https://doi.org/10.15218/ejnm.2026.05 Erbil j. nurs. midwifery, Vol. 9, No. (1), May 2026
Original Article

# Evaluation of Post-cesarean Section Nursing Care in Maternal and Pediatric Teaching Hospitals

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## ABSTRACT

**Background and Objectives:** The worldwide increase in cesarean section rates has become a major public health concern due to associated maternal and neonatal risks. Appropriate post-cesarean nursing care plays a vital role in preventing complications and promoting recovery. This study aimed to assess nurses' performance in providing post-cesarean nursing care and to determine its association with selected socio-demographic characteristics.

**Methods:** A descriptive study was conducted at the Maternal and Pediatric Teaching Hospital in Raparin Administration from July 21 to September 1, 2025. The study included all 22 nurses working in the women's ward (total population sampling) The sample size was small because it included all available nurses working in the women's department. Data were collected using direct interviews and observational checklists. Statistical analysis was performed using SPSS version 27. Chi-square and Fisher's exact tests were applied to examine associations between variables. A p-value ≤ 0.05 was considered statistically significant.

**Results:** The mean age of participants was 47.5 ± 8.7 years (range: 32–61 years). Most nurses were married (90.9%), and 51% were graduates of secondary nursing school. Overall, the performance of post-cesarean nursing care was inadequate, particularly during the first 24 hours and at discharge. A highly significant association was found between nurses' performance in providing care during the first 24 hours and their age, level of education, years of employment, and years of experience (p ≤ 0.05).

**Conclusions:** Post-cesarean nursing care in the studied hospital was generally inadequate. Nurses' age, education level, and professional experience were significantly associated with care performance. Continuous training programs and regular supervision are recommended to improve the quality of post-cesarean nursing care, as they can enhance nurses' skills and knowledge, ultimately leading to better patient outcomes.

**Keywords:** Nursing Care; Cesarean Section; Nurse.

*Received: 25/11/2025* *Accepted:26/02/2025* *Published: 30/05/2026*

## INTRODUCTION

A cesarean section, also called a C-section, is a surgical procedure used to deliver a baby through incisions made in the mother's abdominal wall and uterus. It's typically performed when a vaginal delivery would be risky or not possible or when urgent delivery is needed to protect the health of the mother or baby. [1]. Cesarean section plays a crucial role in lowering both maternal and perinatal mortality [2]. According to the World Health Organization, the ideal cesarean section rate lies between 5% and 15%, ensuring that this lifesaving procedure is provided when medically necessary for the safety of both mother and child [3].CS rates have increased over the past 40 years from approximately 5% to more than 30% in many industrialized countries [4]. The CS rate is approximately 21.1% for the most developed regions of the globe, 14.3% for the less developed regions, and 2% for the least developed regions 6. Additionally, maternal deaths after CS in low- and middle-income countries are reported to be 100 times greater than in wealthier nations. In some cases, as many as one-third of infants die. This is based on findings from a review of 196 studies involving 12 million pregnancies across 67 low- and middle-income countries [5].Several maternal factors contributed to this rise, including conditions such as hypertension, abnormalities of amniotic fluid, post-term pregnancy, maternal stress, Rh incompatibility, psychological disorders, and other chronic illnesses that complicate pregnancy, such as thalassemia, anaemia, asthma, and urinary retention. Other contributors included multiple gestations, macrosomia (large babies), and fetal distress. Additionally, prolonged or obstructed labor, cephalopelvic disproportion (CPD), failed labor induction, placenta previa, and abnormal fetal positioning, all of which pose risks to both the mother and the baby, were identified as combined clinical causes [6].Based on a review involving approximately 30 million women, caesarean sections may reduce the risk of urinary incontinence and pelvic organ prolapse. However, they can also increase the risk of complications in future pregnancies. When not medically indicated, cesarean deliveries may endanger both mothers and infants by increasing the risk of short- and long-term health complications [7].Caesarean sections are linked to a higher risk of complications such as blood transfusion, hysterectomy, maternal and neonatal mortality, uterine rupture, placenta accreta, and placenta previa. It also tends to be more expensive and require longer hospital stays compared to vaginal delivery [8].Nurses play a vital role throughout the entire caesarean process—before, during, and after surgery. Much like how a primary care physician coordinates a patient's overall medical care, the nurse serves as a central point of support during the caesarean experience. Since both childbirth and surgery are significant stressors, the nurse's ability to offer reassurance and clear communication has been shown to enhance patient satisfaction and reduce anxiety [9].Post-caesarean care extends beyond clinical duties. Nurses support and educate women after delivery not just as healthcare providers but also as administrators, educators, researchers, and counsellors [10]. The aim is to evaluate the types of nursing care provided to mothers after cesarean deliveries and to identify any deficiencies or challenges that may arise in this area.The post-delivery period is therefore a crucial opportunity to improve maternal and neonatal health and well-being by promoting healthy behaviours, teaching life skills, facilitating breastfeeding, advising women about family planning options, promoting good mental health, and preventing and treating

childbirth-related complications [3].To reduce maternal morbidity and mortality, it is essential that mothers and newborns receive high-quality post-cesarean section nursing care from healthcare providers. Neglecting this care can lead to serious health complications. This study aims to generate evidence on the nursing care services provided to mothers after cesarean delivery, to assess the types of care offered, to examine the relationship between selected sociodemographic characteristics of the study participants and the quality of nursing care, and to identify any gaps or negligence that may exist in this area.

## METHOD

A descriptive cross-sectional study was conducted from 21st of July 2025– 1st of September ,2025. The study included 22 nurses who work in the women's ward at the Maternal and Pediatric Teaching Hospital in Rania City, Raparin Administration, Kurdistan Region, Iraq. A non-probability purposive sampling technique was used. All nurses working in this unit participated in the study, except those who were on maternity leave during the period of data collection. The study was conducted over a specific period during the data collection phase. The sample size was small because it included all available nurses working in the women's ward; however, since this was a descriptive study, it is recommended to increase the sample size in future research to improve the generalizability of the findings. A questionnaire was developed by the researcher to collect data from the study sample. It consisted of two main parts: Part I: Socio-demographic characteristics of the sample (9 items).
Part II: Observational checklist, which consisted of two sections: Section 1: Nursing care provided within the first 24 hours after caesarean section (24 items). Section 2: Discharge home counselling and advice. Face validity was established to ensure the appropriateness of the study tool. Several experts from the Kurdistan region, who had extensive clinical experience in women's health and post-cesarean nursing care, were consulted. In addition, a pilot study was conducted from July 21 to July 27, 2025, involving ten participants to assess the reliability of the study tool. Reliability was measured using inter-rater and inter-observer methods, and Cronbach's alpha correlation coefficient was calculated. The resulting coefficient was r = 0.79, indicating acceptable reliability. The pilot study participants were not included in the final study sample. Data were collected through direct interviews with 22 nurses and by assessing the nursing care they provided to mothers after cesarean section using an observational checklist. Each nurse was observed twice during the data collection period. The checklist included items related to nursing practices and assessments, which were rated based on frequency of performance. Items that were consistently practiced (always) were scored 3, items that were occasionally practiced (sometimes) were scored 2, and items that were not practiced (never) were scored one point. Statistical analysis The collected data were entered into SPSS (Statistical Package for the Social Sciences), version 27, for analysis. Descriptive statistics such as mean, standard deviation, frequency, and percentage were used to summarize the findings. Inferential statistical tests—including correlation coefficients, chi-square tests, and Fisher's exact test—were applied to examine associations between variables. A p-value of ≤ 0.05 was considered statistically significant.

## RESULTS

The mean age of the study participants was 47.5 years with a standard deviation ± 8.7, with an age range of 32 to 61 years. The largest proportion of participants fell within the age groups of 32–41, 42–51, and 52–61 years, each representing 22.7% of the sample. The majority of participants were married (90.9%), and all were nurses. In terms of educational background, qualifications ranged from primary nursing school to college-level nursing education, with 51% having graduated from secondary nursing school. Regarding employment, approximately half of the participants (50.0%) were employed within the 52–61-year age category, while 40.9% reported having between 1 and 7 years of professional experience. Table 1.

**Table (1):** Distribution Sociodemographic Characteristics of the Study Sample

| Variables | Categories | Frequency | (%) |
|---|---|---|---|
| **Age group** | | | |
| | 32-41 | 6 | (27.3) |
| | 42-51 | 7 | (31.8) |
| | 52-61 | 9 | (40.9) |
| **Level of Education** | Graduate of primary school | 1 | (4.6) |
| | Graduate of secondary nursing school | 11 | (51) |
| | Graduate of medical institute | 5 | (22.7) |
| | Graduate of the College of Nursing | 5 | (22.7) |
| **Years of employment (Groups)** | 6-17 | 6 | (27.3) |
| | 18-29 | 5 | (22.7) |
| | ≥30 | 11 | (50) |
| **years of experience (Groups)** | 1-7 | 9 | (40.9) |
| | 8-14 | 7 | (31.8) |
| | 15-21 | 6 | (27.3) |
| **Marital status** | Married | 20 | (90.9) |
| | Widow | 2 | (9.1) |
| **Total** | | 22 | (100) |

Description of the nurse's participation in activities that are related to post-cesarean section care, training programs and courses and symposia, continuous self-learning. data obtained by direct interview with them. This table describes that none of the nurses participated in the training session about post-cesarean section care, neither inside the country nor outside the country. Also, they did not have any periodical program in their department. Regarding continuous self-learning only %36.4 of them developed their learning for that; they depended on using the internet %27.0 as a main source for expanding their knowledge as demonstrated in Table 2.

**Table (2):** Description of Nurse's Participations and Activities Which are Related to Increasing Their Level of Knowledge About Post-Caesarean Section Nursing Care.

| Variables | Categories | F. | (%) |
|---|---|---|---|
| - Have you ever participated in a special training course or attended any symposia, conference, Seminar regarding post cesarean care? | no | 22 | (100) |
| Did you have periodic educational program in your department regarding postpartum care? | no | 22 | (100) |
| Continuous self learning | yes | 8 | (36.4) |
| | no | 14 | (63.6) |
| * If yes by what? | books | 1 | (4.5) |
| | internet | 6 | (27) |
| | magazine | 0 | (0) |
| | others | 1 | (4.5) |
| Total | | 22 | (100) |

Regarding the provision of nursing care after a cesarean section, the result reveals only three nursing care actions are always provided by health care workers, which are item number (4,5) checking blood pressure was always done by nurses (4.5%) and sometimes was done (27.3%); another item was always checking by the participants which was checking of oxygen saturation (4.5) and sometimes it was checked by them (18.2) .More than three-fourth of participants( %77.3) always administered medication as prescribed. In addition, 13.6% of the nurses always assessed the amount and character of lochia, noting clots. When it comes to bladder management, almost a quarter (22.7%) always remove the urinary catheter 6-12 hrs. post op or the next morning. Early mobilization is another provision always done by nurses approximately 27.3% of the nurses and sometimes 59.1% (Table 3).

**Table (3):** Describe the Post-Cesarean Section Nursing Care Provided by Nurses to the Mothers Within the First 24 Hrs. After Cesarean Section.

| Provision of post cesarean section nursing care within first 24 hrs. | Never Done No. (%) | Sometimes Done No. (%) | Always Done No. (%) |
|---|---|---|---|
| **Checking vital signs** | | | |
| 1- Check temperature | 17(77.3) | 5(22.7) | 0(0) |
| 2-Check respiratory rate | 17(77.3) | 5(22.7) | 0(0) |
| 3- Check pulse rate | 17(77.3) | 5(22.7) | 0(0) |
| 4- Check blood pressure | 15(68.2) | 6(27.3) | 1(4.5) |
| 5- Check oxygen saturation | 17(77.3) | 4(18.2) | 1(4.5) |
| **Fluid input and output** | | | |
| 1-Assess iv site for appearance & patency initially and /2 hours | 21(95.5) | 1(4.5) | 0(0) |
| 2-Record fluid input and fluid output | 21(95.5) | 1(4.5) | 0(0) |
| 3-Administer medication as prescribed | 5(22.7) | 0(0) | 17(77.3) |
| 4-Assess Pain and analgesia given as necessary | 22(100) | 0(0) | 0(0.0) |
| **Surgical site** | | | |
| 1-Encourage woman to wear loose comfortable clothes | 21(95.5) | 1(4.5) | 0(0) |
| 2- Assessing wound for infection, bleeding and separation | 21(95.5) | 1(4.5) | 0(0) |
| **Perineum &Fundus** | | | |
| 1- Uterine tone assessment | 22(100) | 0(0) | 0(0) |
| 2- Assess amount and character of lochia, noting clots | 9(40.9) | 10(45.5) | 3(13.6) |
| **Bladder management** | | | |
| 1-Verify foley catheter is patent and note volume of urine. | 19(86.4) | 3(13.6) | 0(0) |
| 2- Removing urinary catheter 6-12 hrs. post or next morning | 13(59.1) | 4(18.2) | 5(22.7) |
| 3- Document The time of removal of the urinary catheter and amount of urine in the catheter bag . | 22(100) | 0(0) | 0(0) |
| 4-Encouraging Women to pass urine by six hours following removal of the catheter | 22(100) | 0(0.0) | 0(0) |
| **Mobilization** | | | |
| 1-Encourage early mobilization. | 3(13.6) | 13(59.1) | 6(27.3) |
| 2-Nurse present when woman first ambulate. | 22(100) | 0(0) | 0(0) |
| 3- Encouraging women to apply anti embolic stockings prior to CS or as soon as possible post CS. | 22(100) | 0(0) | 0(0) |
| **Care of baby** | | | |
| 1-Maintain thermal care of newborn. | 22(100) | 0(0) | 0(0) |
| 2- Encouraging Early skin contact between mother and baby. | 22(100) | 0(0) | 0(0) |
| 3- Provide support to help the woman to start breastfeeding as soon as possible. | 22(100) | 0(0) | 0(0) |
| Any other care that nurses are rendering and providing..... | 22(100) | 0(0) | 0(0) |

Regarding the discharge home care and advice, the result shows that 9.1% of the study samples were always advised the mothers regarding nutrition after a cesarean section. More than three- fourth of the 72.7% participants sometimes provided information about nutrition. Breast care and personal hygiene are always done by the nurses 4.5% and sometimes almost half of participants 45.5%. However, all mothers did not get any care and advice about wound care and sexual intercourse resumption, as demonstrated in Table 4.

**Table (4):** Explain the Nursing Care and Advice Provided by Nurses for the Women after Discharging to Home.

| Discharge home care | Never Done No. (%) | Sometimes Done No. (%) | Always Done No. (%) |
|---|---|---|---|
| 1-Observe temperature, Women are apyrexial | 21(95.5) | 1(4.5) | 0(0) |
| 2-Observation of Complications | 21(95.5) | 1(4.5) | 0(0) |
| 3- Advising women to observe for signs of infection e.g. redness, discharge and increased pain. | 21(95.5) | 1(4.5) | 0(0) |
| 4- Encouraging women to take over the care of the wound and advising to clean and dry the area at least daily | 22(100) | 0(0) | 0(0) |
| 5- Women advised to keep the stockings on for at least 7 days | 22(100) | 0(0) | 0(0) |
| 6- Advising the Women not to lift heavy objects or perform heavy manual housework for 4-6 weeks post-delivery | 16(72.7) | 6(27.3) | 0(0) |
| 7- Counseling the women about Sexual intercourse resumption heavy manual housework for 4-6 weeks post-delivery | 22(100) | 0(0) | 0(0) |
| 8- Maternal nutritional advice | 4(18.2) | 16(72.7) | 2(9.1) |
| 9- Advising women about Breast care and personal hygiene | 11(50) | 10(45.5) | 1(4.5) |
| 10-Educating about Danger signs | 18(81.8) | 4(18.2) | 0(0) |

About the association between some sociodemographic characteristics and nursing care that is provided, a highly significant association is found between the nursing care provided by the nurse and the age group, which includes checking temperature, respiratory rate, pulse rate, oxygen saturation and administration of medication, p- value = <0.001. Blood pressure p value = 0.03 assess amount and character of lochia, noting clots (p value = 0.017), removing urinary catheter 6-12 hrs. post or next morning (p value=0.002) (Table 5).

As found in the result, there is a significant association between nursing care provided after a cesarean section within 24 hours and level of education. The provided nursing care, which includes checking temperature, pulse rate, and respiratory rate; removing the urinary catheter 6-12 hrs. post-op or the next morning, administration of medication as prescribed, has a value of p=<0.001. When it comes to blood pressure, p value = 0.048, oxygen saturation p value = 0.046, assess the amount and character of lochia, noting clots p value =,0.003 p value =0.002 (Table 6).

**Table (5):** Indication of Associations Between Age Groups of Nurses and Some Types of Nursing Care That Provided Post -Cesarean Section.

| Nursing care within 24 hrs | | Age (Groups) | | | |
|---|---|---|---|---|---|
| | | 32 - 41 | 42-51 | 52-61 | P-Value |
| 1-check temperature | Never Done | 1 | 7 | 9 | **< 0.001** |
| | Sometimes Done | 5 | 0 | 0 | |
| | Always Done | 0 | 0 | 0 | |
| 2-Check respiratory rate | Never Done | 1 | 7 | 9 | **< 0.001** |
| | Sometimes Done | 6 | 0 | 0 | |
| | Always Done | 0 | 0 | 0 | |
| 3-Check pulse rate | Never Done | 1 | 7 | 9 | **< 0.001** |
| | Sometimes Done | 5 | 0 | 0 | |
| | Always Done | 0 | 0 | 0 | |
| 4-Check blood pressure | Never Done | 1 | 6 | 8 | |
| | Sometimes Done | 4 | 1 | 1 | **0.03** |
| | Always Done | 1 | 0 | 0 | |
| 5- check oxygen saturation | Never Done | 1 | 7 | 9 | |
| | Sometimes Done | 4 | 0 | 0 | **0.002** |
| | Always Done | 1 | 0 | 0 | |
| 6-Administer medication as pre-scribed | Never Done | 5 | 0 | 0 | |
| | Sometimes Done | 0 | 0 | 0 | **<0.001** |
| | Always Done | 1 | 7 | 9 | |
| 7- Assess amount and character of lochia noting clots | Never Done | 1 | 2 | 3 | |
| | Sometimes Done | 2 | 5 | 0 | **0.017** |
| | Always Done | 3 | 3 | 0 | |
| 8- Removing urinary catheter 6-12 hrs. post or next morning | Never Done | 1 | 5 | 7 | **0.002** |
| | Sometimes Done | 0 | 2 | 2 | |
| | Always Done | 5 | 0 | 0 | |

**Table (6):** The Association Between the Level of Education with Nursing Care Provided After Cesarean Section Within 24 Hours.

| Nursing care during first 24 hrs. | | Level of Education | | | | P-Value |
|---|---|---|---|---|---|---|
| | | Primary nursing school | secondary nursing school | medical institute | College of Nursing | |
| 1-check temperature | Never Done | 1 | 11 | 5 | 0 | **< 0.001** |
| | Sometimes Done | 0 | 0 | 0 | 5 | |
| | Always Done | 0 | 0 | 0 | 0 | |
| 2-Check respiratory rate | Never Done | 1 | 11 | 5 | 0 | **< 0.001** |
| | Sometimes Done | 0 | 0 | 0 | 5 | |
| | Always Done | 0 | 0 | 0 | 0 | |
| 3-Check pulse rate | Never Done | 1 | 11 | 5 | 0 | **< 0.001** |
| | Sometimes Done | 0 | 0 | 0 | 5 | |
| | Always Done | 0 | 0 | 0 | 0 | |
| 4-Check blood pressure | Never Done | 1 | 11 | 5 | 0 | **0.048** |
| | Sometimes Done | 0 | 0 | 0 | 5 | |
| | Always Done | 0 | 0 | 0 | 0 | |
| 5- check oxygen saturation | Never Done | 1 | 11 | 5 | 0 | **0.046** |
| | Sometimes Done | 0 | 0 | 0 | 5 | |
| | Always Done | 0 | 0 | 0 | 0 | |
| 6-Administer medication as pre-scribed | Never Done | 0 | 0 | 0 | 5 | |
| | Sometimes Done | 0 | 0 | 0 | 0 | **< 0.001** |
| | Always Done | 1 | 11 | 5 | 0 | |
| 7- Assess amount and character of lochia noting clots | Never Done | 1 | 7 | 1 | 0 | |
| | Sometimes Done | 0 | 4 | 4 | 2 | **0.003** |
| | Always Done | 0 | 0 | 0 | 3 | |
| 8- Removing urinary catheter 6-12 hrs. post or next morning | Never Done | 1 | 9 | 3 | 0 | |
| | Sometimes Done | 0 | 2 | 2 | 0 | **< 0.001** |
| | Always Done | 0 | 0 | 0 | 5 | |

The result analyzed the highly significant association found between the nursing care provided after a cesarean section within 24 hours and years of employment. They provide nursing care, which includes checking temperature, pulse rate, oxygen saturation, respiratory rate, and administration of medication as prescribed, p value =<0.001. Regarding blood pressure, p value =0.029, assess the amount and character of lochia, noting clots, p value =0.013 (Table 7).

**Table (7):** Exploring the Associations Between Years of Employment of Nurses to the Nursing Care that Provided.

| Nursing care within 24 hrs. | | Years of employment | | | |
|---|---|---|---|---|---|
| | | 6-17years | 18-29 years | ≥30 years | p- value |
| 1-check temperature | Never Done | 1 | 5 | 11 | |
| | Sometimes Done | 5 | 0 | 0 | **< 0.001** |
| | Always Done | 0 | 0 | 0 | |
| 2-Check respiratory rate | Never Done | 1 | 5 | 11 | **< 0.001** |
| | Sometimes Done | 5 | 0 | 0 | |
| | Always Done | 0 | 0 | 0 | |
| 3-Check pulse rate | Never Done | 1 | 5 | 11 | |
| | Sometimes Done | 5 | 0 | 0 | **< 0.001** |
| | Always Done | 0 | 0 | 0 | |
| 4-Check blood pressure | Never Done | 1 | 4 | 10 | |
| | Sometimes Done | 4 | 1 | 1 | **0.029** |
| | Always Done | 1 | 0 | 0 | |
| 5- check oxygen saturation | Never Done | 1 | 5 | 11 | |
| | Sometimes Done | 4 | 0 | 0 | **< 0.001** |
| | Always Done | 1 | 0 | 0 | |
| 6-Administer medication as prescribed | Never Done | 5 | 0 | 0 | |
| | Sometimes Done | 1 | 0 | 0 | **< 0.001** |
| | Always Done | 0 | 5 | 11 | |
| 7- Assess amount and character of lochia noting clots | Never Done | 1 | 1 | 7 | |
| | Sometimes Done | 2 | 4 | 4 | **0.013** |
| | Always Done | 3 | 0 | 0 | |

Highly significant association between nursing care provided after a cesarean section within 24 hours and years of experience. They provide nursing care, which includes checking temperature, pulse rate, oxygen saturation, respiratory rate, administration of medication as prescribed, assessing the amount and character of lochia, noting clots, p value =0.005 and blood pressure, p – value = 0.041. Removing the urinary catheter 6-12 hrs. post-op or the next morning, p value =0.022 (Table 8).

**Table (8):** Exploring the Associations Between Nursing Care That Provided with the Years of Experiences of The Nurses.

| Nursing care within 24 hrs | | Years of experience | | | |
|---|---|---|---|---|---|
| | | 1-7 years | 8-14 years | 15-21 years | P- value |
| 1-check temperature | Never Done | 4 | 7 | 6 | |
| | Sometimes Done | 4 | 0 | 0 | 0.005 |
| | Always Done | 1 | 0 | 0 | |
| 2-Check respiratory rate | Never Done | 4 | 7 | 6 | |
| | Sometimes Done | 4 | 0 | 0 | 0.005 |
| | Always Done | 1 | 0 | 0 | |
| 3-Check pulse rate | Never Done | 4 | 7 | 6 | |
| | Sometimes Done | 4 | 0 | 0 | 0.005 |
| | Always Done | 1 | 0 | 0 | |
| 4-Check blood pressure | Never Done | 4 | 6 | 5 | |
| | Sometimes Done | 4 | 1 | 1 | 0.041 |
| | Always Done | 1 | 0 | 0 | |
| 5- check oxygen saturation | Never Done | 4 | 7 | 6 | |
| | Sometimes Done | 4 | 0 | 0 | 0.005 |
| | Always Done | 1 | 0 | 0 | |
| 6-Administer medication as prescribed | Never Done | 5 | 0 | 0 | |
| | Sometimes Done | 0 | 0 | 0 | 0.005 |
| | Always Done | 4 | 7 | 6 | |
| 7- Removing urinary catheter 6-12 hrs. post or next morning | Never Done | 4 | 5 | 4 | |
| | Sometimes Done | 0 | 2 | 2 | 0.022 |
| | Always Done | 5 | 0 | 0 | |

## DISCUSSION

In this study, the practices of the care of 22 nurses were investigated regarding post-caesarean nursing care after the birth of the new born by caesarean section procedure. According to the results of the study, all nurses who work in the women's ward were female due to sociocultural and religious beliefs in which male nurses do not usually work in this ward. Their age range were (32 to 61), the highest percentage of them was aged between (32 to 41,42 to 51, 52 to 61). The largest proportion of participants fell within the age 52-61 which is 40.9%, and the majority of them were married, while all of them were female nurses due to sociocultural and religious beliefs in which male nurses do not usually work in this ward. In terms of their employment and experience years, half of them, which is 50.0% employed for equal to and more than 30 years and have (9) years of experience, which is %40.9 of participants. In addition, their educational level extended from primary nursing school to college of Nursing and half of them graduated from secondary nursing schools because in the past only such schools were available in this region. Also, due to economic and political crises, employing those nurses who graduated from colleges and nursing institutes was stopped. In terms of providing post-cesarean section nursing care, each nurse was observed two times in the women's ward to determine the types of assessment and care that they provide and detect any impairments and negligence that may occur during the evaluation. According to the study results about the nursing care within the first 24 hrs. after cesarean sections that the mother should receive, the nursing care that is always provided by almost all the nurses is the administration of medication as prescribed and almost always removing the urinary catheter 6-12 hrs. post-op or the next morning .Checking blood pressure, oxygen saturation, and amount and character of lochia, noting clots, and encouraging mobilization are sometimes done by some of them. The remaining care and assessments were never done. In general, performing this care was inadequate and not the way which is essential for suspecting and preventing the post-caesarean complications and problems such as haemorrhage, infection, and breastfeeding problems. These findings are consistent with the study conducted in Wad-Medani Maternity Hospital, Wad-Medani City, Sudan, [10] which showed that most studied nurses (36 participants) followed the procedure guidelines in the selected aspects and they provided nursing care in a good and correct way, but current practice still needs to be improved. Furthermore, there is still much to be done to improve the care given to babies, including assessing the newborn and calculating the Apgar score and regularly assessing the woman's pain and discomfort. About discharge home counseling and advice, the findings of this study revealed that mothers were counseled and advised regarding nutrition after cesarean section, breast care, and personal hygiene, sometimes done by almost more than half of participants. However, all mothers did not get any care and advice about wound care or sexual intercourse resumption. This is because the mothers only ask about these issues while discharging. Lack of awareness/knowledge of mothers and their attendants about cesarean sections and their care plays an important role. The results of this study are almost identical to those of other studies, which indicate that women often experience insufficient emotional support, poor communication, and limited involvement in decision-making, which negatively affects satisfaction [11,12]. Additionally, postnatal education

regarding self-care, newborn care, and discharge guidance and follow-up is frequently inadequate, leaving mothers unprepared for home care [13]. Regarding the association between some sociodemographic characteristics of the study sample and the nursing care services provided. The finding of this study revealed that there is a highly significant association between the nursing care provided and the age of nurses; those aged (32 – 37) provided essential nursing care to the mothers compared to the other groups. The reason for that must be related to the fact that they are newly graduated from university and institutes compared to others that are old graduates from secondary nursing school. In terms of educational level and its association with providing post-cesarean nursing care, the study revealed a significant association between offering the care during the first 24 hours and level of education, and the graduates of college and medical institutes provide more nursing compared to those of the other degrees. In addition, a highly significant association with years of employment and experience is revealed with provided nursing care. This finding is not congruent with this study [14] which announced that more experienced nurses provide higher-quality post-cesarean nursing care Regarding nurse's participation in activities that relate to post-caesarean nursing care training programs and courses and symposia, and continuous self-learning, none of the nurses participated in the training session about post-caesarean section care, neither inside the country nor outside the country. Some of them were reading about this care, and the source of their reading mostly came from the internet. Also, they did not have any periodical program in their department for increasing their level of knowledge. This finding is consistent with the study [15], that was conducted in Egypt and demonstrated that hospital administration neither provides training programs and refresher courses on the quality of nursing performance during the postpartum period nor establishes a care standard for the postpartum period. This ultimately resulted in inadequate nursing knowledge and substandard nursing performance. Inadequate and incomplete post-caesarean nursing care by nurses in the current study could have resulted from the lack or insufficiency of hospital policies, guidelines, and practices for delivery post-caesarean care in all hospital units. It could also be due to not having adequate training courses according to the latest evidence and guidelines about post-caesarean care, because it is revealed in the results of this study that the majority of them did not attend any symposia, conferences, seminars or periodical programs in their department about such health care services. It is also possible that such insufficiencies might be due to a lack of defined job specifications; not having proper services in terms of adequate places and needed beds for the large number of patients in this area; and having inadequate or a lack of proper nurses. Finally, such problems can also be due to a lack of follow-up policies by the hospital's administration or committee from the ministry of health in cases of poor or inadequate care. It is similar to studies [16,17].

## CONCLUSION

The findings of this study have shown that nursing care that the mothers should receive after caesarean section was inadequate and incomplete. Generally, adequate post- caesarean nursing care services were not provided and performed for the mothers except for some care and assessments during the early first twenty-four hours and home discharging. Moreover, the other care services / assessments are ignored and not performed. In

addition, this study reveals that there is a significant association between age groups, level of education, years of experience and employment with the post-cesarean nursing care performance. This section should highlight the major, firm discoveries and state what the added value of the main finding is, without literature references.

### Recommendations

It is recommending that a structured and comprehensive training program on evidence based guidelines and standards for post-caesarean nursing care be conducted on a periodic and annual basis for all nursing staff in the women's ward, under the coordination of the Ministry of Health and hospital administration. The establishment of continuous monitoring and evaluation frameworks is essential to systematically identify challenges and deficiencies encountered in the delivery of pos-cesarean nursing care services. Further empirical investigations are warranted to examine the underlying barriers and influencing factors that limit nursing ability to effectively implement and provide high-quality post-cesarean nursing care.

## Source of funding

This research did not receive any grant from funding agencies in the public, commercial, or non-profit sectors.

### Ethical clearance

The study proposal was approved by the Scientific Committee of Raparin University's College of Nursing on 2/9/2024 No (40). After discussing the study's objectives, a copy of the proposal was submitted to the University of Raparin /general directors of scientific affairs. Consequently, an official letter was sent to the General Directorate of Health/Raparin to obtain official health permission to conduct the study.

### Conflict of interest

The authors declare that there is no conflict of interest.

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