinamento em serviço para fortalecer os cuidados de enfermagem durante o trabalho de parto e ampliar o uso de pacotes instrucionais para os segundo e terceiro estágios do parto.

Palavras-chave: práticas de enfermeiros obstétricos, primeiro estágio do trabalho de parto normal, pacote instrucional, competência em enfermagem, cuidado materno .

1. Introduction

The laboring process is a life-changing event for many women. Nurses need to be respectful, available, encouraging, supportive, and professional in dealing with all women (Farg; Hassan, 2019; Hassan et al., 2025a; Ibrahim et al., 2017). Nursing care for labor and birth involves assessment and instructions, advocacy, and support for the woman. Providing the highest quality in maternity care is dependent on nurses valuing the childbirth experience and recognizing it as a life-changing experience for women and their families (Ahmed et al., 2017; Hassan et al., 2020a; Hassan; Nasr, 2017; Hassan et al., 2020b; Hassan et al., 2025b; Hassam et al., 2010; Nashed et al., 2025).

Caring nurse practices encompass technical skills and caring behaviors, giving care that protects, promotes, and supports physiologic childbirth; providing optimal care; and recognizing health disparity and cultural diversity in all women's care to improve the childbirth experience (Abd Elfath et al., 2018; Hassan et al., 2018; Hassan et al., 2021; Hassan, 2019; Pillitteri, 2020). Instructional packages play a crucial role in health care, enhancing the quality of women's care, meeting societal demands, and lowering costs (Abd-Elhakam et al., 2025; Hassan et al., 2025c; Hassan et al., 2025d; Hassa et al., 2025e; Nady et al., 2025; Zaki et al., 2025). Maternity nurses deliver essential supportive care during the first stage of labor, serving as primary gatekeepers for observations, interventions, and treatments (Hsieh; Chen, 2020).

Nurses play a vital role in labor, positively influencing women's self-esteem, self-efficacy, and empowerment. Their support contributes to a more positive birth experience, as nurses help disseminate crucial knowledge about labor stages and promote effective self-care practices, ultimately enhancing women's independence and reducing maternal mortality and morbidity (Ismail et al., 2018).

The role of maternity nurses involves assessing women's needs and expectations during labor to empower their participation in the childbirth experience. Seven themes were identified: physiologic needs (nutrition, environment, hygiene, comfort, privacy); psychological needs (empathy, advocacy, emotional support, encouragement); informational needs (labor process, hospital policies); communication needs (interaction with health care providers and familiar attendants); esteem needs (value, confidence, decision involvement); security needs (calming fears); and medical needs (pain relief, preventing unnecessary interventions) (Hassan et al., 2025f; Hassan et al., 2016a; Hassan et al., 2016b; Hassan et al., 2024; Hassan et al., 2015; Farag; Hassan, 2019b; Nady et al., 2017; Nady et al., 2014; Prakash, 2018).

Nursing care in the first stage involves taking a medical history, reviewing laboratory tests, and conducting a physical assessment. Key nursing interventions encompass identifying the estimated due date (EDD), validating the woman's history for fetal risk, performing Leopold's maneuvers and vaginal examinations, and educating the woman and her partner on monitoring techniques (including fetal heart rate assessment, amniotic fluid evaluation, and contraction monitoring via partogram), along with providing emotional support for decision-making regarding interventions (Hutchison et al., 2025).

The nurse's responsibilities encompass patient orientation, initiation of the labor chart, and review of the obstetric health record. This includes gathering identification details, assessing the obstetric history (tracking gravida, para, estimated delivery date, fetal movement, labor onset, lab results, previous labor durations, and complications), evaluating health information such as Rh status and allergies, monitoring pregnancy factors (contraction patterns, membrane status, vital signs, fetal heart tones), documenting vaginal bleeding, and noting the last oral intake (Aboudonya et al., 2022; Atsali; Russel, 2018; Hassan et al., 2025g; Mugada et al., 2020; Sheha et al., 2018).

Maternity nurses assess health at labor admission by monitoring contractions, cervical dilation (4-5 cm), and effacement ($\geq 80\%$). Eligible patients include those with ruptured membranes and contractions. ACOG Guidelines outline warning signs like vaginal bleeding, abdominal pain, fever ($\geq 38^\circ\text{C}$), and unstable vital signs. Additionally, nurses evaluate emotional status, check for increased pulse, excessive bleeding, meconium, abnormal fetal heart tones, and contraction changes. They execute physician orders, administer IV fluids, perform complete blood counts, and monitor uterine activity (Abd-Elhakam et al., 2025; Alhafez, 2020; Hassan et al., 2025h; Thornton et al., 2020).

Improving labor outcomes and the lives of women and neonates can be achieved by improvement of health care quality. In Egypt, there was scattered research that was carried out to assess the maternity nurses' practices regarding nursing care of the first stage of normal labor. In this context, the current study had one central goal: providing a remarkable scientific base practice regarding this issue.

2. Materials and Methods

2.1 General rules

Research design: A quasi-experimental study design (one-group pre-posttest) was utilized to achieve the aim of the study. A quasi-experimental design is a type of research design that aims to evaluate the effect of an instructional package on maternity nurses' practices regarding nursing care of the first stage of normal labor.

Settings: The current study was conducted at the labor unit at Beni-Suef University Hospital and Beni-Suef Specialist Hospital. The obstetric and gynecological department of Beni-Suef University Hospital consisted of ten rooms: two rooms (for delivery), one room (for pre-labor), one room (for post-labor), two rooms (for staff nurses), two rooms (for doctors), one room (for ultrasound), and one big room (for high-risk postpartum containing ten beds). While the obstetric and gynecological department in Beni-Suef Specialist Hospital consisted of 7 rooms (one room for pre-labor) and contained only three beds (two delivery rooms), each one contained one delivery bed, one room (for nursing staff), and two rooms (for women with postpartum or postoperative cases), each one containing six beds, and one room) containing an ultrasound.

Subjects: A convenience sample was employed in the study, consisting of 50 maternity nurses from the labor unit, including 23 nurses from Beni-Suef University Hospital and 27 nurses from Beni-Suef Specialist Hospital.

Tools of data collection:

To achieve the aim of this study, data were collected by the following tool:

Tool I: A Structured Interviewing Questionnaire

This tool in Arabic language and included general characteristics of the maternity nurses, which included five questions such as place of work, age, level of education, residence, and years of experience.

Tool II: Observational checklist: This tool was applied before and after the instructional package sessions to assess the effect of the instructional package on the nurses' competency in practices. This tool was designed by a researcher after reviewing the related current and previous literature to assess the maternity nurses' practices regarding nursing care of the first stage of normal labor (WHO, 2022).

The document contains several checklists about maternity nursing practices. Part I assesses general practices during the first stage of normal labor. Part II outlines the procedures for performing Leopold's maneuver. Part III

provides guidelines for conducting vaginal examinations. Part IV focuses on the Partogram, detailing fetal and maternal conditions along with labor progress indicators such as fetal heart rate (FHR), status of amniotic fluid, degree of molding, cervical dilation, head descent, and maternal condition.

The scoring for maternity nurses' practice was calculated as follows: (1) for done and (0) for not done practices. The total scores of the items were summed up, and the total was divided by the number of items, giving a mean score for practice. These scores were converted into percentages as follows:

- Competent practice: if total score $\geq 60\%$
- Incompetent practice: if total score $<60\%$

Tools validity: Revision of the tools for clarity, relevance, comprehensiveness, understanding, and applicability was done by a panel of experts composed of five professors of obstetrics and gynecological nursing to measure the content validity of the tools.

Reliability of the tools: The study tools showed strong internal consistency, indicated by Cronbach's Alpha values of 0.926 for practice.

Ethical considerations:

- Ethical approval was obtained from the Research Ethics Committee at the Faculty of Nursing, Benha University, REC-OBSN-D2.
- All ethical considerations were considered for privacy and confidentiality.
- Informed consent was obtained from the nurses participating in the study after a brief explanation of the study's aim.
- Participants were informed about their right to withdraw at any time during the study.

Pilot study:

A pilot study was conducted on 5 nurses to ensure the clarity, feasibility, applicability, and time needed for the structured questionnaire. According to the results obtained from the data analysis, modifications of rewording, correction, omission, and addition were needed in some questions of knowledge.

Field work:

The study was conducted from the beginning of October 2024 and completed by the end of June 2025. The researcher attended the previously mentioned study setting 2 days per week (Sunday and Wednesday). At the beginning, the researcher interviewed the maternity nurses in a proper private place, greeted the nurses, introduced herself, explained the purpose of the study, and provided the nurses with all information about the study (purpose, duration, and activities). The study was conducted in the following four phases:

Assessment:

The research evaluated the practices of maternity nurses by distributing a self-administered questionnaire to gather their characteristics. Subsequently, observational checklists were utilized to assess their nursing care practices during the first stage of normal labor.

Planning:

This phase utilizes results from the pretest regarding maternity nurses' practices, leading to the design of an instructional package in Arabic that includes figures and practical skills. The session numbers and content are based on the learning content of this package, which encompasses educational activities, methodology, media design, and evaluation tools.

Implementation:

- General and specific objectives of the instructional package were defined and executed to meet the needs of the studied sample. The researcher conducted two practical sessions over two weeks, each lasting 45-60 min, with one session per week. The sessions were organized into five small groups, each comprising approximately ten nurses.
- During the initial session, nurses were briefed on the package contents and informed about the next session's timing. Each subsequent session began with feedback on the previous one, along with the objectives for the new session. To promote engagement, motivation, and reinforcement, techniques were employed. Nurses had opportunities to ask questions and exchange information throughout the sessions.
- The researcher provided an opportunity for nurses to ask questions at the end of each session to clarify any

misunderstandings about the presentation of nursing care during the first stage of normal labor.

- Various teaching strategies, including lectures, discussions, PowerPoints, videos, and demonstrations, were employed. An instructional booklet on nursing care methods for the first stage of normal labor was created by the researcher, written in simple language, and distributed to participating nurses to achieve specific educational objectives.

The practical sessions:

During the first session, practical implementation of the instructional package was conducted, which included demonstrations of abdominal and vaginal examinations. The second session began with feedback and a re-demonstration of these procedures, followed by a demonstration of the partogram.

Evaluation

The evaluation phase serves as a post-test using the same tool as the pretest to assess the impact of an instructional package on maternity nurses' practices during the first stage of normal labor. The researcher employed tool II to compare the results of nurses' practices before and after the implementation of the instructional package.

Limitation of the study:

Interviewing nurses and implementing sessions were often delayed due to their frequent engagements with women during data collection.

Strength of the study:

- Availability of many updated references related to the study.
- Cooperation of the maternity nurses at all times in the obstetrics and gynecology department.

III. Administrative approval:

Approval to carry out this study was obtained from the Dean of the Faculty of Nursing, Benha University. An official letter was sent from the responsible authorities at the Faculty of Nursing, Benha University, to the director of Beni-Suef University Hospital and Beni-Suef Specialist Hospital for conducting the current study and obtaining informed consent before starting data collection.

I- Statistical item:

The collected data were revised and coded, and statistical presentation and analysis were conducted using the Statistical Package for Social Science (SPSS) version 26. Data were presented using descriptive statistics in the form of frequencies and percentages, mean and standard deviations, means as well as tests of statistical significance and associations by using (χ^2) chi-square, (t-test) paired sample, and (r) Pearson correlation coefficient to detect the relation between the variables (P value).

Degrees of significance of results were considered as follows:

- P-value > 0.05: Not Significant.
- P-value $\leq$ 0.05: Statistically significant.
- P-value $\leq$ 0.01: Highly Statistically Significant.

3. Results

Figure 1 shows that 56% of the maternity nurses studied were aged 20 to 29, and 54% were from rural areas. Additionally, 66% had completed technical nursing institutes, and 54% were employed at Beni-Suef Specialist Hospital. Notably, 56% had less than 5 years of experience.

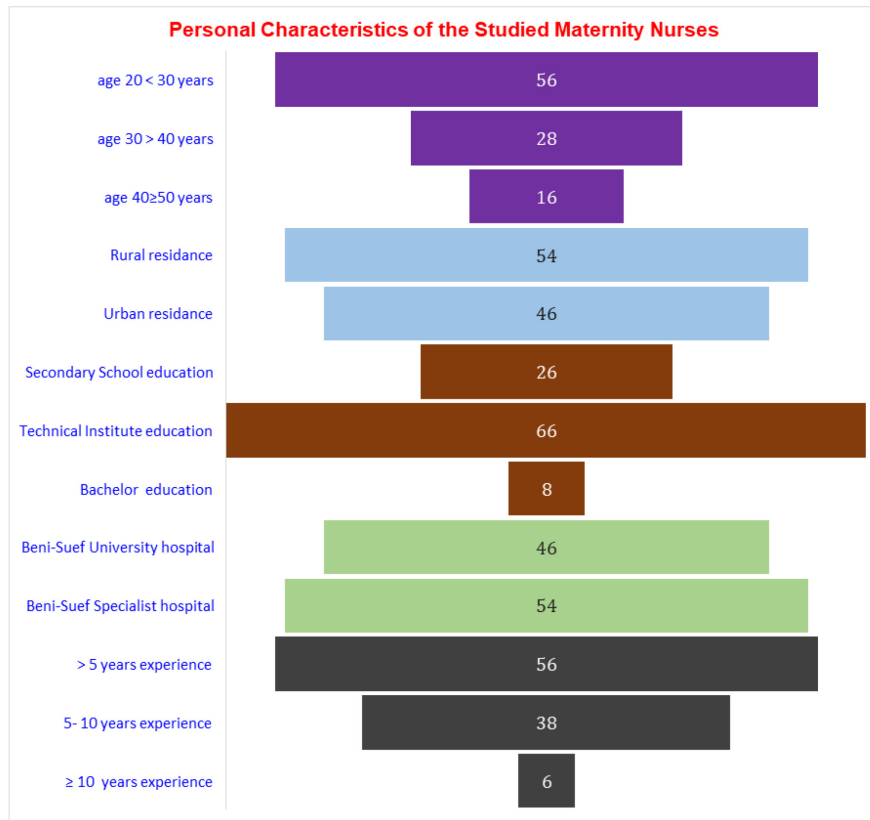


Figure 2. Number and percentage distribution of personal characteristics of the studied maternity nurses. Source: Authors, 2026.

Figure 2 illustrates the change in maternity nurses' competence in nursing care during the first stage of normal labor before and after an instructional package. Incompetency rates decreased from 64% pre-instruction to 14% post-instruction, while competency increased from 36% to 86%.

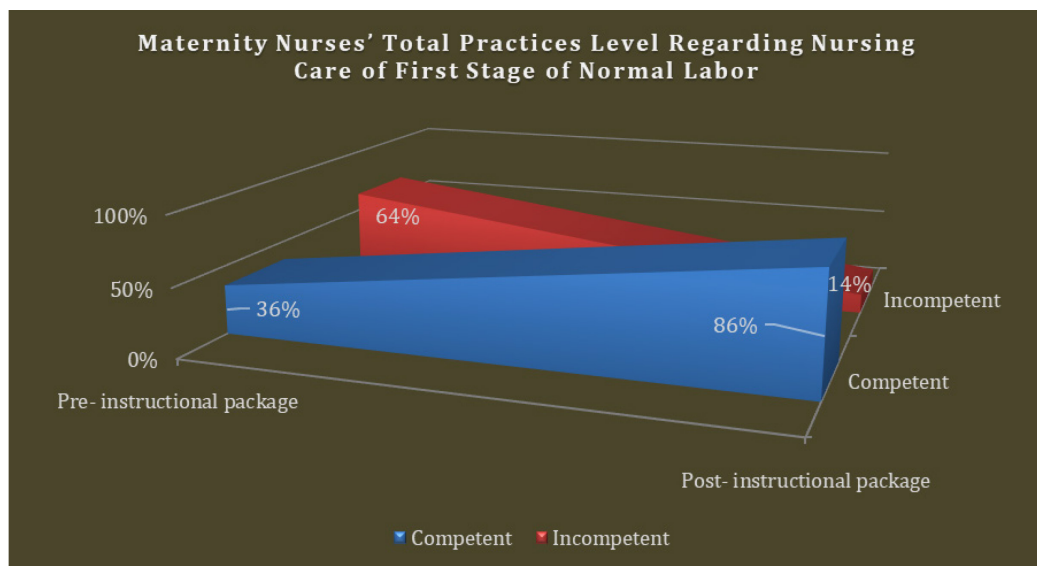


Figure 2. Percentage distribution of the studied maternity nurses' total practice level regarding nursing care of first stage of normal labor at pre and post-instructional package. Source: Authors, 2026.

Table 1. Shows that there were statistically significant differences between the studied maternity nurses' total practice score and their age ($P \leq 0.05$) pre-intervention.

Personal characteristics	Total practice level											
	Pre- instructional package						Post- instructional package					
	Competent		Incompetent		X ² / FET	P- value	Competent		Incompetent		X ² / FET	P- value
	No	%	No	%			No	%	No	%		
Age in years												
▪ 20<30	13	72.2	15	46.9			22	51.2	6	85.7		
▪ 30<40	1	5.6	13	40.6	7.062	0.029*	13	30.2	1	4.3	3.132	0.209
▪ 40≥50	4	2.2	4	12.5			8	18.6	0	0.0		
Work place												
▪ University hospital	11	61.1	12	37.5			17	39.5	6	85.7		
▪ Specialist hospital	7	38.9	20	62.5	2.585	0.095	26	60.5	1	14.3	5.168	0.030*

Note: Also, there were statistically significant differences between the studied maternity nurses' practice scores and their workplace and training courses ($P \leq 0.05$) post-intervention. Source: Authors, 2026.

Figure 3 presents the relation between the studied nurses' total practice level and their residence at pre and post-instructional package. It reveals that incontinent practices were higher among rural residents in both pre and post instructional package (53% and 75%, respectively).

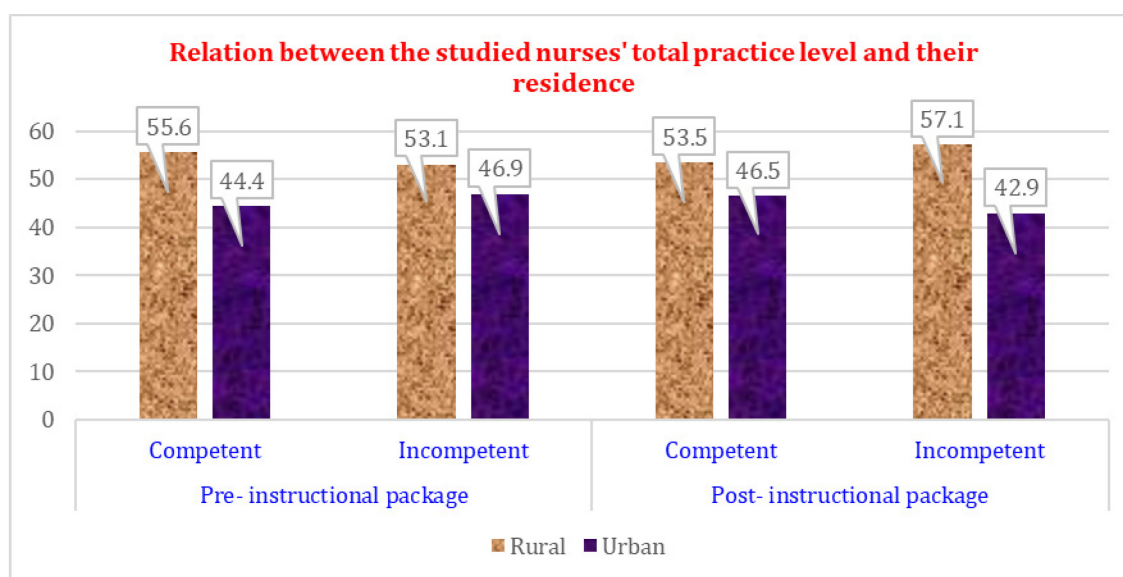


Figure 3. Relation between the studied nurses' total practice level and their residence at pre and post-instructional package. Source: Authors, 2026.

Figure 4 portrays the relation between studied nurses' total practice level and their educational level at pre & post-instructional package. It reveals that incontinent practices regressed among secondary school (28% and 14%) and bachelor (3% and 0%) in both pre/post instructional package, respectively.

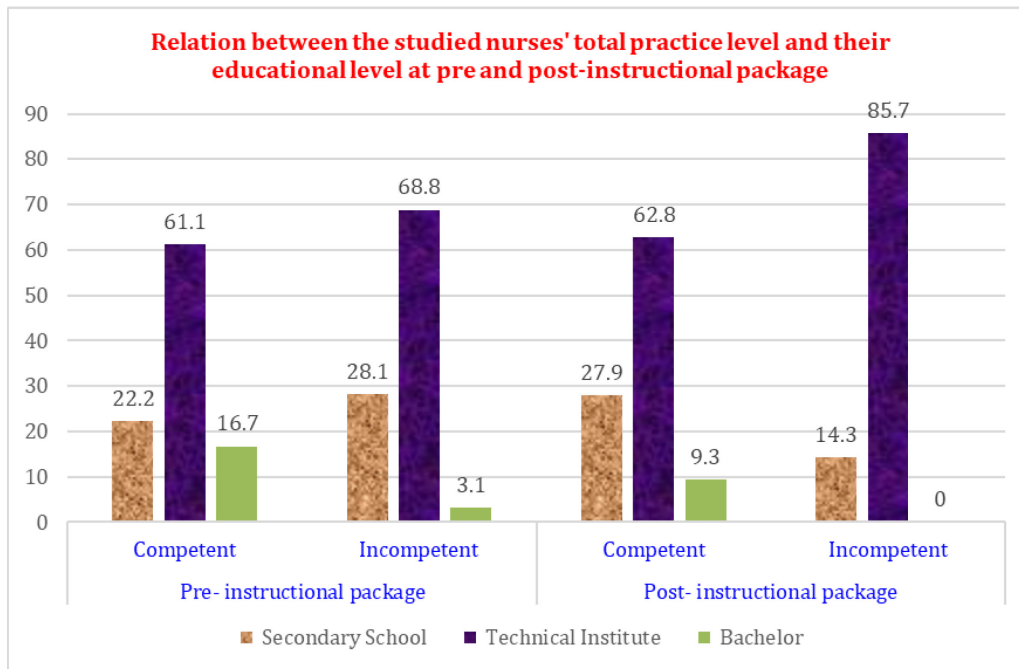


Figure 4. Relation between the studied nurses' total practice level and their educational level at the pre and post-instructional package. Source: Authors, 2026.

Figure 5 shows the relation between the studied nurses' total practice level and their years of experience at the pre- and post-instructional package. It reveals that incompetent practices were more evident among nurses with less than 5 years (50% and 85%), respectively.

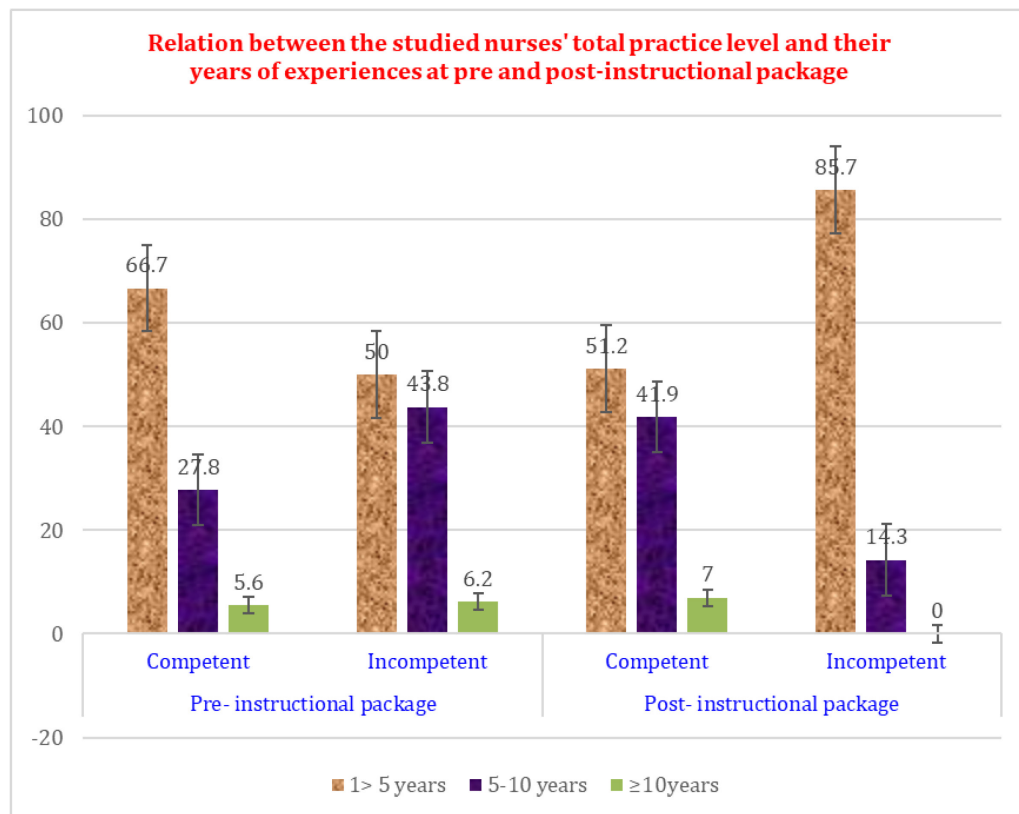


Figure 5. Relation between the studied nurses' total practice level and their years of experience at the pre and post-instructional package. Source: Authors, 2026.

4. Discussion

The nurse's role in childbirth is ensuring a safe environment for the mother and her newborn. Nurses begin evaluating the mother and fetus during the administration procedures at the health care agency and continue to do so throughout labor [44-50]. It is critical to provide anticipatory guidance and explain each procedure and what will happen next. This will prepare the woman for upcoming physical and emotional challenges; thereby helping to reduce her anxiety, acknowledging members of her support system helps allay their fears and concerns. Also, knowing how and when to evaluate a woman during the various stages of labor is essential for all labor and birth nurses to ensure a positive maternal experience and a healthy newborn (Abd Elfattah et al., 2019; Caughey, 2020; Farg; Hassa, 2019; Hassan et al., 2021; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Ibrahim et al., 2021).

Regarding the total practice of nursing care of the first stage (pre/post), the current study reported that about three-quarters of nurses demonstrated unsatisfactory nursing care practices during the first stage of labor in the pretest, whereas over 75% showed satisfactory practices in the posttest. This result agreed with Shokry et al. (2022) in their recent study titled "Effect of supportive measures guidelines on nurses' practices during labor, Egypt," which reported that more than two-thirds of the studied nurses had incompetent practices pre-supportive measures guidelines, which improved post-supportive measures guidelines implementation so that most of them had a competent level of practices during labor (Shokry et al., 2022). Also, the current study is on the same line with Mohamed et al. (2022) in their recent study titled "Effect of instructional guidelines regarding uterotonic drug administration on nurses' performance and labor outcome, Egypt," which showed that more than half of the studied nurses had a good performance level post-implementation of instructional guidelines (Mohamed et al., 2022).

Additionally, this study was in agreement with Ahmed et al. (2019), who carried out a study entitled "Effect of applying standards for labor and delivery nursing care on performance standards for maternal and neonatal health: normal labor and delivery (NLD)." After application of this study, it was immediately better than pre-standards, and the total scores of nurses' performance showed a highly statistically significant difference ($p < 0.001$) (Ahmed et al., 2019). This might be due to enhancing practices of nurses during first-stage labor post-instructional package.

The study revealed that an instructional package notably enhanced nurses' knowledge, practices, and attitudes. It resulted in better knowledge and competent practices, while poor practices decreased. The package, which included educational methods and concise, visually appealing Arabic booklets, was effective in improving outcomes (Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2021; Masoud et al., 2026; Nady et al., 2025; Said et al., 2026; Zaki et al., 2025). This aligns with Edgar Dale's learning retention pyramid, highlighting the importance of learning methods in information retention (Abd-Elfattah et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Hassan et al., 2025; Masters, 2013; Mohamed et al., 2025; Sheha et al., 2025; Zaki et al., 2025).

Concerning the relation between their total practices (pre/post) and general characteristics of the studied nurses, the present study revealed that there was high statistical significance between the studied maternity nurses' total score of practice and their demographic characteristics, such as age and training courses ($P \leq 0.05$), pre-instructional package implementation. While there was high statistical significance between the studied maternity nurses' total score of practice and their demographic characteristics, such as workplace and training courses ($P \leq 0.05$), post-instructional package implementation.

Besides, the current study matched Bhullar & Kaur (2022), who studied "A pre-experimental study to assess the effectiveness of STP on knowledge regarding partographs among staff nurses in selected hospitals" and indicated that there was statistical significance between the workplace and the total score of practices ($p = 0.001$) (Bhullar; Kaur, 2022). This result was similar to Mohamed et al. (2022) in their recent study titled "Effect of instructional guidelines regarding uterotonic drug administration on nurses' performance and labor outcome, Egypt" and reported that there was a statistically significant difference between the total score of practices and age ($p = 0.018$) pre-instructional program (Mohamed et al., 2022). Also, this result was similar to Moridi et al. (2022), who studied "midwives' knowledge and practice of respectful maternity care: a survey from Iran" and reported that there was a statistically significant difference between demographic characteristics, such as training courses, and total practice ($p = 0.001$) (Moridi et al., 2022).

This finding was similar to Ahmed et al. (2019), who conducted a study entitled "Effect of applying standards for labor and delivery nursing care on performance of nurses, Minia, Egypt" and reported that there was no statistically significant difference between total nurses' practices and their educational level and years of

experience pre-standards implementation (Ahmed et al., 2019).

On the other hand, the current study disagreed with Rathore & Devi (2019). Their study, entitled "A study to assess the effectiveness of the structured teaching program on knowledge and practice of partograph among staff nurses working in the maternity unit," showed that there was a statistically significant association between level of practice and educational qualification (p -value 0.001) (Rathore; Devi, 2019). In addition, the current study was dissimilar to Ahmed et al. (2023) study entitled "Effect of Educational Program on Maternity Nurses' Knowledge and Practices Regarding Non-Invasive Fetal Well-Being Assessment Methods," which indicated that there was a statistically significant relationship between demographic characteristics, such as years of experience, and total practice score at the post-educational program (p -value > 0.001) (Ahmed et al., 2023).

5. Conclusions

Based on the findings of the present study, it can be concluded that the instructional package had a positive effect on maternity nurses' practices regarding the nursing care of the first stage of normal labor. It promoted competent practices and reduced incompetent ones regardless of nurses' age, educational level, residence, workplace, and years of experience.

6. Recommendation

To enhance maternity nurses' practices in normal labor, a periodic in-service training program is proposed, focusing on nursing care during the first stage, along with the application of an instructional package aimed at improving care during the second and third stages of labor.

7. Authors' Contributions

Hanan Elzeblawy Hassan: Conceptualization, methodology, supervision, validation, writing – original draft preparation, and writing – review & editing. *Amal Ahmed Hassan Omran:* Methodology, supervision, validation, data interpretation, and writing – review & editing. *Hend Eweis Saad:* Data collection, investigation, formal analysis, project administration, and writing – original draft preparation. *Hanan Amin Ali Gaafr:* Data analysis, validation, visualization, writing – review & editing, and final manuscript approval. All authors contributed substantially to the study conception and design, reviewed and approved the final version of the manuscript, and agreed to be accountable for all aspects of the work.

8. Conflicts of Interest

No conflicts of interest.

9. Ethics Approval

Yes applicable. Ethical approval was obtained from the Research Ethics Committee at the Faculty of Nursing, Benha University, REC-OBSN-D2.

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