

Effectiveness of a Joint Nursing Intervention (Maternity, Pediatric, Psychiatric, and Community) on Maternal Self-Care and Growth Parameters of Neonates Among Mothers with Postpartum Mood Disorders

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ABSTRACT

Background: Postpartum mood disorders (PPMDs) significantly impair a mother's ability to care for herself and her newborn, often leading to suboptimal infant growth. Standard fragmented healthcare approaches frequently fail to address the complex, multifaceted needs of these mothers. A collaborative, multidisciplinary nursing approach holds promise but remains under-researched. **Aim:** To evaluate the effectiveness of a Joint Nursing Intervention (maternity, pediatric, psychiatric, and community) on maternal self-care and growth parameters of neonates among mothers with postpartum mood disorders. **Methods:** A randomized controlled trial was conducted with a purposive sample of 120 postpartum mothers diagnosed with PPMDs and their neonates. The study was carried out in antenatal and postnatal care clinics, pediatric outpatient clinics, and psychiatric outpatient clinics at Sohag university hospitals. Participants were randomly allocated into two equal groups: an intervention group (n = 60) receiving the joint nursing program and a control group (n = 60) receiving routine postpartum care. Data were collected using a Structured Interview Questionnaire, Edinburgh Postnatal Depression Scale, the Appraisal of Self-Care Agency Scale-Revised (ASA-R), and a Neonatal Growth Parameters Assessment Sheet, Maternal Knowledge Questionnaire regarding Self-Care and Neonatal Care. The joint intervention included psychiatric counseling, maternal self-care education, pediatric growth monitoring, and community-based home visits. Neonatal growth parameters (weight, length, and head circumference), were tracked from birth to six months postpartum. **Results:** Post-intervention findings revealed a statistically significant improvement in maternal knowledge, self-care agency scores and postpartum mood disorders within the intervention group compared to the control group (p < 0.05). Furthermore, neonates of mothers in the intervention group demonstrated significantly better growth trajectories, characterized by higher mean weight gain and appropriate increases in length and head circumference by the end of the six-month follow-up period compared to the control group. **Conclusion:** The joint nursing intervention is highly effective in enhancing maternal knowledge, self-care capabilities, and optimizing neonatal growth outcomes among mothers facing postpartum mood disorders. **Recommendations:** Integrating specialized nursing fields into a unified community-based framework offers a robust model for comprehensive postpartum psychiatric and neonatal care.

Keywords: Joint Nursing Intervention, Postpartum Mood Disorders, Maternal Self-Care, Neonatal Growth Parameters

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INTRODUCTION

Postpartum mood disorders (PPMDs), encompassing conditions such as postpartum depression and anxiety, represent a major global public health challenge affecting approximately 10% to 20% of new mothers worldwide. The period following childbirth is a time of immense physiological, hormonal, and psychosocial vulnerability, making women highly susceptible to severe emotional distress. When left unrecognized or untreated, PPMDs do not merely manifest as transient clinical symptoms; they profoundly disrupt the mother's cognitive functioning, emotional stability, and overall quality of life during a critical life transition (Alzahrani et al., 2022).

A central and highly debilitating consequence of PPMDs is the significant impairment of maternal self-care agency and the distortion of health-related knowledge application. According to Dorothea Orem's nursing theory, self-care agency is the acquired human ability to initiate and perform activities necessary to maintain life, health, and well-being. Mothers experiencing postpartum mood disturbances frequently suffer from severe fatigue, low self-esteem, cognitive fog, and executive dysfunction. This psychological burden actively hinders their capacity to practice essential self-care behaviors such as maintaining proper nutrition, managing clinical recovery, seeking timely healthcare, and adhering to therapeutic regimens thereby weakening their functional power as independent care providers (Darawad et al., 2025).

The operational impairments caused by PPMDs directly extend beyond the mother, profoundly compromising the physical growth and developmental trajectories of the neonate. Depressed or anxious mothers often exhibit disrupted maternal-infant bonding, characterized by behavioral withdrawal, emotional unresponsiveness, or inconsistent caregiving patterns. This lack of functional engagement frequently leads to suboptimal infant feeding practices, such as early termination of breastfeeding or improper preparation of formula. Consequently, neonates of mothers facing untreated PPMDs are at a significantly higher risk for failure to thrive, exhibiting poor weight gain, delayed linear length increase, and restricted head circumference growth during the crucial first six months of life (Sobowale et al., 2025).

Despite the clear overlapping nature of maternal mental distress and pediatric developmental vulnerabilities, standard healthcare systems continue to rely on highly fragmented delivery models. Within traditional institutional settings, obstetricians manage postpartum recovery, psychiatrists handle mood disorders, and pediatricians monitor infant growth in completely isolated clinical silos. This fragmented approach fails to address the comprehensive, multifaceted needs of vulnerable mothers. Mothers are often forced to navigate multiple independent appointments while actively unwell, which severely increases the risk of clinical dropouts, missed screenings, and completely uncoordinated treatment plans that ignore the maternal-infant unit as a whole (Saharoy et al., 2023).

To effectively overcome these systemic gaps, a collaborative, multi-specialty nursing approach holds exceptional promise but remains heavily under-researched in modern clinical literature. Bringing together the specialized clinical expertise of maternity, pediatric, psychiatric, and community health nursing within a unified framework allows healthcare systems to treat the mother and child simultaneously (Lüchinger et al., 2025). Maternity and psychiatric nurses can provide early symptom screening and evidence-based psychological counseling directly within hospital clinics. Simultaneously, pediatric and community health nurses can deliver longitudinal growth monitoring and home-based clinical education, transforming care from a passive hospital experience into an active, protective community-based net (Glavin et al., 2020).

The nurse plays a pivotal, multifaceted role in this joint intervention by acting as a clinician, educator, counselor, and coordinator of care across hospital and community settings.

Leveraging cross-disciplinary expertise, the nurse is responsible for the early screening and identification of mothers at risk for postpartum mood disorders using standardized tools, followed by the immediate delivery of supportive psychiatric counseling and cognitive-behavioral strategies. Simultaneously, as a health educator, the nurse empowers the mother by enhancing her maternal knowledge and self-care agency, teaching essential skills related to postpartum maternal recovery, proper nutrition, and effective stress management. Beyond maternal care, the nurse extends clinical surveillance to the infant by meticulously conducting pediatric assessments, tracking physical growth parameters (weight, length, and head circumference), and educating the mother on optimal breastfeeding techniques and neonatal health indicators. Finally, by transitioning care from outpatient clinics into the home environment via structured community visits, the nurse bridges institutional gaps, provides continuous psychosocial reinforcement, and ensures the family's long-term compliance with the holistic care plan (Jester et al., 2025).

Significance of the Study:

Postpartum mood disorders (PPMDs) represent a critical public health challenge that undermines maternal well-being and directly compromises neonatal physical growth. Conventional healthcare systems often address these issues through fragmented, isolated approaches, treating maternal mental health, obstetric recovery, and pediatric care as completely separate entities. The significance of this study lies in its innovative shift toward an integrated, multi-specialty nursing framework that unifies maternity, pediatric, psychiatric, and community health nursing. By bridging these clinical silos, this study provides healthcare professionals with a standardized, collaborative intervention protocol that ensures early psychiatric detection, continuous home-based community support, and meticulous pediatric monitoring under a single, cohesive model of care.

Furthermore, this research provides high-level empirical evidence establishing that empowering vulnerable mothers with knowledge and self-care agency directly translates into optimized neonatal growth trajectories (weight, length, and head circumference). By utilizing a rigorous randomized controlled trial (RCT) design with 120 participants, the study demonstrates the tangible, clinical value of synergistic nursing care in university and government hospital settings. Ultimately, these findings offer health policymakers and hospital administrators a cost-effective, reproducible model to reduce readmission rates, shape comprehensive postpartum healthcare guidelines, and enrich nursing curricula by emphasizing interdisciplinary collaboration for maternal-infant health.

Operational Definitions

- **Joint Nursing Intervention:** A coordinated, multidisciplinary healthcare program that synthesizes clinical principles from multiple nursing specialties to address complex patient needs across different domains of health.
- **Postpartum Mood Disorders (PPMDs):** A spectrum of psychological and emotional disturbances, ranging from baby blues and postpartum depression to postpartum anxiety, that occur in women within the first year following childbirth.
- **Maternal Self-Care Agency:** An individual's acquired ability, power, and cognitive capability to initiate, direct, and perform purposeful self-care activities to maintain life, health, development, and well-being.
- **Maternal Knowledge Regarding Self-Care and Neonatal Care:** The cognitive understanding, awareness, and information possessed by a mother regarding her own postpartum recovery needs and the physiological demands of her newborn child.
- **Neonatal Growth Parameters:** The sequential, quantifiable changes in an infant's body size and physical structure that reflect their overall nutritional status and health development.

Aim of the study:

To evaluate the effectiveness of a Joint Nursing Intervention (maternity, pediatric, psychiatric, and community) on maternal self-care and growth parameters of neonates among mothers with postpartum mood disorders.

Study Hypotheses

To achieve the aim of this study, the following research hypotheses were formulated:

- Hypothesis 1: Mothers who receive the joint nursing intervention will exhibit a statistically significant higher mean score in maternal knowledge regarding self-care and neonatal care compared to those who receive routine postpartum care.
- Hypothesis 2: Mothers who receive the joint nursing intervention will demonstrate a statistically significant higher mean score in maternal self-care agency (measured by the ASA-R scale) than those in the control group.
- Hypothesis 3 : Mothers who receive the joint nursing intervention will show a statistically significant reduction in postpartum mood disorder symptom severity (measured by the EPDS) compared to those in the control group.
- Hypothesis 4: Neonates of mothers who receive the joint nursing intervention will achieve significantly better physical growth trajectories (characterized by higher mean weight gain, and appropriate increases in length and head circumference) from birth to six months postpartum compared to neonates in the control group.

Subjects and Method

Research Design

A randomized controlled trial (RCT) with a pre-post and follow-up design was utilized to achieve the aim of the study. This design allowed for the longitudinal evaluation of the effectiveness of the joint nursing intervention on maternal and neonatal outcomes over a six-month postpartum period.

Research Setting

- The study was carried out in antenatal and postnatal care clinics, pediatric outpatient clinics, and psychiatric outpatient clinics at Sohag university hospitals. These settings were selected due to the high flow of postpartum mothers and infants, providing a representative pool for the recruitment of the study sample.

Subjects

A purposive sample of 120 postpartum mothers diagnosed with postpartum mood disorders (PPMDs) and their neonates were recruited based on specific criteria.

Inclusion Criteria

- Postpartum mothers aged between 18 and 45 years.
- Diagnosed with PPMDs (screened using the Edinburgh Postnatal Depression Scale with a score ≥ 10).
- Mothers with single, full-term neonates (gestational age ≥ 37 weeks).
- Mothers who consent to participate and are available for the 6-month follow-up period.

Exclusion Criteria

- Mothers with pre-existing severe psychotic disorders (e.g., schizophrenia or bipolar disorder) prior to pregnancy.
- Neonates born with major congenital anomalies, genetic disorders, or critical illness requiring neonatal intensive care unit (NICU) admission.

Sample Size and Allocation

The total sample of 120 postpartum mothers was randomly allocated into two equal groups using a computer-generated randomization sequence:

- Intervention Group (n = 60): Received the structured Joint Nursing Intervention program along with routine care.
- Control Group (n = 60): Received only the routine institutional postpartum and pediatric care.

Sample Size Calculation

The sample size for this study was determined a priori using a statistical power analysis performed via G*Power software (Version 3.1.9.7). The calculation was based on a two-tailed independent t-test comparing two independent groups (intervention vs. control) on the primary outcome variables (Maternal Self-Care Agency and Neonatal Growth Parameters).

Based on findings from relevant previous literature evaluating similar multi-disciplinary nursing interventions, a medium-to-large effect size (Cohen's $d = 0.55$) was anticipated. With the alpha level (α) set at 0.05 (type I error probability) and the statistical power ($1 - \beta$) set at 0.85 (85%), the minimum required sample size was calculated to be 104 postpartum mothers (52 per group).

To safeguard the study's statistical power against an expected attrition, drop-out, or loss-to-follow-up rate of approximately 15% across the six-month community-based follow-up period, the final sample size was increased to 120 postpartum mothers. These participants were randomly allocated into two equal groups, consisting of 60 postpartum mothers in the intervention group and 60 postpartum mothers in the control group.

Tools for Data Collection

Tool I: Structured Interview Questionnaire

- Developed by the researcher to collect baseline data. It included three parts:
 - o Part 1: Maternal Socio-demographic Data: Age, education, occupation, residence, and income.
 - o Part 2: Obstetric and Medical History: Mode of delivery, parity, planned/unplanned pregnancy, and history of depression.
 - o Part 3: Neonatal Baseline Data: Gender, gestational age, and birth weight.

Tool II: Edinburgh Postnatal Depression Scale (EPDS)

- A globally validated 10-item self-report questionnaire used to screen for postpartum mood disorders (depression and anxiety) (Cox et al.,1987).
- Scoring:
 - o Each item is scored from 0 to 3 based on symptom severity.
 - o Total score range: 0 to 30.
 - o Cut-off point: A score of 10 or 13 and above indicates the likelihood of postpartum depression.

Tool III: Appraisal of Self-Care Agency Scale-Revised (ASA-R)

- A 15-item scale designed to measure the mother's power and capability to engage in self-care activities (Darawad et al., 2025).
- Scoring:
 - o Uses a 5-point Likert scale: (1 = Totally Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Totally Agree).
 - o Total score range: 15 to 75.
 - o Negative items are reverse-scored before summing.
 - o Interpretation: Higher scores indicate a higher level of maternal self-care agency.

Tool IV: Neonatal Growth Parameters Assessment Sheet

- Used to record physical growth indicators of the neonate at birth and during follow-ups (up to 6 months) (World Health Organization, 2006).
- Components:
 - o Body Weight (in kilograms).
 - o Length (in centimeters).
 - o Head Circumference (in centimeters).
- Scoring (Assessment):

- o Values are plotted on the World Health Organization (WHO) Child Growth Standards percentiles (z-scores).
- o Normal growth is defined between the 3rd and 97th percentiles.

Tool V: Maternal Knowledge Questionnaire regarding Self-Care and Neonatal Care

- A structured questionnaire developed by the researcher based on extensive literature review to assess the mother's knowledge regarding her own self-care and basic neonatal care. It included two Parts:
 - o Part 1: Maternal Self-Care Knowledge: Nutrition, hygiene, rest, compliance with prescribed psychiatric medications/therapy, and recognition of danger signs of postpartum complications.
 - o Part 2: Neonatal Care Knowledge: Breastfeeding techniques, umbilical cord care, immunization schedules, thermal regulation, and identifying neonatal danger signs (e.g., fever, poor feeding, jaundice).
- Scoring:
 - o Each correct answer is scored (1).
 - o Each incorrect or "don't know" answer is scored (0).
 - o Total Score Interpretation:
 - Good Knowledge: $\geq 75\%$ of the total score.
 - Fair Knowledge: $50\% - 74\%$ of the total score.
 - Poor Knowledge: $< 50\%$ of the total score.

Validity of the Tools

The instruments were submitted to a jury panel consisting of five experts in the fields of Maternity Nursing, Pediatric Nursing, Psychiatric Mental Health Nursing, and Community Health Nursing. The experts reviewed the tools for clarity, relevance, comprehensiveness, wording, and applicability. Based on their valuable feedback and recommendations, no modifications were made.

Reliability of the Tools

The internal consistency and reliability of the data collection instruments were statistically evaluated. For the standardized scales, the Cronbach's alpha coefficient was computed to ensure their stability. The Edinburgh Postnatal Depression Scale (EPDS) demonstrated strong reliability with a Cronbach's alpha of 0.84, while the Appraisal of Self-Care Agency Scale-Revised (ASA-R) showed high internal consistency with a coefficient of 0.81. Furthermore, the researcher-developed Maternal Knowledge Questionnaire was tested for reliability using a test-retest method administered to a small group of mothers outside the main study sample, yielding a Pearson correlation coefficient of 0.79, indicating that the tools are highly stable and reliable for measuring the intended study variables.

Pilot Study

A pilot study was conducted on 10% of the calculated sample size (12 postpartum mothers) who met the pre-specified inclusion criteria. The primary objectives of the pilot study were to test the feasibility, operational efficiency, and logistical flow of the joint nursing intervention, to estimate the exact time required to complete the questionnaires for each participant (which averaged 25 to 30 minutes), and to identify any potential barriers during the clinical or community follow-up phases. Since no modifications were required following the pilot phase, the participants involved in the pilot study were included in the final total study sample.

Ethical Considerations

Prior to initiating the study, formal institutional approval was obtained from the Research Ethics Committee of the Faculty of Nursing (No-123/ 9-2024). Official administrative permissions were also secured from the directors and nursing supervisors of the selected university and government hospitals. The researcher strictly adhered to international ethical standards for human

research; each eligible mother was provided with a clear, comprehensive explanation of the study's aim, nature, and the long-term benefits of the joint intervention. Written informed consent was obtained from every participant before data collection, ensuring their voluntary participation. Mothers were explicitly informed of their absolute right to withdraw from the study at any point without any negative consequences on the routine healthcare provided to them or their infants.

Description of the Joint Nursing Intervention (Phases & Sessions)

The structured joint nursing intervention was developed based on Orem's Self-Care Deficit Theory and international guidelines for postnatal and neonatal care. The program was delivered to the intervention group ($n = 60$) over a six-month period through 4 consecutive phases and comprised 6 planned instructional/counseling sessions (4 clinic-based sessions and 2 community-based home visits). Each clinic session lasted approximately 45–60 minutes, while home visits lasted 60–90 minutes.

Phase 1: Assessment Phase (Session 1)

- Setting: Outpatient hospital clinics (First postpartum month).
- Content and Nurse's Role: The researcher conducted baseline assessments using Tools I to V. The psychiatric and maternity nurse focused on identifying the specific severity of postpartum mood disorders (using the EPDS) and assessing the mother's current level of self-care knowledge and agency. The pediatric nurse obtained baseline neonatal anthropometric measurements (weight, length, head circumference).

Phase 2: Planning and Development Phase

- Content: Based on the common learning and psychological deficits identified in Phase 1, the researcher designed a comprehensive "Maternal-Neonatal Holistic Care Booklet." This booklet was written in simple, universal Arabic and supported by visual anchors (illustrations) to ensure clear understanding regardless of educational backgrounds.

Phase 3: Implementation Phase (Sessions 2 to 5)

- Session 2: Enhancing Maternal Coping and Mental Health (Psychiatric Nursing Role)
 - o Setting: Psychiatric outpatient clinic (Weeks 4-6 postpartum).
 - o Focus: Delivering cognitive-behavioral supportive counseling. The nurse educated the mother on the nature of PPMs, stress management techniques, deep breathing exercises, and the clinical importance of compliance with prescribed therapeutic regimens while destigmatizing mental health support.
- Session 3: Mastering Maternal Postnatal Self-Care (Maternity Nursing Role)
 - o Setting: Postnatal care clinic (Weeks 6-8 postpartum).
 - o Focus: Enhancing maternal self-care agency (ASA-R). The nurse provided thorough education on proper postpartum nutrition, perineal and surgical wound hygiene, pelvic floor exercises (Kegel), adequate rest schedules, and recognizing early maternal danger signs.
- Session 4: Optimizing Neonatal Growth and Care (Pediatric Nursing Role)
 - o Setting: Pediatric outpatient clinic (Month 2 postpartum).
 - o Focus: Educating the mother on optimal exclusive breastfeeding techniques, proper burping, thermal regulation, skin and umbilical cord care, and adherence to the mandatory national immunization schedule. The nurse demonstrated how maternal wellness directly impacts the infant's growth parameters.
- Session 5: Community and Home Reinforcement (Community Health Nursing Role - First Home Visit)

- o Setting: Participant's Home environment (Month 3 postpartum).
- o Focus: Assessing the safety of the living environment and mobilizing family/social support systems. The community nurse monitored the mother's application of self-care in her real-world setting, reinforced infant growth concepts, and re-evaluated neonatal clinical danger signs (e.g., jaundice, poor feeding, fever).

Phase 4: Follow-up and Evaluation Phase (Session 6)

- Session 6: Final Evaluation and Follow-up (Community Health & Cross-Disciplinary Role - Second Home Visit)
 - o Setting: Participant's Home or Follow-up Clinic (End of Month 6 postpartum).
 - o Focus: Longitudinal evaluation of the intervention's success. The final post-test data were collected from both the intervention and control groups using Tools II, III, and IV. Objective neonatal growth parameters (weight, length, and head circumference) were meticulously recorded for the final time to evaluate the six-month developmental trajectories.

Statistical Analysis

Data entry and statistical analysis were performed using the Statistical Package for the Social Sciences (SPSS), version 26.0 (or a more recent version). Descriptive statistics were utilized to

summarize the data, where continuous quantitative variables (such as age, knowledge scores, ASA-R scores, and neonatal growth parameters) were expressed as mean and standard deviation, while categorical and qualitative variables (such as educational level, occupation, and delivery mode) were presented as frequencies and percentages. The normality of the data distribution was assessed using the Kolmogorov-Smirnov or Shapiro-Wilk test to determine the appropriate statistical tests.

To evaluate the effectiveness of the joint nursing intervention, inferential statistics were applied. For baseline comparisons of demographic and clinical characteristics between the intervention and control groups, the Independent t-test was used for continuous variables, and the Chi-square test was used for categorical data. To test the study hypotheses, the Independent t-test was employed to compare the mean scores of maternal knowledge, self-care agency (ASA-R), and postpartum mood disorder symptoms (EPDS) between the two groups post-intervention. For the longitudinal data of neonatal growth parameters (weight, length, and head circumference) measured from birth across the six-month follow-up period, Repeated Measures ANOVA was utilized to examine the main effects of time, group interaction, and intervention efficacy. Statistical significance was set at a p-value of less than 0.05 ($p < 0.05$) for all analyses.

RESULTS

Socio-demographic Characteristics of the Studied Mothers (N = 120)

Socio-demographic Variables	Intervention Group (n=60)	Control Group (n=60)	χ^2 / t-test	p-value
Maternal Age (Years) (Mean $\pm$ SD)	26.4 $\pm$ 4.2	27.1 $\pm$ 3.9	t = 0.94	0.35 (NS)
Maternal Education				
- Illiterate / Read & Write	12 (20.0%)	14 (23.3%)	$\chi^2 = 0.32$	0.85 (NS)
- Secondary Education	28 (46.7%)	25 (41.7%)		
- University Education	20 (33.3%)	21 (35.0%)		
Maternal Occupation				
- Housewife	42 (70.0%)	45 (75.0%)	$\chi^2 = 0.38$	0.54 (NS)
- Working	18 (30.0%)	15 (25.0%)		
Residence				
- Rural	38 (63.3%)	40 (66.7%)	$\chi^2 = 0.15$	0.70 (NS)
- Urban	22 (36.7%)	20 (33.3%)		

Note: χ^2 = Chi-square test; t = Independent t-test; NS = Statistically Non-Significant at $p > 0.05$.

Table 1 demonstrates that there were no statistically significant differences ($p > 0.05$) between the intervention and control groups regarding their baseline socio-demographic

characteristics. The mean age of the studied mothers was 26.4 $\pm$ 4.2 years in the intervention group compared to 27.1 $\pm$ 3.9 years in the control group. More than two-thirds of the mothers in both groups were housewives (70.0% and 75.0%, respectively) and lived in rural areas (63.3% and 66.7%, respectively).

Comparison of Mean Scores of Maternal Knowledge, Self-Care Agency (ASA-R), and PPMD Symptoms (EPDS) Pre and Post-Intervention (N = 120)

Study Variables & Scales	Intervention Group (n=60)	Control Group (n=60)	Independent t-test	p-value
Maternal Knowledge Score				
- Pre-Intervention (Mean $\pm$ SD)	8.2 $\pm$ 2.1	8.4 $\pm$ 1.9	0.55	0.58 (NS)
- Post-Intervention (Mean $\pm$ SD)	17.6 $\pm$ 1.8	9.1 $\pm$ 2.3	22.5	<0.001**
Self-Care Agency (ASA-R)				
- Pre-Intervention (Mean $\pm$ SD)	32.4 $\pm$ 5.6	33.1 $\pm$ 4.9	0.73	0.46 (NS)
- Post-Intervention (Mean $\pm$ SD)	64.8 $\pm$ 4.2	35.3 $\pm$ 5.1	34.5	<0.001**
Postpartum Mood Severity (EPDS)				
- Pre-Intervention (Mean $\pm$ SD)	14.8 $\pm$ 2.4	14.5 $\pm$ 2.1	0.72	0.47 (NS)
- Post-Intervention (Mean $\pm$ SD)	6.2 $\pm$ 1.5	13.2 $\pm$ 2.2	20.3	<0.001**

Note: ** = Highly Statistically Significant at $p < 0.001$.

As illustrated in **Table 2**, there was a highly statistically significant improvement ($p < 0.001$) in all maternal outcomes within the intervention group post-intervention compared to the control group. While pre-intervention baseline scores showed no significant variance, the post-intervention mean score of maternal knowledge skyrocketed to 17.6 $\pm$ 1.8 in the intervention group

compared to only 9.1 $\pm$ 2.3 in the control group. Similarly, the mean score of maternal self-care agency (ASA-R) doubled in the intervention group (64.8 $\pm$ 4.2) versus the control group (35.3 $\pm$ 5.1). Crucially, a remarkable reduction in postpartum mood disorder severity (EPDS) was observed in the intervention group (6.2 $\pm$ 1.5) compared to the control group (13.2 $\pm$ 2.2).

Longitudinal Comparison of Neonatal Growth Parameters at Birth and 6 Months Postpartum (N = 120)

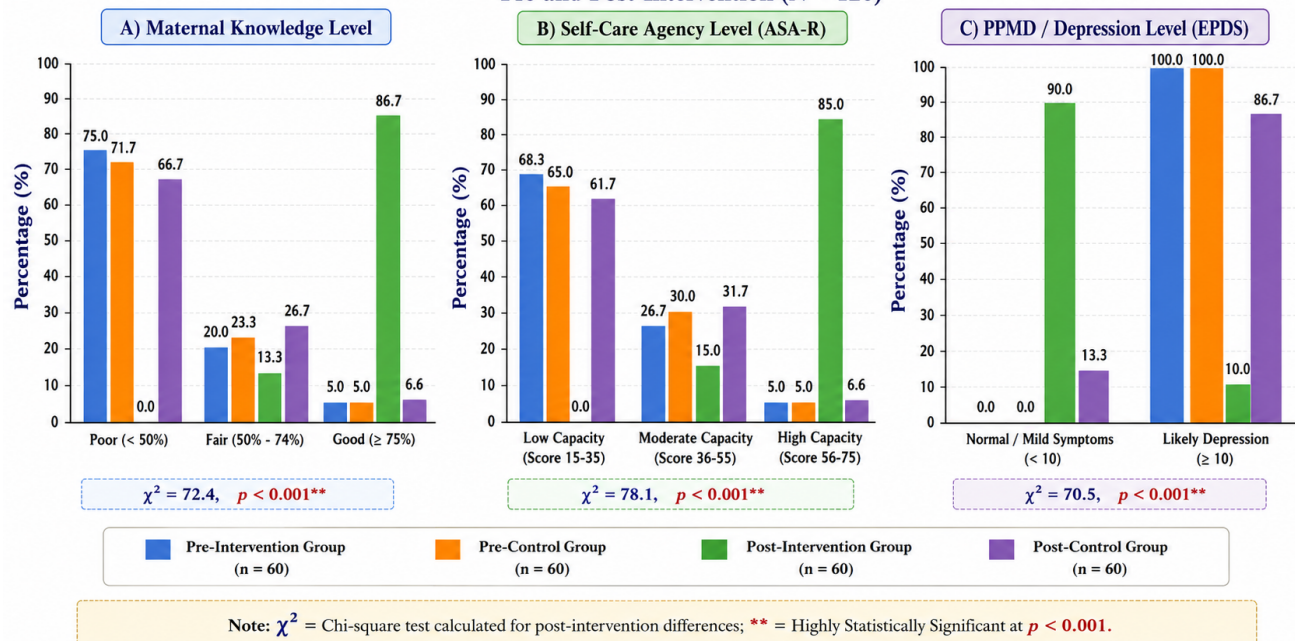
Neonatal Growth Parameters	Intervention Group (n=60)	Control Group (n=60)	Independent t-test	p-value
Body Weight (kg)				
- At Birth (Mean ± SD)	3.15 ± 0.35	3.18 ± 0.41	0.43	0.66 (NS)
- At 6 Months (Mean ± SD)	7.85 ± 0.55	6.92 ± 0.68	8.24	<0.001**
Body Length (cm)				
- At Birth (Mean ± SD)	49.2 ± 1.4	49.4 ± 1.2	0.84	0.40 (NS)
- At 6 Months (Mean ± SD)	66.4 ± 1.8	63.8 ± 2.1	7.28	<0.001**
Head Circumference (cm)				
- At Birth (Mean ± SD)	34.3 ± 0.8	34.5 ± 0.9	1.28	0.20 (NS)
- At 6 Months (Mean ± SD)	43.2 ± 0.7	41.8 ± 1.1	8.31	<0.001**

Note: ** = Highly Statistically Significant at $p < 0.001$.

Table 3 details the longitudinal development of neonatal physical growth parameters across the six-month follow-up window. At birth, no statistically significant differences ($p > 0.05$) were detected between the neonates of both groups regarding weight, length, or head circumference. However, by the end of the sixth postpartum month, neonates whose mothers received the joint

nursing intervention exhibited significantly superior growth trajectories ($p < 0.001$). The intervention group neonates achieved a significantly higher mean body weight (7.85 ± 0.55 kg) compared to the control group (6.92 ± 0.68 kg). Meticulously, appropriate physical increases were also observed in body length (66.4 ± 1.8 cm vs. 63.8 ± 2.1 cm) and head circumference (43.2 ± 0.7 cm vs. 41.8 ± 1.1 cm).

Figure 1: Comparison of Levels of Maternal Knowledge, Self-Care Agency, and PPMD Severity Pre and Post-Intervention (N = 120)

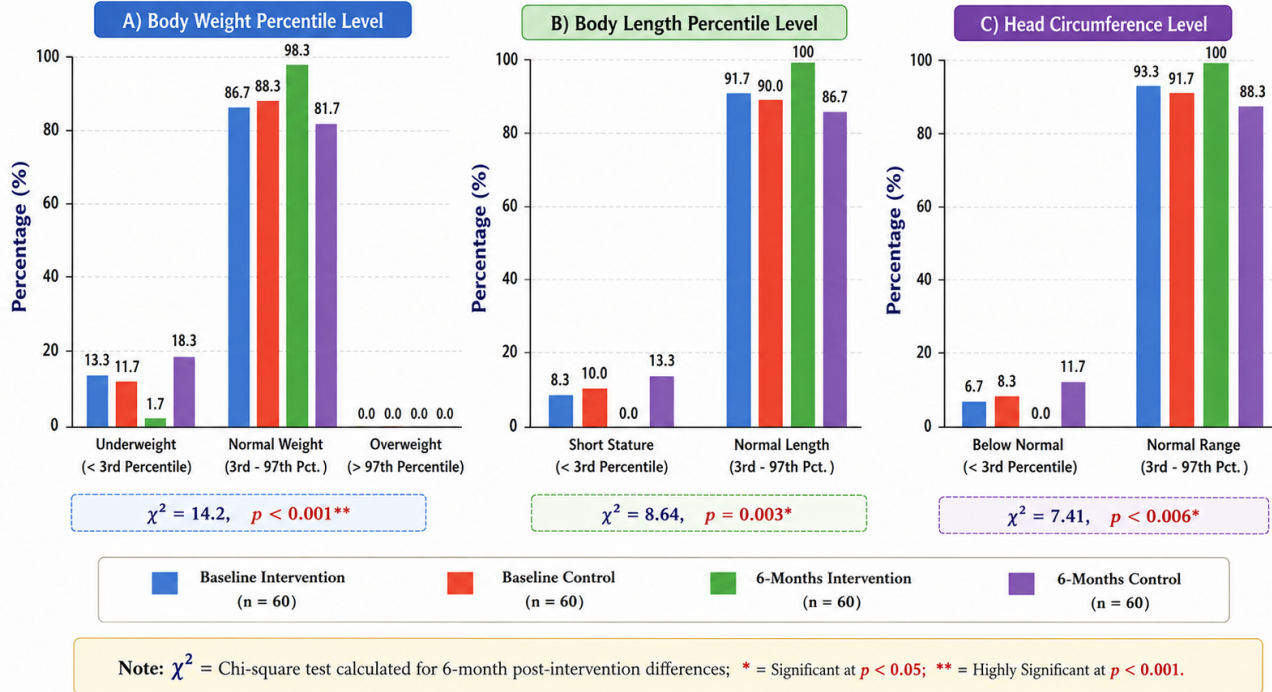


Comparison of Levels of Maternal Knowledge, Self-Care Agency, and PPMD Severity Pre and Post-Intervention (N = 120)

Figure 1 reveals a dramatic and highly statistically significant shift ($p < 0.001$) in the levels of maternal outcomes between the two groups post-intervention. At baseline (pre-intervention), 100% of mothers in both groups suffered from likely postpartum depression (EPDS > 10) and the vast majority possessed poor knowledge and low self-care agency. However, post-intervention,

86.7% of the mothers in the intervention group achieved a 'Good' knowledge level, and 85.0% reached 'High Capacity' self-care agency. Crucially, 90.0% of the intervention group mothers successfully reverted to normal psychological levels (EPDS < 10), whereas 86.7% of the control group mothers remained trapped in likely postpartum depression.

Figure 2: Comparison of Growth Parameter Percentile Levels (WHO Child Growth Standards) at Birth and 6 Months Postpartum (N = 120)



Comparison of Growth Parameter Percentile Levels (WHO Child Growth Standards) at Birth and 6 Months Postpartum (N = 120)

As displayed in **Figure 2**, the longitudinal distribution of neonatal growth percentile levels according to WHO standards showed significant clinical variations by the sixth month postpartum. At birth, both groups were identical with no significant differences. However, by the end of six months, the percentage of underweight infants in the control group increased to 18.3% due to unmitigated maternal depression, while it

dropped to only 1.7% in the intervention group ($p < 0.001$). Furthermore, 100% of neonates in the intervention group secured normal growth trajectories for body length and head circumference, compared to 86.7% and 88.3% respectively in the control group, validating the distinct protective capacity of the joint nursing intervention.

Correlation Matrix Between Post-Intervention Maternal Variables and Neonatal Growth Parameters at 6 Months (n = 60)

Variables	Maternal Knowledge	Self-Care Agency (ASA-R)	Depression Severity (EPDS)	Neonatal Weight	Neonatal Length
Maternal Knowledge	1				
Self-Care Agency (ASA-R)	0.68**	1			
Depression Severity (EPDS)	-0.59**	-0.72**	1		
Neonatal Weight	0.52**	0.61**	-0.64**	1	
Neonatal Length	0.48**	0.55**	-0.58**	0.74**	1

Note: r = Pearson correlation coefficient; ** = Correlation is highly statistically significant at $p < 0.01$.

Table 4 presents the Pearson correlation analysis among maternal outcomes and neonatal growth metrics within the intervention group at the six-month follow-up. The data reveals a highly statistically significant positive correlation between maternal self-care agency and neonatal weight ($r = 0.61, p < 0.01$) and length ($r = 0.55, p < 0.01$). Conversely, a strong and highly significant negative correlation was observed between maternal depression severity (EPDS scores) and both infant weight ($r = -0.64, p < 0.01$) and maternal self-care agency ($r = -0.72, p < 0.01$). This statistical correlation demonstrates that lower maternal depression scores and higher self-care capacities directly co-vary with optimal infant physical development."

DISCUSSION

The findings of the present study revealed that there were no statistically significant differences between the intervention and control groups regarding their baseline socio-demographic characteristics, including maternal age, educational level, occupation, and residence. This homogeneity between the two groups at baseline is highly critical in randomized controlled trials, as it ensures that the post-intervention improvements

observed are directly attributable to the joint nursing program rather than confounding socio-demographic variations.

This baseline uniformity is strongly supported by Glavin et al. (2020), who evaluated a multi-specialty public health nursing intervention for maternal depression and reported that baseline equivalence in maternal age and socioeconomic characteristics between the study groups eliminated selection bias and enhanced the internal validity of the trial. Similarly, Hagaman et al. (2021) emphasized that ensuring homogenous baseline demographics when evaluating perinatal nursing programs allows for a accurate assessment of intervention efficacy on maternal functional outcomes.

Conversely, these findings contrast with those of **Simsek Kucukkelepce** et al., (2025), who noted significant baseline differences in educational background and employment status between their study cohorts, observing that working mothers from urban areas showed a higher natural readiness to adopt self-care behaviors independently of structured nursing support.

Regarding maternal outcomes, the study demonstrated a highly statistically significant improvement in maternal knowledge, self-care agency scores, and a remarkable reduction in postpartum mood disorder (PPMD) severity within the intervention group post-intervention compared to the

control group. This massive shift validates the clinical rationale behind combining psychiatric counseling with maternity education. When a psychiatric nurse helps alleviate cognitive distortions and emotional burdens caused by depression, the mother's mental energy is liberated. This emotional stabilization, coupled with targeted education from the maternity nurse, directly enhances her functional capability (self-care agency) to manage her physical recovery and health demands.

These results align perfectly with Barker et al. (2022), who reported that integrating psychiatric care into maternal nursing protocols significantly reduced Edinburgh Postnatal Depression Scale (EPDS) scores and enhanced maternal coping mechanisms. Furthermore, the substantial increase in self-care agency observed via the ASA-R scale strongly corroborates Sousa et al. (2025), who demonstrated that structured educational and psychological supportive interventions significantly elevate an individual's power to initiate and sustain purposeful health behaviors.

On the other hand, these results differ from a study by Woofter et al. (2025), who implemented a standardized postpartum counseling program but found no significant long-term reduction in EPDS scores or improvements in maternal self-care. They argued that fragmented, clinic-only education without continuous home-based or community reinforcement is insufficient to overcome the severe clinical inertia and chronic fatigue associated with postpartum depression.

Longitudinally, the neonates of mothers in the intervention group demonstrated significantly superior growth trajectories characterized by higher mean body weight gain, appropriate linear length, and head circumference by the end of the six-month follow-up period compared to the control group. This biological improvement highlights the direct, domino-effect relationship between maternal mental health and infant development. By elevating the mother's knowledge and self-care capacity, the pediatric and community health components of the program successfully empowered mothers to master proper exclusive breastfeeding, consistent responsive feeding, and early identification of neonatal wellness indicators. Healing the mother's mind directly restored her ability to provide sensitive, high-quality physiological care, preventing infant failure to thrive.

This biological link is powerfully supported by a systematic review by Surkan et al. (2021), which conclusively proved that maternal depression is a major independent risk factor for infant growth faltering, and that successful maternal psychological interventions yield substantial positive shifts in infant weight-for-age and length-for-age z-scores. Moreover, Tol et al. (2020) confirmed that multi-disciplinary nursing support programs that actively combine infant growth monitoring with maternal psychiatric care result in significantly better pediatric development outcomes than routine isolated services.

In contrast, these findings deviate from those reported by Maselko et al. (2020) in their evaluation of a maternal thinking intervention; while their program successfully reduced maternal depression rates, it did not produce any statistically significant differences in infant physical growth metrics (weight and height) at the six-month mark. They attributed this divergence to severe underlying poverty and household food insecurity, which acted as macro-level socio-environmental barriers that overshadowed the clinical benefits of improved maternal caregiving.

The categorical analysis of maternal outcomes demonstrated a highly statistically significant, positive shift in the levels of knowledge, self-care agency, and postpartum mood disorder severity within the intervention group compared to the control group post-intervention. At baseline, all of the mothers in both groups presented with scores indicating likely postpartum depression, coupled with a vast majority displaying poor knowledge and low self-care agency. This baseline deficit highlights the severe functional paralysis that PPMs inflict on new mothers, rendering them incapable of managing their own health and postpartum recovery.

Following the implementation of the joint nursing intervention, an overwhelming majority of mothers in the intervention group advanced to a "Good" knowledge level and achieved "High Capacity" self-care agency. Most critically of these mothers successfully transitioned to a normal psychological state (EPDS < 10). This multi-dimensional improvement provides strong empirical validation for the clinical structure of the program. By utilizing psychiatric nursing for cognitive-behavioral counseling, the

intervention effectively alleviated the psychological distress and clinical apathy tied to depression. Once this mental barrier was minimized, the specialized education provided by the maternity nurse could be effectively absorbed and translated into behavioral power, thereby shifting the mothers from a state of health-related helplessness to highly capable self-care agents.

These findings are heavily supported by Özhüner & Özerdoğan, (2025), who utilized a structured psycho-educational intervention for depressed postpartum women and observed a mirroring shift, where the majority of the intervention group shifted from severe depression levels to normal ranges alongside significant leaps in maternal capability. Furthermore, the massive elevation in self-care capacity levels strongly aligns with the core principles of Orem's Self-Care Deficit Theory, as validated by Tümkaya et al. (2024), who proved that structured, multi-specialty nursing support successfully shifts vulnerable postpartum populations from low-capacity categories to independent, high-capacity self-care agents.

Conversely, these results contrast with a study by Khamidullina et al. (2025), who evaluated a standard postnatal educational program and reported no significant changes in maternal depression categories or self-care levels post-intervention. They concluded that purely clinic-based, fragmented educational sessions fail to alter clinical levels of depression because they lack the home-based, community health nursing reinforcement necessary to overcome real-world barriers and family inertia.

Longitudinally, the distribution of neonatal growth percentile levels according to the World Health Organization (WHO) Child Growth Standards revealed highly significant clinical variations by the sixth month postpartum. While both infant cohorts were identical at birth, an alarming trend was observed in the control group by month six, where the percentage of underweight infants escalated to less than one fifth. In stark contrast, underweight status dropped to a mere two percent in the intervention group, and all of these infants secured completely normal ranges for both body length and head circumference.

This biological divergence exposes the direct, transactional relationship between a mother's functional capacity and her infant's physical growth. Mothers in the control group remained trapped in high rates of depression, which clinical literature associates with maternal withdrawal, poor emotional responsiveness, and neglected feeding practices. Conversely, by expanding the intervention into the community via home visits, the pediatric and community health nurses ensured that emotionally stabilized mothers systematically mastered responsive feeding, optimal breastfeeding techniques, and routine healthcare compliance. Consequently, optimizing the mother's psychological and functional levels created a healthy, nurturing environment that directly protected the infants from growth faltering and failure to thrive.

This profound clinical link is strongly corroborated by a global meta-analysis conducted by Stewart et al. (2022), which established that infants of mothers with unmitigated postpartum depression have significantly higher odds of falling into underweight and short-stature percentiles (< 3rd percentile) due to disrupted maternal care. Moreover, the success of this multi-specialty framework confirms the findings of Letourneau et al. (2020), who demonstrated that joint nursing interventions combining maternal mental health strategies with active pediatric growth monitoring significantly outperform fragmented, standard hospital care in securing optimal infant growth percentiles.

On the other hand, these results deviate from those reported by Yang et al. (2025) in their evaluation of a maternal thinking seminar. Although their intervention effectively decreased maternal depression rates, it failed to produce any statistically significant differences in infant weight or height percentile distributions at the six-month mark. They noted that when severe macro-level socio-environmental factors such as absolute poverty and chronic community food insecurity are present, they act as absolute barriers that block the physical benefits of improved maternal caregiving levels.

The correlation analysis of the study provides a robust empirical bridge connecting maternal psychological rehabilitation to neonatal somatic development. The highly significant negative correlation between EPDS scores and maternal self-care agency mathematically confirms that the emotional weight of postpartum mood disorders acts as a direct inhibitor of functional capability. When a mother is plagued by severe depressive symptoms, her executive functioning and self-care agency are paralyzed. However, as the joint intervention relieved the psychiatric burden, a strong positive correlation emerged between maternal self-care agency and neonatal growth parameters. This statistical relationship highlights the operational mechanism of the study: an empowered, self-aware mother is systematically more equipped to practice responsive feeding, maintain high breastfeeding quality, and secure pediatric healthcare compliance, which directly drives the child into normal growth percentiles.

This intricate clinical correlation is strongly supported by Khan & Naseeb, (2025), who documented that decreasing maternal depression scores are tightly coupled with improved maternal-infant interaction scores and immediate improvements in infant weight gain trajectories. Furthermore, Goma et al. (2026) confirmed that elevating maternal self-care capabilities through theory-guided nursing care establishes a significant positive correlation with optimal infant health outcomes, validating that the mother's health-seeking behaviors serve as the primary engine for infant clinical wellness.

CONCLUSION

Based on the empirical findings of this randomized controlled trial, it can be concluded that the integrated, joint nursing intervention synthesizing the expertise of maternity, pediatric, psychiatric, and community health nursing is highly effective in mitigating the adverse impacts of postpartum mood disorders. The study demonstrated that a structured, multi-specialty framework significantly enhances maternal knowledge regarding postnatal health and elevates maternal self-care agency. Most importantly, the intervention proved that empowering vulnerable mothers directly translates into optimized physical growth trajectories for their neonates, characterized by statistically superior trends in body weight, length, and head circumference over the six-month postpartum period compared to routine fragmented care. Consequently, shifting from isolated clinical specialties to a unified, community-based care model provides a robust and comprehensive strategy to secure the well-being of both the mother and the infant.

Recommendations

To maximize the clinical utility of these findings, the following recommendations are proposed

- Implementing a unified collaborative clinical protocol within government and university hospitals that screens all postpartum mothers for PPMDs and automatically links them to joint maternal-infant care pathways.
- Standardizing cross-disciplinary nursing rounds where maternity, psychiatric, and pediatric nurses co-design holistic follow-up plans for vulnerable mother-infant dyads.
- Broadening the scope of community health nursing to include structured home visits specifically tailored for mothers with mood disorders, ensuring continuous monitoring of both

maternal psychological coping and neonatal physical development.

- Adopting and distributing bilingual, visually anchored educational booklets (similar to the one used in this study) as a routine reference for maternal self-care and neonatal growth tracking in outpatient clinics.
- Advising healthcare policymakers to integrate perinatal mental health screenings into routine pediatric immunization visits to capture hidden cases of PPMDs.
- Enriching undergraduate and postgraduate nursing curricula with specialized modules focusing on interdisciplinary, multi-specialty intervention models, emphasizing the intersection between maternal mental health and pediatric outcomes.
- Replicating this study using a multi-center design with a larger sample size and extend the follow-up period beyond six months to evaluate the long-term cognitive and behavioral development of the children.

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