

Nurse-Led Integrated Antenatal–Postnatal and Postoperative Nursing Intervention for Mothers with Surgical Care Needs: Impact on Maternal Psychological Well-Being, Self-Care Management, Parenting Competence, and Child Emotional–Behavioral Outcomes

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Abstract

Background: The antenatal and postnatal periods represent critical stages in a woman's life that may be accompanied by substantial physical, psychological, and caregiving demands. Mothers who have additional surgical care needs may experience postoperative pain, impaired mobility, wound-care requirements, fatigue, and difficulties in performing self-care activities while simultaneously adapting to maternal and parenting responsibilities. These challenges may negatively affect maternal psychological well-being, parenting competence, and the emotional and behavioral adjustment of children. Therefore, an integrated nurse-led intervention addressing maternal health, postoperative care, self-management, psychological well-being, and parenting may provide a comprehensive approach to improving maternal and child outcomes. **Aim:** This study aimed to evaluate the effect of a nurse-led integrated antenatal–postnatal and postoperative nursing intervention on maternal psychological well-being, self-care

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management, parenting competence, and child emotional–behavioral outcomes among mothers with surgical care needs. **Methods:** A quasi-experimental one-group pretest–posttest design with follow-up assessment was adopted. The study included 100 mothers with surgical care needs who were receiving antenatal, postnatal, or postoperative nursing care. Participants were recruited using a purposive sampling technique according to predefined eligibility criteria. The study was conducted at Sohag University Hospitals, including the Obstetrics and Gynecology Department and relevant Medical and Surgical Departments and outpatient follow-up clinics. Data were collected using a structured maternal and clinical assessment questionnaire, a maternal psychological well-being scale, a self-care management assessment scale, a parenting competence scale, and a child emotional–behavioral assessment scale. Baseline assessment was performed before the intervention. **Results:** Following implementation of the intervention, mothers demonstrated improvement in psychological well-being, self-care management, and parenting competence compared with their baseline assessment. Improvements were also observed in mothers' ability to manage postoperative symptoms, perform appropriate self-care, and respond effectively to their children's emotional and behavioral needs. Child emotional–behavioral outcomes showed a favorable change following the intervention. The observed improvements across the studied domains supported the potential effectiveness of the integrated nurse-led approach in addressing the interconnected maternal surgical, psychological, self-care, and parenting needs. **Conclusion:** The nurse-led integrated antenatal–postnatal and postoperative nursing intervention provided a comprehensive approach to supporting mothers with surgical care needs. The intervention may enhance maternal psychological well-being, self-care management, and parenting competence while contributing to improved emotional and behavioral outcomes among their children. **Recommendations:** Integrating structured postoperative nursing care, psychological support, self-care education, and parenting guidance into antenatal and postnatal nursing services is recommended.

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Introduction:

The antenatal and postnatal periods represent critical stages in the life of women, characterized by profound physiological, psychological, social, and behavioral changes. Pregnancy requires women to adapt to changing physical conditions, prepare for childbirth, and develop expectations regarding motherhood, whereas the postnatal period involves recovery from pregnancy and childbirth while simultaneously assuming new caregiving and parenting responsibilities. The transition to motherhood may therefore be accompanied by fatigue, sleep disturbance, pain, emotional stress, changes in body image, and concerns related to infant care. The World Health Organization emphasizes that postnatal care should address not only physical recovery but also maternal mental health, emotional well-being, information needs, and support for women and families (World Health Organization, 2022).

The challenges associated with the transition to motherhood may become more complex when mothers have additional surgical care needs. Mothers who undergo cesarean delivery or other abdominal and gynecological surgical

procedures may experience postoperative pain, restricted mobility, wound-care requirements, fatigue, sleep disturbances, and limitations in performing routine activities. These physical challenges may interfere with breastfeeding, infant care, household activities, and maternal self-care (Duran & Vural, 2023). In particular, inadequate management of postoperative symptoms or wound-related problems may delay physical recovery and increase maternal dependence on family members or healthcare providers. Therefore, comprehensive postpartum care should incorporate assessment of physical recovery, pain, fatigue, wound healing, and other postoperative concerns as integral components of maternal care (WHO, 2022).

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The postpartum period is also a particularly important period for maternal psychological health. Women may experience emotional distress, anxiety, depressive symptoms, stress, or worsening of pre-existing mental health problems during pregnancy and after childbirth. The World Health Organization reported that approximately one in five women experiences a mental health condition during pregnancy or within the first year following childbirth, emphasizing the importance of integrating mental health assessment and support into maternal and child health services. Maternal psychological difficulties are important not only because of their consequences for the mother but also because maternal mental health can influence infant care, interaction, attachment, and early child development (Saharoy et al., 2023).

The importance of continuous and comprehensive postpartum care has increasingly been recognized as essential for promoting maternal and infant health. The American College of Obstetricians and Gynecologists recommends that postpartum care should be considered an ongoing process rather than a single clinical visit and should be

individualized according to each woman's physical, psychological, social, and healthcare needs. Comprehensive postpartum care should address maternal mood and emotional well-being, infant care and feeding, sleep and fatigue, physical recovery from childbirth, chronic disease management, and health maintenance. This comprehensive approach is particularly relevant for mothers with surgical care needs because postoperative recovery may overlap with the demands of newborn care and adaptation to parenthood (American College of Obstetricians and Gynecologists [ACOG], 2018).

Self-care management represents another important component of maternal recovery during the antenatal and postnatal periods. Mothers need adequate knowledge and practical skills to recognize warning signs, manage pain and fatigue, maintain wound hygiene when applicable, adhere to medications and prescribed treatments, maintain adequate nutrition and hydration, obtain sufficient rest, and seek healthcare when complications occur. The WHO recommendations specifically emphasize maternal assessment, physical recovery, wound healing, hygiene, nutrition, mental health, and appropriate health education during postnatal contacts. Consequently, structured nursing education and individualized self-care guidance can help mothers become more confident and capable of managing their own health while caring for their infants (Sherif et al., 2025).

Parenting competence is closely connected with maternal adaptation and psychological well-being. During the transition to motherhood, women are required to develop confidence in recognizing infant needs, providing appropriate physical care, responding to crying and behavioral cues, establishing feeding and sleeping routines, and responding appropriately to children's emotional needs. Mothers who experience pain, fatigue, psychological distress, or limitations in physical functioning may perceive greater difficulty in performing parenting tasks. Therefore, nursing interventions that combine maternal self-care education with parenting guidance may address two interrelated dimensions of maternal adjustment: the mother's ability to care for herself and her ability to provide responsive care for her child (La Rosa et al., 2025).

The relationship between maternal well-being and child emotional and behavioral development further highlights the importance of integrated maternal–child nursing care.

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Maternal psychological difficulties during pregnancy and the postpartum period may affect the quality of mother–child interaction, caregiving responsiveness, and the child's early emotional and behavioral adjustment. WHO therefore recommends integrating perinatal mental health into maternal and child health services, recognizing that maternal mental health problems can have consequences for infants' physical and emotional development. Supporting maternal psychological well-being and parenting capacity may consequently contribute to a more supportive environment for children's emotional and behavioral development (Prokopowicz et al., 2026).

Taken together, the coexistence of surgical recovery, maternal self-care demands, psychological adaptation, and parenting responsibilities indicates the need for an integrated rather than fragmented nursing approach. A nurse-led intervention that combines postoperative care, symptom management, self-care education, psychological support, and parenting guidance may address the multiple and overlapping needs experienced by mothers with surgical care requirements. Such an approach is consistent with contemporary recommendations advocating person-centered, continuous, and holistic maternal and postnatal care that considers the health and well-being of both mothers and their children (Faessler et al., 2023).

Nurses have a central role in addressing these interconnected maternal and child needs because nursing care can extend across health education, postoperative monitoring, symptom management, psychological support, self-care training, parenting education, and follow-up. Nurse-led interventions can provide individualized education according to the mother's clinical condition, reinforce appropriate self-care behaviors, identify psychological distress, encourage appropriate help-seeking, and support mothers in developing confidence in infant and child care (Arefadib et al., 2023). The WHO postnatal recommendations identify nurses and midwives among the healthcare professionals who can contribute to person-centered postnatal care, while ACOG emphasizes the need for coordinated and continuous support throughout the transition from pregnancy to parenthood (WHO, 2022; ACOG, 2018).

Significance of the Study

Mothers with surgical care needs may experience overlapping physical, psychological, self-care, and parenting challenges during the antenatal and postnatal periods. An integrated nurse-led intervention may help address these needs simultaneously through postoperative care, self-care education, psychological support, and parenting guidance. The significance of this study lies in evaluating whether such an integrated approach can improve maternal psychological well-being, self-care management, and parenting competence while contributing to favorable child emotional–behavioral outcomes. The findings may support the integration of structured maternal, postoperative, and parenting support into routine nursing services.

Aim:

This study aimed to evaluate the effect of a nurse-led integrated antenatal–postnatal and postoperative nursing intervention on maternal psychological well-being, self-care management, parenting competence, and child emotional–behavioral outcomes among mothers with surgical care needs.

Hypotheses

H1: Mothers who receive the nurse-led integrated antenatal–postnatal and postoperative nursing intervention will demonstrate significantly higher levels of maternal psychological well-being after the intervention compared with their pre-intervention levels.

H2: Mothers who receive the intervention will demonstrate significantly improved self-care management after the intervention compared with their pre-intervention levels.

H3: Mothers who receive the intervention will demonstrate significantly higher parenting competence after the intervention compared with their pre-intervention levels.

H4: Children of mothers who receive the intervention will demonstrate significantly improved emotional and behavioral outcomes after the intervention compared with baseline assessment.

Subjects and Methods

Research Design

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A quasi-experimental one-group pretest–posttest design with a follow-up assessment was used to evaluate the effect of a Nurse-Led Integrated Antenatal–Postnatal and Postoperative Nursing Intervention on maternal psychological well-being, self-care management, parenting competence, and child emotional–behavioral outcomes among mothers with surgical care needs. Participants were assessed at three time points: baseline (T0), immediately after completion of the intervention (T1), and two months after the intervention (T2).

Setting:

The study was conducted at Sohag University Hospitals, including the Obstetrics and Gynecology Department and relevant Medical and Surgical Departments and outpatient follow-up clinics. The selected settings provided access to mothers requiring antenatal/postnatal nursing care as well as continued postoperative nursing assessment and management.

Subjects:

A purposive sample of 100 mothers who fulfilled the predetermined eligibility criteria was recruited for the study. Each participating mother had one child aged 2–10 years who was included in the assessment of child emotional–behavioral outcomes.

The studied mothers were selected according to their need for continued nursing care, particularly mothers experiencing cesarean-related postoperative surgical complications. Selected additional postoperative surgical care needs, such as abdominal/gastrointestinal and breast-related postoperative problems, could also be included when they met the study eligibility criteria and required continued nursing follow-up.

Inclusion Criteria

Mothers were included in the study if they met the following criteria:

- Mothers who were in the antenatal or postnatal period and required continued nursing care.
- Mothers with documented cesarean-related postoperative surgical complications requiring nursing

assessment, management, education, or follow-up.

- Mothers with selected postoperative surgical care needs, including wound-related problems, persistent postoperative pain, delayed wound healing, mobility limitations, medication-related problems, or other postoperative problems requiring nursing intervention.
- Mothers who had one child aged **2–10 years** for assessment of child emotional–behavioral outcomes.
- Mothers who were willing to participate in the complete intervention and follow-up assessments.
- Mothers who were able to communicate and participate in the educational and counseling sessions.

Exclusion Criteria

Mothers were excluded if they:

- Had severe medical or psychiatric conditions that prevented participation in the intervention.
- Had major postoperative complications requiring intensive care or immediate surgical re-intervention.
- Had severe cognitive or communication difficulties that interfered with completing the study tools.
- Were unwilling to continue participation or were expected to be unavailable during the intervention and follow-up period.

Sample Size:

The study included 100 mothers who were recruited using purposive sampling. The sample size was considered adequate to evaluate changes in the primary maternal and child-related outcomes across the three assessment points.

$$[n=\frac{Z^2P(1-P)}{d^2}]$$

Where:

- **n** = required sample size
- **Z** = standard normal value corresponding to a 95% confidence level (1.96)
- **P** = expected proportion of the studied outcome
- **d** = accepted margin of error (0.05)

Data Collection Tools

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Data were collected using five tools. The tools were selected to assess the mothers' sociodemographic and clinical characteristics, psychological well-being, self-care management, parenting competence, and their children's emotional–behavioral status before and after implementation of the nurse-led integrated antenatal–postnatal and postoperative nursing intervention.

Tool I: Structured Maternal and Clinical Assessment Questionnaire

This tool was developed by the researcher based on a review of relevant literature and maternal and postnatal care recommendations to assess the sociodemographic, obstetric, surgical, and clinical characteristics of the studied mothers. The WHO recommendations emphasize comprehensive assessment of maternal physical recovery, pain, fatigue, wound healing, general well-being, and psychosocial needs during postnatal care (**World Health Organization, 2022**).

The tool consisted of four parts:

Part I: Sociodemographic characteristics:

It included age, residence, educational level, occupation, marital status, family income, and number of family members.

Part II: Obstetric characteristics:

It included gravidity, parity, gestational age, number of living children, previous pregnancy complications, type of current delivery, and history of previous cesarean section or other obstetric procedures.

Part III: Surgical and clinical characteristics:

It included type of surgical care received, indication for surgery, type of anesthesia, postoperative day, presence of surgical wound, wound condition, postoperative pain, fatigue, mobility limitation, medication use, and reported postoperative complications. Particular attention was given to mothers requiring cesarean-related postoperative care, abdominal surgical care, wound management, or other relevant surgical nursing needs.

Part IV: Maternal postoperative/self-care problems:

It assessed common problems such as pain, sleep disturbance, fatigue, difficulty in mobility, difficulty performing personal hygiene, difficulty caring for the infant, difficulty managing the surgical wound, medication-

management difficulties, and need for family support.

Scoring system:

Items in Parts I–III were mainly recorded as categorical variables and were not assigned a total score. Part IV was scored according to the presence or absence and/or severity of each identified problem. For severity items, **0 = absent, 1 = mild, 2 = moderate, and 3 = severe**. Higher scores indicated a greater burden of postoperative/self-care problems.

Tool II: WHO-5 Well-Being Index

The **WHO-5 Well-Being Index (WHO-5)** was used to assess the mothers' subjective psychological well-being. It is a brief validated measure consisting of **five positively worded items** addressing the respondent's experiences during the previous two weeks. The WHO-5 assesses positive mood, relaxation, activity and vitality, freshness and rest, and interest in daily life. It is particularly suitable for the current study because psychological well-being is an important component of integrated perinatal and postnatal care. WHO recommends integration of mental health assessment and support into maternal and child health services (**Topp et al., 2015**).

The five items assessed whether the mother:

- Felt cheerful and in good spirits.
- Felt calm and relaxed.
- Felt active and vigorous.
- Woke up feeling fresh and rested.
- Felt that her daily life was filled with things that interested her.

Scoring system:

Each item was rated on a **6-point Likert scale**:

- 5 = All of the time
- 4 = Most of the time
- 3 = More than half of the time
- 2 = Less than half of the time
- 1 = Some of the time
- 0 = At no time

The raw total score ranged from **0 to 25**. The raw score was multiplied by **4** to obtain a standardized percentage score ranging from **0 to 100**, with higher scores indicating better psychological well-being.

For interpretation in the present study:

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- **0–50%:** Poor/reduced well-being
- **>50–75%:** Moderate well-being
- **>75–100%:** Good well-being

The WHO-5 is a measure of well-being rather than a diagnostic instrument; therefore, low scores should be interpreted as indicating reduced well-being and a need for further assessment rather than as a diagnosis of depression.

Tool III: Maternal Self-Care Management Assessment Scale

This tool was used to assess the mothers' ability to independently manage their health and postoperative/self-care needs during the antenatal–postnatal and postoperative periods. The scale was developed by the researcher after reviewing maternal postnatal-care recommendations and relevant literature, with emphasis on physical recovery, wound care, medication management, nutrition, rest, mobility, symptom monitoring, and seeking appropriate health care. WHO recommendations support providing women with information, reassurance, support, and opportunities to develop confidence in managing their own health during the postnatal period (WHO, 2022).

The scale consisted of **six domains**:

Domain 1: Personal hygiene and wound care

Included hand hygiene, wound cleaning, maintaining wound dryness, observing wound changes, recognizing abnormal discharge or redness, and appropriate wound-care practices.

Domain 2: Pain and symptom management

Included appropriate pain-management strategies, monitoring pain severity, use of prescribed medications, recognition of warning signs, and reporting persistent or worsening symptoms.

Domain 3: Medication management

Included taking medications according to prescription, adherence to dosage and timing, awareness of medication purpose, recognition of adverse effects, and avoiding inappropriate self-medication.

Domain 4: Nutrition and hydration

Included adequate fluid intake, balanced nutrition, adequate protein intake, appropriate iron-rich foods, and following dietary recommendations.

Domain 5: Physical activity, mobility, and rest

Included gradual mobilization, appropriate activity according to medical recommendations, avoidance of excessive physical effort, adequate sleep/rest, and safe performance of daily activities.

Domain 6: Health monitoring and help-seeking

Included monitoring maternal health, recognizing postoperative warning signs, attending follow-up visits, communicating health concerns, and seeking professional assistance when needed.

Scoring system:

Each item was rated using a **3-point Likert scale**:

- **2 = Always/appropriately practiced**
- **1 = Sometimes/partially practiced**
- **0 = Never/not practiced**

The total score was calculated by summing all item scores. The total score was converted into a percentage:

$$\text{Percentage score} = (\text{Observed score} / \text{Maximum possible score}) \times 100$$

Interpretation was:

- **<60% = Unsatisfactory self-care management**
- **60–<75% = Fair self-care management**
- **≥75% = Satisfactory self-care management.** Higher scores indicated better self-care management.

Tool IV: Parenting Sense of Competence Scale (PSOC)

The **Parenting Sense of Competence Scale (PSOC)** (Gilmore & colleagues, 2024) was used to assess mothers' perceived competence and confidence in performing the parenting role. Parenting competence is particularly relevant to the current intervention because mothers with postoperative care needs may experience pain, fatigue, reduced mobility, and psychological stress while simultaneously adapting to infant-care and parenting responsibilities. Current literature continues to use and refine the PSOC as a measure of parental efficacy and satisfaction.

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The original PSOC consists of **17 items** covering two major dimensions:

1. Parenting Efficacy:

This dimension assesses the mother's perceived ability, competence, problem-solving capacity, and confidence in handling child-care and parenting situations.

2. Parenting Satisfaction:

This dimension assesses satisfaction with the parenting role, perceived value of parenting, and feelings of frustration or difficulty associated with being a parent.

Scoring system:

Each item was rated on a **6-point Likert scale**:

- 1 = Strongly disagree
- 2 = Disagree
- 3 = Slightly disagree
- 4 = Slightly agree
- 5 = Agree
- 6 = Strongly agree

Negatively worded items were **reverse scored** before calculating the total score.

The total score was obtained by summing the 17 item scores. The theoretical score ranged from **17 to 102**, with higher scores indicating greater perceived parenting competence.

For descriptive interpretation, the total percentage score was categorized as:

- <60% = Low parenting competence
- 60–<75% = Moderate parenting competence
- ≥75% = High parenting competence

Tool V: Child Emotional–Behavioral Assessment Scale

This tool was used to assess the child's emotional and behavioral adjustment as perceived and reported by the mother. It was developed by the researcher based on relevant literature concerning early childhood emotional and behavioral development and the WHO recommendation to integrate maternal mental health and responsive caregiving support with early childhood health and development services (WHO, 2022).

The scale covered **five major domains**:

Domain 1: Emotional regulation

Included the child's ability to calm after distress, tolerate frustration, express emotions appropriately, and recover from upsetting situations.

Domain 2: Social interaction

Included interaction with the mother and family members, responsiveness to others, participation in age-appropriate activities, and social engagement.

Domain 3: Attachment and responsiveness

Included seeking comfort from the mother, responding to maternal attention, showing affection, and accepting appropriate comforting.

Domain 4: Behavioral adjustment

Included sleep-related behavior, feeding behavior, irritability, excessive crying, aggression, withdrawal, and other age-appropriate behavioral concerns.

Domain 5: Attention and adaptive behavior

Included attention to activities, following simple age-appropriate instructions, participation in play, adaptability to changes, and age-appropriate independence.

Scoring system:

Each item was rated on a **3-point scale** according to the frequency of the behavior:

- 2 = Usually/appropriate behavior
- 1 = Sometimes/partially appropriate
- 0 = Rarely/not appropriate

The total score was calculated by summing all items and converted into a percentage:

Percentage score = (Observed score / Maximum possible score) × 100

Interpretation was:

- <60% = Poor emotional–behavioral adjustment
- 60–<75% = Moderate adjustment
- ≥75% = Good emotional–behavioral adjustment

Higher scores indicated more favorable emotional and behavioral adjustment.

Validity and Reliability

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The study tools were reviewed by a panel of experts from relevant nursing specialties, including Obstetric and Gynecological Nursing, Medical-Surgical Nursing, Pediatric Nursing, Psychiatric and Mental Health Nursing, and Community Health Nursing, to assess content validity, clarity, relevance, and comprehensiveness.

The reliability of the study tools was assessed using an appropriate internal-consistency method, such as Cronbach's alpha coefficient, with a coefficient of 0.70 or higher considered acceptable.

Pilot Study

A pilot study was conducted on approximately 10% of the total sample to assess the feasibility, clarity, applicability, and estimated time required for data collection and intervention implementation. Mothers participating in the pilot study were excluded from the final study sample if modifications to the tools or intervention procedures were required.

Ethical Considerations

The study was conducted after obtaining approval from the relevant ethical and administrative authorities. Written informed consent was obtained from each participating mother after providing an explanation of the study purpose, procedures, potential benefits, and voluntary nature of participation. Mothers were informed that they had the right to withdraw from the study at any time without affecting the care they received. Confidentiality and privacy of all collected information were maintained, and data were used only for research purposes.

Phases of the Intervention and Sessions

The nurse-led integrated antenatal–postnatal and postoperative nursing intervention was implemented over 4 weeks, with two sessions per week, for a total of 8 structured sessions. Each session lasted approximately 45–60 minutes, according to the mothers' health condition, postoperative status, and learning needs. The intervention was delivered through individual and/or small-group sessions at the Obstetrics and Gynecology Department, relevant Medical/Surgical Departments, and outpatient follow-up clinics of Sohag University Hospitals. Educational materials, demonstrations, return demonstrations, discussion, counseling, and individualized

nursing feedback were used throughout the intervention.

The intervention was implemented through **four sequential phases**: assessment and preparation, implementation, consolidation and reinforcement, and follow-up evaluation.

Phase I: Assessment and Preparation

This phase was conducted before implementation of the intervention. The researcher established rapport with the mothers, explained the purpose and procedures of the study, obtained informed consent, and assessed each mother's individual needs and clinical condition.

Baseline data were collected using the study tools, including maternal and clinical characteristics, psychological well-being, self-care management, parenting competence, and child emotional–behavioral status. Particular attention was given to postoperative pain, wound condition, mobility limitations, fatigue, self-care difficulties, psychological concerns, and parenting challenges.

The baseline assessment was used to identify individual learning needs and determine the priorities of nursing education and counseling.

Phase II: Intervention Implementation

During this phase, the intervention was delivered through eight structured sessions. The content progressed from basic understanding and postoperative safety to self-care, psychological well-being, parenting competence, child emotional–behavioral support, and integration of all learned skills.

Session 1: Orientation, Assessment, and Understanding Maternal Surgical Care Needs

Objectives:

- Establish rapport and create a supportive therapeutic relationship.
- Introduce the purpose and structure of the intervention.
- Increase mothers' awareness of their physical and psychological needs.
- Explain common postoperative problems and expected recovery.
- Identify individual maternal and family concerns.

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Content:

The researcher provided an overview of antenatal/postnatal and postoperative care, common postoperative symptoms, expected physical recovery, pain and fatigue management, mobility limitations, wound care, medication adherence, nutrition, rest, and the importance of follow-up. The mothers were encouraged to identify their own concerns and barriers to self-care and infant care.

Methods: Interactive discussion, individualized counseling, question-and-answer, and educational materials.

Duration: 45–60 minutes.

Session 2: Postoperative Wound Care, Infection Prevention, and Safety

Objectives:

- Improve mothers' knowledge and practices related to wound care.
- Promote prevention and early recognition of postoperative complications.
- Improve adherence to prescribed treatment and follow-up.

Content:

The session addressed hand hygiene, wound protection, wound observation, keeping the wound clean and appropriately dry, medication adherence, recognition of abnormal redness, swelling, discharge, fever, increasing pain, wound separation, and other warning signs requiring professional assessment. For mothers with cesarean-related or abdominal surgical wounds, individualized instructions were provided according to the clinical condition and prescribed postoperative care plan.

Methods: Explanation, demonstration, illustrated educational materials, discussion, and return demonstration.

Duration: 45–60 minutes.

Session 3: Self-Care Management and Physical Recovery

Objectives:

- Strengthen mothers' ability to perform appropriate self-care.
- Promote safe mobility and gradual return to daily activities.

- Improve management of pain, fatigue, sleep, nutrition, and hydration.

Content:

The session focused on personal hygiene, wound-related self-care, pain management, medication use, adequate nutrition and hydration, rest and sleep, gradual mobilization, appropriate physical activity, body mechanics, and avoidance of activities that may interfere with surgical recovery. Mothers were trained to distinguish expected postoperative discomfort from symptoms requiring medical attention.

Methods: Demonstration, return demonstration, problem-solving, discussion, and individualized nursing instruction.

Duration: 45–60 minutes.

Session 4: Psychological Well-Being and Emotional Self-Management

Objectives:

- Improve awareness of emotional changes during the antenatal/postnatal and postoperative periods.
- Promote positive psychological well-being.
- Teach practical strategies for managing stress, anxiety, emotional distress, and fatigue.

Content:

The session covered common emotional responses to childbirth, surgery, pain, sleep disturbance, changes in body image, and increased maternal responsibilities. Mothers were taught simple relaxation and breathing exercises, positive coping strategies, appropriate expression of emotions, realistic daily planning, sleep/rest organization, and utilization of family and professional support. The importance of recognizing persistent sadness, severe anxiety, inability to cope, or other concerning psychological symptoms and seeking professional assistance was emphasized.

Methods: Psychoeducation, supportive counseling, guided breathing/relaxation, discussion, and individualized problem-solving.

Duration: 45–60 minutes.

Phase III: Parenting and Family-Centered Care

Session 5: Parenting Competence and Maternal Confidence

Objectives:

- Enhance mothers' confidence in performing the parenting role.
- Improve maternal competence in infant care.
- Reduce the effect of postoperative limitations on parenting activities.

Content:

The session addressed maternal confidence, infant-care responsibilities, feeding support, hygiene, safe handling, recognizing infant cues, responding appropriately to infant needs, organizing maternal rest with infant-care activities, and asking family members for appropriate assistance. Special emphasis was placed on helping mothers adapt infant-care activities to their postoperative condition while maintaining safe and responsive caregiving.

Methods: Demonstration, role play, discussion, modeling, and return demonstration.

Duration: 45–60 minutes.

Session 6: Child Emotional and Behavioral Support

Objectives:

- Improve mothers' recognition of common child emotional and behavioral needs.
- Strengthen responsive maternal interaction.
- Promote positive parent–child communication and emotional regulation.

Content:

Mothers were educated about recognizing signs of distress, irritability, withdrawal, excessive crying, sleep and feeding difficulties, and changes in behavior. The session emphasized responsive caregiving, comforting, positive communication, appropriate stimulation, play, establishing predictable routines, and responding calmly to child emotional needs. Mothers were also taught when behavioral or emotional concerns require professional assessment.

Methods: Discussion, demonstration, role play, case scenarios, and problem-solving.

Duration: 45–60 minutes.

Phase IV: Integration, Reinforcement, and Evaluation

Session 7: Integrated Maternal Self-Management and Family Support

Objectives:

- Integrate the skills acquired during previous sessions.
- Strengthen mothers' ability to manage multiple maternal and parenting responsibilities.
- Promote appropriate use of family and health-care support.

Content:

The researcher helped mothers integrate postoperative care, self-care, psychological coping, infant care, and parenting responsibilities into a realistic daily routine.

The session addressed:

- Planning daily activities.
- Balancing rest and infant-care responsibilities.
- Medication and follow-up schedules.
- Wound and symptom monitoring.
- Pain and fatigue management.
- Seeking family assistance.
- Recognizing situations requiring health-care consultation.
- Maintaining positive maternal–child interaction.

Individual barriers were discussed and practical solutions were developed with each mother.

Methods: Individual counseling, problem-solving, discussion, reinforcement, and practical planning.

Duration: 45–60 minutes.

Session 8: Consolidation, Return Demonstration, and Preparation for Follow-Up

Objectives:

- Reinforce all previously acquired knowledge and skills.
- Evaluate mothers' ability to apply the intervention components.
- Correct incorrect practices.

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- Prepare mothers for continued self-management after completion of the intervention.

Content:

The researcher reviewed the main intervention components, including wound care, infection prevention, medication adherence, pain and symptom management, nutrition, mobility, psychological coping, infant care, parenting competence, and recognition of maternal or child warning signs.

Mothers were asked to demonstrate selected self-care and infant-care skills and to explain how they would respond to common maternal or child problems. Incorrect responses were corrected through individualized feedback.

A personalized continuation plan was developed, emphasizing maintenance of healthy behaviors, follow-up attendance, family support, and early professional consultation when warning signs occurred.

Methods: Review, question-and-answer, return demonstration, feedback, reinforcement, and individualized counseling.

Duration: 45–60 minutes.

Follow-Up Phase

A follow-up assessment was conducted two months after completion of the intervention to determine the sustainability of the intervention effects. The same outcome measures used at baseline and immediately after the intervention were reapplied to assess changes in maternal psychological well-being, self-care management, parenting competence, and child emotional–behavioral outcomes.

During follow-up, mothers were encouraged to continue the recommended self-care, postoperative safety practices, psychological coping strategies, responsive parenting behaviors, and appropriate health-service utilization. Any reported persistent or worsening clinical or psychological concerns were referred to the appropriate health-care service according to the hospital’s usual care pathway.

Summary of the Intervention Schedule

Phase	Session	Main Content	Duration
Assessment & Preparation	Pre-intervention	Baseline assessment, needs assessment, consent, orientation	45–60 min
Implementation	Session 1	Orientation and understanding surgical care needs	45–60 min
Implementation	Session 2	Wound care, infection prevention, and safety	45–60 min
Implementation	Session 3	Self-care, pain, mobility, nutrition, and recovery	45–60 min
Implementation	Session 4	Psychological well-	45–60 min

Phase	Session	Main Content	Duration
		being and emotional self-management	
Parenting & Family-Centered Care	Session 5	Parenting competence and maternal confidence	45–60 min
Parenting & Family-Centered Care	Session 6	Child emotional and behavioral support	45–60 min
Integration & Reinforcement	Session 7	Integrated self-management and family support	45–60 min
Integration & Evaluation	Session 8	Consolidation, return demonstration, and preparation	45–60 min

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Phase	Session	Main Content	Duration
		for follow-up	
Follow-up	2 months after	Reassessment of all	45–60 min

Phase	Session	Main Content	Duration
	intervention	study outcomes	

Statistical Analysis

Data were coded, tabulated, and statistically analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. Descriptive statistics were used to summarize participants' sociodemographic and clinical characteristics, including frequencies, percentages, means, and standard deviations. The normality of quantitative variables was assessed before inferential analysis. For comparison of mothers' psychological well-being, self-care management, parenting competence, and child emotional–behavioral scores before and after the intervention, the paired-samples *t*-test was used for normally distributed quantitative data. For non-normally distributed data, the Wilcoxon signed-rank test was applied. For categorical outcomes measured before and after the intervention, McNemar's test was used for paired binary variables, while the marginal homogeneity test was considered for paired categorical variables with more than two categories.

For the follow-up assessment, repeated-measures analysis of variance (ANOVA) was used to compare normally distributed continuous outcomes across the three assessment periods (pre-intervention, post-intervention, and follow-up), with appropriate post-hoc comparisons when significant differences were detected. The Friedman test was used as the non-parametric alternative when the assumptions of repeated-measures ANOVA were not met. Effect sizes were calculated where appropriate to estimate the magnitude of intervention effects. Pearson's or Spearman's correlation coefficient was used to examine relationships between maternal psychological well-being, self-care management, parenting competence, and child emotional–behavioral outcomes, according to data distribution. Statistical significance was considered at $p < 0.05$, while $p < 0.01$ was considered highly statistically significant.

Results:

Table (1): Distribution of the Studied Mothers According to Their Sociodemographic Characteristics (N = 100)

Sociodemographic characteristics	No.	%
Age (years)		
<25	21	21.0
25–<35	48	48.0
≥35	31	31.0
Mean ± SD	31.8 ± 6.4	
Residence		
Rural	63	63.0
Urban	37	37.0
Educational level		

Sociodemographic characteristics	No.	%
Illiterate/read and write	14	14.0
Basic education	25	25.0
Secondary education	38	38.0
University education or higher	23	23.0
Occupation		
Housewife	72	72.0
Working	28	28.0
Marital status		
Married	96	96.0
Other	4	4.0
Family income		
Insufficient	46	46.0
Sufficient	54	54.0

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Table (1) shows that nearly half of the studied mothers (48.0%) were aged 25–<35 years, with a mean age of 31.8 ± 6.4 years. More than three-fifths of the mothers (63.0%) lived in rural areas. Regarding educational level, 38.0% had secondary education, while 23.0% had

university education or higher. The majority of the mothers were housewives (72.0%) and married (96.0%). Concerning family income, slightly more than half of the mothers (54.0%) reported that their income was sufficient, whereas 46.0% reported insufficient income.

Table (2): Distribution of the Studied Mothers According to Obstetric and Surgical Characteristics (N = 100)

Obstetric and surgical characteristics	No.	%
Parity		
Primipara	32	32.0
Multipara	68	68.0
Current type of delivery/surgical care		
Cesarean-related care	62	62.0
Abdominal/other surgical care	38	38.0
Previous cesarean section		
Yes	57	57.0
No	43	43.0

Table (2) demonstrates that more than two-thirds of the studied mothers were multiparous (68.0%). Cesarean-related surgical care represented the largest category (62.0%), while 38.0% received other abdominal or relevant surgical care. More than half of the mothers (57.0%) had a history of previous cesarean section. Most mothers (89.0%) had a surgical

Obstetric and surgical characteristics	No.	%
Presence of surgical wound		
Yes	89	89.0
No	11	11.0
Postoperative pain		
Mild	18	18.0
Moderate	52	52.0
Severe	30	30.0
Mobility limitation		
Present	67	67.0
Absent	33	33.0
Postoperative fatigue		
Present	71	71.0
Absent	29	29.0

wound at the time of assessment. Regarding postoperative problems, moderate pain was reported by 52.0% of mothers, while severe pain was reported by 30.0%. Mobility limitation and postoperative fatigue were also common, affecting 67.0% and 71.0% of mothers, respectively.

Figure (1): Distribution of the Studied Mothers According to Their Overall Psychological Well-Being Before, Immediately After, and Two Months After the Intervention (N = 100)

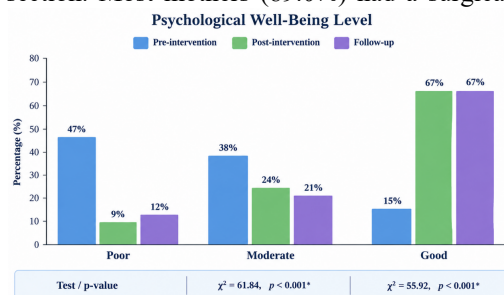


Figure (1): Distribution of the studied participants according to their psychological well-being level at pre-intervention, post-intervention and follow-up (N = 100).

Figure (1): indicates a marked improvement in the mothers' psychological well-being following implementation of the intervention. Before the intervention, nearly half of the mothers (47.0%) had poor psychological well-being and only 15.0% had good well-being. Immediately after the intervention, the proportion with poor well-being decreased substantially to 9.0%, whereas the proportion

with good well-being increased to 67.0%. At the two-month follow-up, the proportion with good psychological well-being remained 67.0%, while poor well-being was reported by only 12.0%. The observed changes were statistically significant ($\chi^2 = 61.84, p < 0.001$), with the favorable improvement maintained at follow-up ($\chi^2 = 55.92, p < 0.001$).

Table (3): Comparison of Mothers' Mean Psychological Well-Being Scores Before, Immediately After, and Two Months After the Intervention (N = 100)

with good well-being increased to 67.0%. At the two-month follow-up, the proportion with good psychological well-being remained 67.0%, while poor well-being was reported by only 12.0%. The observed changes were statistically significant ($\chi^2 = 61.84, p < 0.001$), with the favorable improvement maintained at follow-up ($\chi^2 = 55.92, p < 0.001$).

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Assessment time	Mean $\pm$ SD	Test of significance	p-value
Pre-intervention	48.6 $\pm$ 15.7		
Post-intervention	72.4 $\pm$ 13.2	t = 18.64	<0.001*

Table (3) shows a substantial increase in the mean psychological well-being score from 48.6 $\pm$ 15.7 before the intervention to 72.4 $\pm$ 13.2 immediately after its implementation. Although a slight reduction was observed at the two-month follow-up (70.8 $\pm$ 13.9), the mean score

Assessment time	Mean $\pm$ SD	Test of significance	p-value
Follow-up	70.8 $\pm$ 13.9	t = 16.92	<0.001*

remained considerably higher than the baseline value. The differences between pre-intervention and post-intervention scores and between pre-intervention and follow-up scores were highly statistically significant (t = 18.64, p < 0.001 and t = 16.92, p < 0.001, respectively).

Figure (2): Distribution of the Studied Mothers According to Their Overall Self-Care Management Before, Immediately After, and Two Months After the Intervention (N = 100)

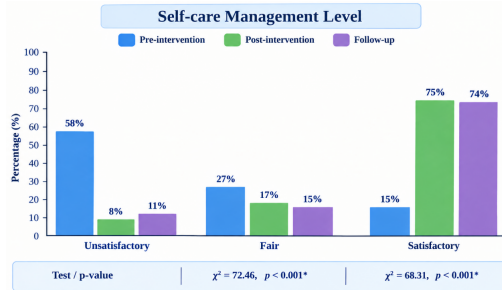


Figure (2): Distribution of the studied participants according to their self-care management level at pre-intervention, post-intervention and follow-up (N = 100).

Figure (2): demonstrates a pronounced improvement in mothers' self-care management after the intervention. Before implementation, 58.0% of mothers had unsatisfactory self-care management, while only 15.0% demonstrated satisfactory management. Following the intervention, unsatisfactory self-care decreased

Figure (3): Distribution of the Studied Mothers According to Their Parenting Competence Before, Immediately After, and Two Months After the Intervention (N = 100)

to 8.0%, whereas satisfactory self-care increased markedly to 75.0%. At follow-up, 74.0% continued to demonstrate satisfactory self-care management. The differences were highly statistically significant ($\chi^2 = 72.46$, p < 0.001).

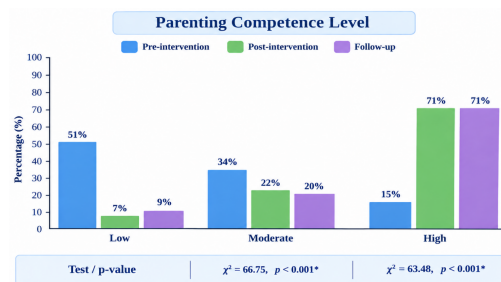


Figure (3): Distribution of the Studied Mothers According to Their Parenting Competence Before, Immediately After, and Two Months After the Intervention (N = 100).

Figure (3): reveals that more than half of the studied mothers (51.0%) had low parenting competence before the intervention, whereas only 15.0% had high competence. After implementation of the integrated nursing intervention, the proportion of mothers with high parenting competence increased markedly

to 71.0%, while low competence declined to 7.0%. The favorable pattern was maintained at follow-up, with 71.0% of mothers continuing to demonstrate high parenting competence. The observed improvement was highly statistically significant ($\chi^2 = 66.75$, p < 0.001).

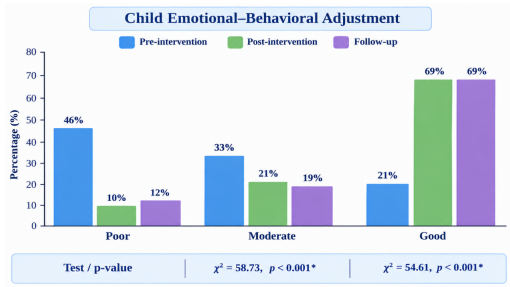


Figure (4): Distribution of the Studied Children According to Their Emotional-Behavioral Adjustment Before, Immediately After, and Two Months After the Intervention (N = 100).

Figure (4): Distribution of the Studied

Figure (4): shows a favorable change in the emotional-behavioral adjustment of the studied children following the intervention. Before the intervention, 46.0% of children had poor emotional-behavioral adjustment and only 21.0% had good adjustment. Immediately after the intervention, good adjustment increased to

Table (4): Comparison of the Mean Scores of the Main Study Outcomes Across the Three Assessment Periods (N = 100)

Study outcomes	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Follow-up Mean $\pm$ SD	F	p-value
Parenting competence	55.1 $\pm$ 13.6	81.7 $\pm$ 9.8	80.4 $\pm$ 10.2	151.84	<0.001***
Child emotional-behavioral adjustment	57.4 $\pm$ 14.2	78.9 $\pm$ 11.1	77.6 $\pm$ 11.5	96.53	<0.001***
Psychological well-being	48.6 $\pm$ 15.7	72.4 $\pm$ 13.2	70.8 $\pm$ 13.9	118.62	<0.001***
Self-care management	52.3 $\pm$ 12.8	79.6 $\pm$ 10.4	78.1 $\pm$ 10.8	164.37	<0.001***

Table (4) demonstrates statistically significant improvements across all major study outcomes over the three assessment periods. The mean psychological well-being score increased from 48.6 $\pm$ 15.7 before the intervention to 72.4 $\pm$ 13.2 after the intervention and remained relatively high at follow-up (70.8 $\pm$ 13.9). Similarly, mean self-care management increased from 52.3 $\pm$ 12.8 to 79.6 $\pm$ 10.4 and

Table (5): Correlation Between Maternal Psychological Well-Being, Self-Care Management, Parenting Competence, and Child Emotional-Behavioral Adjustment After the Intervention (N = 100)

Children According to Their Overall Emotional-Behavioral Adjustment Before, Immediately After, and Two Months After the Intervention (N = 100)

69.0%, while poor adjustment declined to 10.0%. At the two-month follow-up, good adjustment remained at 69.0%, with only 12.0% of children classified as having poor adjustment. The differences were highly statistically significant ($\chi^2 = 58.73$, $p < 0.001$).

Study outcomes	Pre-intervention Mean $\pm$ SD	Post-intervention Mean $\pm$ SD	Follow-up Mean $\pm$ SD	F	p-value
Parenting competence	55.1 $\pm$ 13.6	81.7 $\pm$ 9.8	80.4 $\pm$ 10.2	151.84	<0.001***
Child emotional-behavioral adjustment	57.4 $\pm$ 14.2	78.9 $\pm$ 11.1	77.6 $\pm$ 11.5	96.53	<0.001***

remained at 78.1 $\pm$ 10.8 at follow-up. Parenting competence increased from 55.1 $\pm$ 13.6 at baseline to 81.7 $\pm$ 9.8 after the intervention and 80.4 $\pm$ 10.2 at follow-up. Child emotional-behavioral adjustment also improved from 57.4 $\pm$ 14.2 to 78.9 $\pm$ 11.1 and 77.6 $\pm$ 11.5, respectively. The repeated-measures comparisons were highly statistically significant for all outcomes ($p < 0.001$).

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Variables	Self-care management	Parenting competence	Child emotional–behavioral adjustment
Psychological well-being	$r = 0.61, p < 0.001^{***}$	$r = 0.58, p < 0.001^{***}$	$r = 0.46, p < 0.001^{***}$
Self-care management	—	$r = 0.64, p < 0.001^{***}$	$r = 0.52, p < 0.001^{***}$

Table (5) illustrates significant positive correlations among the major study outcomes after the intervention. Maternal psychological well-being was positively correlated with self-care management ($r = 0.61, p < 0.001$) and parenting competence ($r = 0.58, p < 0.001$).

Table (6): Relationship Between Selected Maternal Characteristics and Overall Improvement in Study Outcomes (N = 100)

Maternal characteristics	Improved No. (%)	Not improved No. (%)	Test	p-value
Age <35 years	57 (81.4)	13 (18.6)	$\chi^2 = 4.26$	0.039*
Age ≥35 years	20 (66.7)	10 (33.3)		
Urban residence	32 (86.5)	5 (13.5)	$\chi^2 = 2.91$	0.088
Rural residence	45 (71.4)	18 (28.6)		

Table (6) indicates that overall improvement was significantly higher among mothers younger than 35 years (81.4%) compared with those aged 35 years or older (66.7%), with a statistically significant association ($\chi^2 = 4.26, p = 0.039$). No statistically significant association was observed between residence and overall improvement ($\chi^2 = 2.91, p = 0.088$). Educational level showed a borderline association with improvement ($\chi^2 = 3.78, p = 0.052$), while previous cesarean section was not significantly associated with improvement ($\chi^2 = 0.82, p = 0.365$).

Discussion

Variables	Self-care management	Parenting competence	Child emotional–behavioral adjustment
Parenting competence	—	—	$r = 0.69, p < 0.001^{***}$

Parenting competence demonstrated a strong positive correlation with child emotional–behavioral adjustment ($r = 0.69, p < 0.001$). Self-care management was also positively correlated with child adjustment ($r = 0.52, p < 0.001$).

Maternal characteristics	Improved No. (%)	Not improved No. (%)	Test	p-value
University education or higher	20 (87.0)	3 (13.0)	$\chi^2 = 3.78$	0.052
Less than university education	57 (74.0)	20 (26.0)		
Previous cesarean section	42 (73.7)	15 (26.3)	$\chi^2 = 0.82$	0.365
No previous cesarean section	35 (81.4)	8 (18.6)		

The present study demonstrated a significant improvement in maternal psychological well-being following implementation of the nurse-led integrated antenatal–postnatal and postoperative nursing intervention. Before the intervention, nearly half of the studied mothers had poor psychological well-being, whereas after the intervention the proportion with good psychological well-being increased markedly, with the improvement remaining evident at follow-up. This finding may be explained by the integrated nature of the intervention, which did not focus exclusively on physical postoperative care but also incorporated emotional support, stress management, relaxation techniques, counseling, reassurance, and individualized follow-up. This finding is consistent with the

WHO, (2022) which emphasizes that postnatal care should address both the physical and psychological recovery of women and should provide information, reassurance, and support through respectful and person-centered care. It is also consistent with WHO guidance recommending integration of perinatal mental health into maternal and child health services to facilitate early identification of psychological difficulties and appropriate support .

The significant increase in the mean maternal psychological well-being score from the pre-intervention assessment to the post-intervention assessment further supports the effectiveness of the intervention. The persistence of the improvement at the two-month follow-up suggests that the intervention may have promoted coping strategies that mothers could continue using after completion of the formal sessions. This finding agrees with **Kumar et al., (2023)** stated that postnatal services should provide continued emotional support and should recognize that maternal mental and physical recovery extends beyond the immediate period surrounding childbirth. The present finding also agrees with WHO's 2023 advocacy brief, which emphasizes the importance of quality postnatal support for women's well-being and for their ability to adapt positively to motherhood.

Regarding maternal self-care management, the present study revealed a marked improvement after implementation of the integrated nursing intervention. The proportion of mothers with satisfactory self-care increased substantially after the intervention and remained high at follow-up, while the proportion with unsatisfactory self-care decreased. This improvement may be attributed to the practical and individualized components of the intervention, including wound care, medication adherence, pain and symptom management, nutrition and hydration, mobility, adequate rest, health monitoring, and appropriate help-seeking. The finding is in agreement with **Nguyen et al. (2023)**, whose scoping review identified a broad range of self-care interventions across the antenatal, intrapartum, and postpartum periods and highlighted self-care as an important component of maternity care. It is also consistent with WHO recommendations emphasizing information, education, support, and active participation of women in their own postnatal care.

The improvement in self-care management is particularly important among mothers with surgical care needs because postoperative pain,

wound-related concerns, restricted mobility, fatigue, and the demands of infant care may interfere with the mother's ability to perform daily self-care activities. The current intervention addressed these problems simultaneously through demonstration, return demonstration, individualized education, reinforcement, and follow-up. This integrated approach is consistent with **Kuppan et al., (2025)** recognizes that women may require additional support when they experience complications or other health concerns after childbirth. Therefore, the present results support the importance of moving beyond a narrowly biomedical postoperative approach toward comprehensive nursing care that combines physical recovery with education and self-management support.

Concerning parenting competence, the present study found a significant improvement after the intervention, with a substantial increase in mothers who demonstrated a high level of parenting competence. This improvement was maintained at follow-up, suggesting that the intervention may have strengthened maternal confidence and practical parenting abilities. The finding is consistent with **Gilmore & Cuskelly (2024)**, who revisited the Parenting Sense of Competence scale and emphasized the importance of assessing parental efficacy and satisfaction as central components of parenting competence. It is also consistent with a recent study among puerperal women, which reported variation in parenting sense of competence and highlighted the need for targeted clinical support to promote maternal parenting competence.

The observed improvement in parenting competence may also be explained by the intervention's inclusion of practical guidance regarding infant care, recognition of infant cues, responsive caregiving, feeding, hygiene, routines, and the appropriate use of family support. This finding agrees with **Zhang et al., (2021)** emphasize responsive care and support for parents in establishing healthy relationships and behaviors during the early postnatal period. WHO further recognizes that positive postnatal care should help mothers and families develop confidence in caring for their newborns.

Regarding to child emotional–behavioral adjustment, the present study showed a significant improvement after the intervention, with a marked increase in the proportion of children classified as having good emotional–behavioral adjustment. This improvement remained evident at follow-up. Although the

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intervention was primarily directed toward mothers, its effects may have extended to children through improvements in maternal psychological well-being, parenting confidence, responsive caregiving, and the mother's ability to recognize and respond appropriately to children's emotional and behavioral cues. This interpretation is consistent with **Andrade et al., (2025)** revealed that maternal mental health and the quality of early caregiving are closely connected with children's physical, emotional, and developmental well-being.

The significant repeated-measures findings across psychological well-being, self-care management, parenting competence, and child emotional–behavioral adjustment provide additional support for the overall effectiveness of the integrated intervention. The pattern of improvement from baseline to post-intervention, followed by only a modest reduction at follow-up, suggests that the intervention effects were generally sustained. This pattern is consistent with **Lau et al., (2026)** that mentioned the concept of integrated, person-centered postnatal care advocated by WHO, in which education, psychological support, physical recovery, and parenting support are delivered as interconnected components rather than as isolated services.

The significant positive correlations observed among maternal psychological well-being, self-care management, parenting competence, and child emotional–behavioral adjustment further support the interconnected nature of the study outcomes. Mothers who were psychologically more stable may have been more capable of performing self-care activities, while better self-care may have reduced physical stress and increased maternal confidence in caring for the child. Similarly, higher parenting competence may have facilitated more responsive interactions with children, potentially contributing to better child emotional and behavioral adjustment. This interpretation is compatible with **Pan et al., (2025)** revealed that integrated model of maternal and child health, which emphasizes that maternal mental health, caregiving capacity, and child well-being should be considered together rather than as separate outcomes.

In contrast, the present findings differed from studies by **Tol et al., (2020)** and **Xu, & Zhang, (2025)** in which improvement in maternal psychological well-being, self-care, or parenting competence may be limited or short-lived. Such differences could be related to variations in intervention duration, intensity,

timing of assessment, availability of family support, maternal health status, type and severity of surgical care needs, and differences in the instruments used to measure outcomes. In the current intervention, psychological support, postoperative care, self-care education, parenting guidance, reinforcement, and follow-up were delivered as one coordinated program. Therefore, differences from previous findings may reflect the broader multidimensional structure of the present intervention rather than a contradiction in the underlying evidence.

Conclusion

Based on the findings of the present study, the study concluded that the nurse-led integrated antenatal–postnatal and postoperative nursing intervention was associated with improvements in maternal psychological well-being, self-care management, and parenting competence, as well as favorable child emotional–behavioral outcomes. The improvement was generally maintained at follow-up, supporting the value of integrating physical, psychological, self-care, and parenting support within nursing care for mothers with surgical care needs.

Recommendations

Based on the findings of the present study, the following recommendations are proposed:

- Integrating comprehensive nurse-led maternal care programs combining antenatal, postnatal, and postoperative care with psychological support, self-care education, symptom management, and parenting guidance.
- Strengthening discharge education and family support regarding wound care, pain and medication management, nutrition, mobility, rest, infant care, and recognition of maternal or child warning signs, using demonstration and return-demonstration when appropriate.
- Establishing structured post-discharge nursing follow-up to reinforce self-care and parenting practices, monitor maternal psychological well-being and postoperative recovery, and facilitate early referral when problems are identified.
- Providing continuing education for nurses and multidisciplinary collaboration to ensure effective management of maternal physical, psychological, parenting, and child-related needs.

- Conducting future randomized controlled studies with larger samples and longer follow-up periods to confirm the effectiveness and sustainability of the intervention.

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