

A Community-Tailored Supportive Intervention for Female Hemodialysis Patients of Childbearing Age: Impact on Perinatal Depressive Symptoms, Body Image Disturbance, and Offspring Emotional Well-being

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Abstract

Background: Female hemodialysis patients of childbearing age encounter unique and severe biopsychosocial challenges. These distressors intensify during the perinatal period, severely impacting maternal mental health, body image, and subsequent child development. **Aim of the study:** This study evaluated the impact of a community-tailored supportive intervention for female hemodialysis patients of childbearing age on perinatal depressive symptoms, body image disturbance, and offspring emotional well-being. **Subjects and Method:** A quasi-experimental study utilized a purposive sample of 50 female hemodialysis patients of reproductive age, recruited from the hemodialysis units and outpatient gynecology/obstetrics clinics at Sohag university hospitals. Participants were allocated into an intervention group (n=25), which received a community-tailored supportive program comprising psychosocial counseling, cognitive guidance, and peer support, or a control group (n=25) receiving standard routine care. Data were collected at baseline, post-intervention, and during a follow-up phase using a Sociodemographic and Clinical Questionnaire, the Edinburgh Perinatal Depression Scale (EPDS), the Multidimensional Body Image Relations Questionnaire-Appearance Scales (MBSRQ-AS), and the Strengths and Difficulties Questionnaire (SDQ) for offspring well-being. **Results:** The intervention group demonstrated a statistically significant reduction in the severity of perinatal depressive symptoms (EPDS scores) compared to the control group. Furthermore, patients in the intervention group reported substantial improvements in body image acceptance (MBSRQ-AS subscales) and a marked decrease in related distress. Notably, the offspring of mothers in the intervention group exhibited significantly lower total difficulty scores and higher prosocial behavior scores on the SDQ, indicating enhanced emotional stability and behavioral well-being. **Conclusion:** Community-tailored psychosocial interventions serve as a highly effective, practical adjunct to

standard nephrology and obstetric care. **Recommendation:** Incorporating structured support programs into routine clinical protocols is highly recommended to improve long-term health outcomes for both chronically ill mothers and their children.

Keywords: Body Image Disturbance; Childbearing Age; Hemodialysis; Perinatal Depression Symptoms; Offspring Emotional Well-being.

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Introduction:

End-stage renal disease (ESRD) requiring maintenance hemodialysis represents a profound global health burden that heavily compromises patients' biopsychosocial well-being. Historically, women of childbearing age undergoing hemodialysis faced extremely low conception rates due to uremia-induced hypothalamic-gonadal axis dysfunction, resulting in anovulation, amenorrhea, and impaired fertility (Oliverio & Hladunewich, 2020). However, recent advancements in nephrology particularly the implementation of intensive, high-frequency, and nocturnal dialysis regimens have significantly improved the physiological environment, leading to a marked increase in successful pregnancies worldwide. Despite these biomedical triumphs, pregnancy and transitioning into motherhood while tied to a life-sustaining dialysis machine subjects young women to unprecedented physical and psychological strains (Bakhsh & Mahallawi, 2025).

The perinatal period is inherently a time of heightened vulnerability to mental health disorders, but this risk is exponentially compounded for women navigating chronic uremic illness. Perinatal depression, which encompasses depressive episodes occurring during pregnancy or within the first year postpartum, is highly prevalent among hemodialysis patients due to chronic fatigue, fear of adverse fetal outcomes, and the rigorous demands of medical adherence (Shehaj & Kazancioğlu, 2023). Untreated perinatal depression not only compromises maternal compliance with complex fluid and dietary restrictions but also undermines the mother's capacity to cope with the physiological stressors of hemodialysis. Ultimately, this leads to an elevated risk of clinical complications, frequent hospitalizations, and a severe decline in health-

related quality of life (Abd el-Sattar et al., 2025).

Parallel to affective disorders, body image disturbance represents a critical yet frequently overlooked psychological challenge among reproductive-aged female hemodialysis patients. The visible somatic manifestations of advanced kidney failure including surgical scarring from arteriovenous fistulas or central venous catheters, uremic pruritus-induced skin lesions, hyperpigmentation, and fluctuations in dry weight profoundly alter maternal self-perception (Shehaj & Kazancioğlu, 2023). When these chronic physical changes intersect with the rapid, dramatic bodily transformations characteristic of the perinatal state, patients often experience acute self-esteem degradation and severe body dissatisfaction. This disturbance in body image further drives social withdrawal and exacerbates underlying depressive pathology, creating a distressing feedback loop during a sensitive developmental transition (Bakhsh & Mahallawi, 2025).

The adverse ramifications of maternal psychosocial distress extend far beyond the patient, posing a direct threat to offspring emotional and behavioral well-being. The synergistic effect of perinatal depression and body image dissatisfaction can severely impair maternal-fetal attachment and maternal sensitivity, disrupting early mother-infant dyadic interactions (Howard & Khalifeh, 2020). Chronically ill mothers experiencing high levels of biopsychosocial distress often struggle to provide the responsive caregiving essential for their child's optimal neurological and psychological development. Consequently, children raised in these environments exhibit a higher vulnerability to early emotional instability, behavioral difficulties, poor social adaptation, and an increased reliance on community healthcare services later in childhood (O'Dea et al., 2023).

While standard clinical protocols for pregnant hemodialysis patients strictly optimize biomedical parameters such as hematocrit levels and dialysate clearance, structured psychosocial care remains starkly fragmented. Traditional psychiatric interventions often fail to address the specific socio-cultural dynamics, gender roles, and community support systems that heavily influence how young women experience chronic illness and motherhood (Oliverio & Hladunewich, 2020). There is an urgent, documented need for community-tailored supportive interventions that integrate peer support, cognitive adjustments, and culturally resonant counseling into routine nephrological care. Such programs bridge the gap between hospital-centered medical therapy and the patient's daily lived reality, offering a comprehensive framework to buffer the psychological impact of the disease (Hakel et al., 2020).

The nurse's role in this community-tailored intervention focuses on providing integrated biopsychosocial support, specialized education, and continuous monitoring to mitigate perinatal depression, improve body image, and promote offspring emotional well-being (Saharoy et al., 2023). Nurses screen for depressive symptoms, deliver cognitive-behavioral counseling to address body image disturbances from renal therapy and pregnancy, and guide mothers on secure bonding techniques to protect the child's development (Kaur et al., 2026). Additionally, they coordinate care across multidisciplinary teams including nephrology, obstetrics, and pediatrics to ensure treatment adherence while engaging families to build a strong at-home support system for the mother (Sahupala & Wardaningsih, 2026).

Significance of the Study

To address this critical gap in holistic care, the current study evaluated the impact of a structured, community-tailored supportive intervention designed specifically for female hemodialysis patients of childbearing age. By implementing a targeted regimen of biopsychosocial counseling, cognitive guidance, and peer support, this study aimed to systematically reduce perinatal depressive symptoms and alleviate body image disturbances among these patients. Furthermore, this investigation extended its scope to evaluate the secondary, long-term benefits of enhanced maternal mental health on the emotional well-being and behavioral stability of their offspring. The findings seek to

provide an empirical foundation for reforming clinical guidelines, advocating for the mandatory integration of specialized psychosocial support within multidisciplinary nephrology and obstetric care protocols.

Aim of the study:

This study evaluated the impact of a community-tailored supportive intervention for female hemodialysis patients of childbearing age on perinatal depressive symptoms, body image disturbance, and offspring emotional well-being.

Research Hypotheses

- **Hypothesis 1 :** Female hemodialysis patients of childbearing age who receive the community-tailored supportive intervention will exhibit a statistically significant reduction in the severity of perinatal depressive symptoms (as measured by the EPDS) compared to those who receive standard routine care.
- **Hypothesis 2 :** Female hemodialysis patients of childbearing age who receive the community-tailored supportive intervention will demonstrate statistically significant improvements in body image acceptance and a decrease in body image disturbance (as measured by the MBSRQ-AS subscales) compared to those who receive standard routine care.
- **Hypothesis 3 :** The offspring of female hemodialysis patients who participate in the community-tailored supportive intervention will exhibit significantly higher levels of emotional well-being, characterized by lower total difficulty scores and higher Prosocial behavior scores (as measured by the parent-report SDQ), compared to the offspring of mothers in the control group.

Operational Definitions

- **Community-Tailored Supportive Intervention:** A structured program integrating psychosocial counseling, cognitive-behavioral guidance, and culturally relevant peer support, customized to address the unique social roles and medical needs of young female hemodialysis patients.
- **Perinatal Depressive Symptoms:** Affective and somatic indicators of depression occurring during pregnancy or up to one year postpartum,

quantified using the Edinburgh Perinatal Depression Scale (EPDS).

- **Body Image Disturbance:** Attitudinal dissatisfaction and excessive cognitive preoccupation with physical appearance altered by chronic uremia and pregnancy, measured via the Multidimensional Body Image Relations Questionnaire-Appearance Scales (MBSRQ-AS).
- **Offspring Emotional Well-being:** The behavioral, emotional, and social adaptation of the patients' children, evaluated via the parent-report version of the Strengths and Difficulties Questionnaire (SDQ).

Subjects and Method

Research Design

A quasi-experimental (pretest-posttest control group) research design was utilized to achieve the objectives of the study. This design allowed for the evaluation of the community-tailored supportive intervention's efficacy by comparing the intervention group against a non-equivalent control group.

Setting

The study was conducted in the hemodialysis units and outpatient gynecology/obstetrics clinics at Sohag university hospitals. These settings were selected because they serve as regional referral centers, providing a high density of end-stage renal disease (ESRD) patients undergoing maintenance therapy.

4. Subjects

A purposive sample of 50 female hemodialysis patients of childbearing age was recruited. The participants were assigned into two equal groups:

1. **Intervention Group (n = 25):** Received the community-tailored supportive intervention alongside standard medical care.
2. **Control Group (n = 25):** Received only standard routine medical and obstetric care.

Inclusion Criteria:

- Confirmed diagnosis of end-stage renal disease on maintenance hemodialysis for at least 6 months.

- Of reproductive age (18–45 years old).
- Currently in the perinatal period (pregnant or within one year postpartum).
- Having at least one child aged 2 to 17 years (for the offspring assessment component).
- Willing to participate voluntarily in the study.

Exclusion Criteria:

- Patients with a pre-existing history of severe psychotic disorders or major cognitive impairments prior to dialysis initiation.
- Unstable medical conditions requiring acute intensive care hospitalization.

Data collection tools:

Tool I. Sociodemographic and Clinical Questionnaire

- **Description:** A investigator-developed tool to capture baseline characteristics.
- **Variables Covered:**
 1. *Sociodemographic:* Age, education level, employment status, marital status, and monthly income.
 2. *Clinical:* Hemodialysis duration (years), frequency of sessions, parity/gravidity, gestational age (if pregnant), current medications, and primary cause of renal failure.

Tool II. Edinburgh Perinatal Depression Scale (EPDS)

- A widely accepted 10-item self-report instrument used to screen for perinatal and postpartum depressive symptoms (Cox et al., 1987).
- **Scoring System:**
 - **Items:** 10 questions scored on a 4-point Likert scale (0 to 3).
 - **Reverse Scoring:** Items 3, 5, 6, 7, 8, 9, and 10 are reverse-scored (3 to 0).
 - **Total Score:** Ranges from 0 to 30.
 - **Cut-off Value:** A total score of 10 or greater indicates possible depression, while a score of 13 or greater suggests a high probability of

clinical depression. Item 10 screens explicitly for suicidal ideation.

Tool III. Multidimensional Body Image Relations Questionnaire-Appearance Scales (MBSRQ-AS)

- A 34-item self-report scale engineered to assess the attitudinal aspects of body image, body satisfaction, and appearance orientation (Cash, 2000).

- **Subscales (5 Dimensions):**

1. *Appearance Evaluation (7 items):* Feelings of physical attractiveness.
2. *Appearance Orientation (12 items):* Investment in one's appearance.
3. *Overweight Preoccupation (4 items):* Fat anxiety and dieting behaviors.
4. *Self-Classified Weight (2 items):* Perception of weight from underweight to overweight.
5. *Body Areas Satisfaction Scale (BASS; 9 items):* Dissatisfaction or satisfaction with discrete body parts.

- **Scoring System:**

- **Items:** Rated on a 5-point Likert scale (1 = Definitely Disagree / Very Dissatisfied to 5 = Definitely Agree / Very Satisfied).
- **Scores:** Calculated by computing the **mean average score** of the items within each subscale (scores range from 1 to 5). Higher scores on Appearance Evaluation and BASS denote superior body satisfaction. Higher scores on Appearance Orientation and Overweight Preoccupation signify greater cognitive investment or distress regarding physical image.

Tool IV. Strengths and Difficulties Questionnaire (SDQ) - Parent Report Version

- A brief 25-item behavioral screening tool completed by mothers to assess the emotional and behavioral well-being of their offspring (ages 2–17) (Goodman, 1997).

- **Subscales (5 Dimensions, 5 items each):**

1. Emotional Symptoms
2. Conduct Problems
3. Hyperactivity/Inattention

4. Peer Relationship Problems

5. Prosocial Behavior

Scoring System:

- **Items:** Scored on a 3-point Likert scale: *Not True* (0), *Somewhat True* (1), and *Certainly True* (2).
- **Reverse Scoring:** Five specific items across the difficulties subscales are reverse-scored (2, 1, 0).
- **Total Difficulties Score:** Sum of the first four subscales (Emotional + Conduct + Hyperactivity + Peer Problems), ranging from **0 to 40**. Higher scores mean higher distress.
- **Prosocial Behavior Score:** Calculated independently (0 to 10); a higher score implies strong emotional well-being and positive social skills.

Validity of the Tools

The tools were submitted to a jury panel consisting of five experts: two in Psychiatric-Mental Health Nursing, two in Community Health Nursing, Medical-Surgical Nursing, and one consultant in Nephrology and Obstetrics. The experts reviewed the tools for clarity, relevance, comprehensiveness, wording, and applicability to the local community and cultural context. Modifications were made based on their feedback, which primarily included simplifying medical terminology and refining the phrasing of sensitive items regarding body dissatisfaction and postpartum mood changes.

Reliability of the Tools

The internal consistency and reliability of the standardized scales were statistically assessed using Cronbach's alpha coefficient to guarantee stability and homogeneity.

- **Edinburgh Perinatal Depression Scale (EPDS):** Demonstrated strong internal consistency with a Cronbach's alpha value of 0.85.

- **Multidimensional Body Image Relations Questionnaire-Appearance Scales (MBSRQ-AS):** Yielded an overall reliability coefficient of 0.82.

- **Strengths and Difficulties Questionnaire (SDQ):** Showed an acceptable internal consistency with a Cronbach's alpha of 0.80

for the total difficulties score and 0.79 for the prosocial behavior subscale.

Pilot Study

A pilot study was conducted on 10% of the total sample ($n = 5$) female hemodialysis patients) who met the inclusion criteria. The primary objectives of the pilot study were to test the clarity, feasibility, and unambiguous nature of the statements within the data collection tools. Estimate the exact time required to complete the questionnaires for each participant (which averaged 30–45 minutes). Identify potential administrative obstacles or environmental challenges within the hemodialysis units and outpatient clinics during data collection. Because no changes were made to the instruments following the pilot phase, the five patients who participated in the pilot study were **included** in the final sample ($N = 50$).

Ethical Considerations

Official administrative permissions and ethical approval were secured from the Institutional Research Ethics Committee of the participating university and tertiary hospitals before initiating the study Faculty of Nursing, Sohag University. It was approved by the number of (152/ 12-2024). Prior to recruitment, the investigator provided a clear oral explanation of the study's nature, purpose, benefits, and longitudinal timeline to each participant. Informed written or thumbprint consent was obtained voluntarily from all eligible patients. Total anonymity was guaranteed by assigning a unique identification code number to each patient rather than using personal names. All collected data were securely stored in encrypted digital files, accessed only by the primary investigator, and used strictly for academic research purposes. Patients were explicitly informed of their absolute right to refuse participation or withdraw from the study at any absolute point without facing any form of penalty, discrimination, or compromise to their routine medical and obstetric care.

Procedure (Fieldwork Steps)

The execution of this study was systematically carried out across four chronological phases extending from March 2025 to August 2025, following a standardized field track:

Phase 1: Administrative and Preparatory Phase

- **Official Permissions:** Data collection commenced after securing formal approval from the Institutional Research and Ethics Committee. Official administrative letters were addressed to the hospital directors, heads of nephrology departments, and nursing directors of the selected Sohag university and tertiary healthcare centers to explain the study's scope and clinical utility.
- **Setting Logistics:** Dedicated private counseling spaces within the outpatient gynecology clinics and quiet structural areas within the hemodialysis units were reserved to ensure privacy and total confidentiality during individual and small-group interaction.
- **Tool Refinement:** This phase also incorporated the validation and translation of the study tools, followed by the execution of the pilot study on 10% of the sample ($n=5$) to test operational feasibility.

Phase 2: Assessment Phase (Pre-test)

- **Screening and Recruitment:** The primary investigator and trained facilitators screened female patients during their regular morning and afternoon hemodialysis shifts or outpatient perinatal follow-ups against the inclusion/exclusion criteria.
- **Group Assignment:** The first 25 eligible patients who consented to participate were allocated to the intervention group, while the subsequent 25 patients were assigned to the control group to prevent treatment contamination between participants in the same unit.
- **Baseline Measurement:** Individual face-to-face interviews lasting 30 to 45 minutes were conducted with all 50 participants to complete the Sociodemographic and Clinical Questionnaire, the EPDS (for perinatal depression), the MBSRQ-AS (for body image), and the parent-report SDQ (for offspring behavioral assessment).

Phase 3: Implementation Phase (Intervention Track)

- **The Control Group ($n = 25$):** Received only the standard routine hospital care, which included clinical monitoring of fluid/electrolyte balance, routine medical checks by nephrologists, and standard maternal

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care education provided by the hospital nursing staff.

- **The Intervention Group (n = 25):** Participated in the community-tailored supportive intervention, which was structured into 8 consecutive weekly sessions (45–60 minutes per session).
- **Delivery Structure:** The sessions were facilitated by the designated nursing specialists using a hybrid model of individual psycho educational counseling and small-group dynamics (3–5 peers). Handouts and the custom Arabic educational booklet were distributed during the first session. Facilitators utilized interactive visual slides, relaxation audio clips via smartphones, and practical homework assignments to ensure clinical retention.

Timeline and Content of the Intervention Sessions

The community-tailored supportive intervention was delivered over a structured 8-week period, consisting of 8 consecutive weekly sessions. Each session lasted between 45 to 60 minutes and was conducted in a dedicated, private counseling room within the outpatient clinic or during the first two hours of the patients' hemodialysis shifts (when patients are most alert).

The program utilized a hybrid delivery model combining individual psycho educational counseling (for personalized cognitive strategies) and small peer-group interactive discussions (3–5 patients per group) to foster shared experiences and cultural community validation.

Session 1: Orientation, Trust Building, and Needs Assessment

- **Objectives:** Establish therapeutic alliance; explain program goals, duration, and expectations; assess individual baseline stressors.
- **Content:**
 - Welcoming participants and ice-breaking exercises to facilitate group cohesion.
 - Establishing group rules (confidentiality, mutual respect, and active listening).

- Discussion of the dual challenges of managing chronic hemodialysis while fulfilling reproductive and maternal roles.
- Distribution of the intervention educational booklet (written in simple, culturally appropriate Arabic with illustrative guides).
- **Homework Assignment:** Complete a daily mood diary tracking emotional triggers related to medical treatment.

Session 2: Psycho education on Chronic Kidney Disease (CKD) and Perinatal Depression

- **Objectives:** Enhance literacy regarding perinatal mental health; normalize emotional distress; de-stigmatize depressive symptoms within the family/community.
- **Content:**
 - Review of the physiological interaction between hemodialysis, hormonal fluctuations, and maternal mood.
 - Differentiating between normal pregnancy-related fatigue and clinical perinatal depressive symptoms.
 - Educating patients on the early signs of emotional burnout.
 - Interactive discussion on how untreated maternal depression affects medical adherence (fluid restrictions, dietary compliance) and fetal/infant development.
- **Homework Assignment:** Identify and write down three personal maternal strengths and three medical coping strategies used in the past.

Session 3: Cognitive Behavioral Strategies for Mood Management (CBT)

- **Objectives:** Introduce basic cognitive restructuring; identify and challenge cognitive distortions (e.g., catastrophizing, "all-or-nothing" thinking).
- **Content:**
 - Introduction to the Cognitive Triangle (the interconnectedness of Thoughts, Feelings, and Behaviors).
 - Identifying automatic negative thoughts (ANTs) related to being a "chronically ill mother" or "incomplete caregiver."

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- Techniques for reframing negative self-talk into realistic, adaptive, and compassionate cognitions.
- Behavioral activation: Planning one small, achievable, and enjoyable non-medical daily activity.
- **Homework Assignment:** Utilize the "Thought Record Sheet" to catch, challenge, and reframe one negative thought daily.
- tailored for dialysis patients (avoiding strain on the access arm/fistula site).
- Guided imagery techniques focused on creating a psychological "safe space" during dialysis sessions.
- **Homework Assignment:** Practice diaphragmatic breathing for 10 minutes twice daily and during the initiation of the needle cannulation process.

Session 4: Body Image Restructuring and Somatic Acceptance

- **Objectives:** Alleviate distress regarding uremia- and pregnancy-induced physical alterations; foster somatic self-compassion.
- **Content:**
 - Open discussion about community stigma and personal feelings regarding visible dialysis markers (arteriovenous fistulas, central lines, skin hyperpigmentation, surgical scars).
 - Addressing the intersection of pregnancy-related body changes with chronic illness modifications.
 - Cognitive restructuring targeting appearance-related dissatisfaction (separating personal worth from physical appearance).
 - Guided mirror-exposure and body-neutrality exercises focusing on appreciation for what the body achieves functionally (e.g., maintaining life, sustaining a pregnancy).
- **Homework Assignment:** Practice the "Body Gratitude Exercise" focusing on non-aesthetic strengths of the physical self.

Session 5: Stress Management and Physiological Coping Techniques

- **Objectives:** Teach practical physiological relaxation skills to manage acute medical anxiety and maternal stress.
- **Content:**
 - Discussion on how psychological stress triggers physical uremic symptoms and spikes blood pressure during dialysis.
 - Training on **Deep Diaphragmatic Breathing** exercises.
 - Step-by-step instruction and live practice of **Progressive Muscle Relaxation (PMR)**

Session 6: Enhancing Maternal-Fetal Attachment and Early Dyadic Bonding

- **Objectives:** Promote early emotional bonding; enhance maternal sensitivity; prepare for responsive caregiving despite medical limitations.
- **Content:**
 - *For pregnant patients:* Techniques for prenatal bonding (talking to the fetus, responding to fetal movements, mindfulness during fetal kicking).
 - *For postpartum patients:* Maximizing quality infant interaction time; identifying infant behavioral cues and distress signals.
 - Strategies for managing mother-infant separation during long dialysis shifts (e.g., recording the mother's voice, utilizing transitional objects like a worn shirt).
 - Education on positive parenting styles and managing the emotional stability of older offspring.
- **Homework Assignment:** Dedicate 15 minutes of uninterrupted, highly responsive bonding time with the child/fetus daily, free from medical or digital distractions.

Session 7: Mobilizing Social and Community Support Networks

- **Objectives:** Identify available support systems; overcome barriers to asking for help; enhance community integration.
- **Content:**
 - Mapping the patient's current social network using an Ecomap (identifying family, friends, neighbors, healthcare staff, and religious/community centers).

- Assertiveness training: How to communicate clear physical and emotional boundaries to family members.
- Differentiating between instrumental support (e.g., child care, cooking, transport to dialysis) and emotional support.
- Peer-led panel: Experienced hemodialysis mothers share strategies for successfully delegating responsibilities without experiencing maternal guilt.
- **Homework Assignment:** Request and accept one specific piece of instrumental help from a family member or community peer this week.

Session 8: Relapse Prevention, Termination, and Future Planning

- **Objectives:** Consolidate learned skills; formulate a long-term self-care and mental health maintenance plan; terminate the therapeutic group relationship safely.
- **Content:**
 - Review of the core concepts covered across the previous seven sessions (CBT, body image, relaxation, bonding, and support).
 - Identifying potential future stressors (e.g., upcoming surgeries, medical setbacks, child milestones).
 - Developing an individualized "Mental Health Crisis Plan" (recognizing early warning signs of depressive relapse and listing immediate emergency contacts).
 - Celebrating patient achievements, certificate distribution, and feedback collection.
- **Homework Assignment:** Commit to a continuous weekly self-care routine and maintain contact with designated peer group partners.

Teaching Methods and Instructional Materials

To maximize patient engagement, accommodate varying educational backgrounds, and overcome the cognitive fatigue often associated with chronic uremia, a participant-centered, multi-sensory teaching approach was utilized. The intervention combined traditional didactic methods with interactive, experiential, and behavioral learning strategies.

1. Teaching Methods:

- **Interactive Lectures and Guided Discussions:** Brief, simplified lectures (15–20 minutes) were used to introduce core theoretical concepts, such as the biology of perinatal depression or the cognitive triangle. This was immediately followed by semi-structured group discussions to allow patients to share personal lived experiences.
- **Brainstorming:** Used at the beginning of sessions to assess patients' existing knowledge or preconceptions (e.g., brainstorming visible bodily changes caused by dialysis and pregnancy before discussing body image).
- **Role-Playing and Behavioral Rehearsal:** Participants engaged in simulated scenarios to practice new skills in a safe environment. This included role-playing assertiveness techniques to communicate physical boundaries to family members or practicing how to handle community stigma regarding dialysis access lines.
- **Demonstration and Re-demonstration:** The investigator physically demonstrated physiological relaxation techniques, including deep diaphragmatic breathing and Progressive Muscle Relaxation (PMR). Patients then re-demonstrated these techniques under direct supervision to ensure proper execution without straining arteriovenous fistulas.
- **Peer Modeling and Storytelling:** Experienced mothers on hemodialysis within the group shared successful coping mechanisms, which served as powerful vicarious learning experiences for younger or newly diagnosed patients.

2. Instructional Materials:

- **Customized Educational Booklet (Brochure/Manual):** A comprehensive, illustrated booklet written in clear, simplified, and culturally resonant Arabic was distributed to all intervention participants during the first session. It contained summaries of each session, step-by-step guides for relaxation exercises, cognitive reframing worksheets, and a directory of local psychological and community resources.
- **PowerPoint Presentations:** Visually engaging slideshows with large fonts, minimal text, and high-quality graphics were projected during group sessions to sustain attention and highlight core concepts (e.g., mapping automatic negative thoughts).

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- **Video Clips:** Short, culturally appropriate animated videos and real-life documentary clips (2–3 minutes long) were used to illustrate topics such as maternal-fetal attachment behaviors, infant communication cues, and testimonies of women overcoming postpartum distress.
- **Auditory Relaxation Tracks:** Pre-recorded audio files containing guided imagery and PMR instructions set to soft, culturally acceptable background ambient sounds were shared with participants via smartphones (e.g., WhatsApp). This allowed patients to practice relaxation at home or during stressful needle cannulation procedures in the dialysis ward.
- **Visual Logs and Worksheets:** Printed daily mood diaries, "Thought Record Sheets," and body gratitude checklists were provided in a structured binder to facilitate homework compliance and self-monitoring.

Table 1: Structural Framework, Timeline, and Content of the Community-Tailored Supportive Intervention (N=25)

Session & Timeline	Core Topic	Specific Objectives	Teaching Methods	Instructional & Training Materials
Session 1 (Week 1 / 45-60 min)	Orientation & Trust Building	• Establish therapeutic alliance. • Outline program goals and expectations. • Assess baseline psychosocial stressors.	• Ice-breaking exercises • Interactive lecture • Group discussion	• Intervention educational booklet • Daily mood logs • Visual posters
Session 2 (Week 2 / 45-60 min)	CKD & Perinatal Depression Psychoeducation	• Improve mental health literacy. • Normalize emotional distress. • De-stigmatize depressive symptoms.	• Brainstorming • Short didactic lecture • Guided discussion	• PowerPoint presentations • Educational brochure • Illustrative graphs
Session 3 (Week 3 / 45-60 min)	Cognitive Behavioral Therapy (CBT) Strategies	• Introduce cognitive restructuring. • Identify and challenge negative thoughts. • Initiate behavioral activation.	• Interactive lecture • Role-playing • Behavioral rehearsal	• Cognitive Triangle charts • Thought Record Sheets • Achievable activity planners
Session 4 (Week 4 / 45-60 min)	Body Image & Somatic Acceptance	• Alleviate distress over physical changes. • Separate self-worth from appearance. • Foster body neutrality.	• Guided mirror exposure • Peer modeling • Open group discussion	• Self-compassion booklets • Body Gratitude checklists • Visual media clips
Session 5 (Week 5 / 45-60 min)	Stress Management & Relaxation	• Teach physiological coping skills. • Reduce clinical needle anxiety. • Lower somatic stress response.	• Direct demonstration • Participant re-demonstration • Experiential learning	• Auditory relaxation tracks (PMR) • Breathing exercise guides • Smartphone audio clips
Session 6 (Week 6 / 45-60 min)	Maternal Attachment & Offspring Bonding	• Promote prenatal and postnatal bonding. • Identify infant distress cues.	• Case analysis • Interactive lecture • Group storytelling	• Short documentary video clips • Infant communication charts • Parenting skill manuals

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		• Enhance maternal sensitivity.
Session 7 <i>(Week 7 / 45-60 min)</i>	Social & Community Support Mobilization	• Map accessible support systems. • Train in assertive communication. • Delegate maternal load safely.
Session 8 <i>(Week 8 / 45-60 min)</i>	Relapse Prevention & Termination	• Consolidate intervention skills. • Formulate mental health maintenance plan. • Close group relationship safely.

Phase 4: Evaluation and Follow-up Phase (Post-test)

- **Immediate Post-test:** Upon the completion of the 8-week program, both the intervention and control groups were immediately reassessed using the same psychological and behavioral instruments (EPDS, MBSRQ-AS, and SDQ) to evaluate immediate short-term efficacy.
- **Longitudinal Follow-up:** A longitudinal assessment was performed for both groups three months post-intervention to determine the stability and sustained long-term impacts of the community-tailored intervention on maternal mental health, body image adjustments, and subsequent offspring emotional stability.

Statistical Analysis

Data entry, coding, processing, and statistical analyses were performed using the Statistical Package for Social Sciences (SPSS) software, version 26.0. Qualitative (categorical) variables were expressed as frequencies and

percentages, and analyzed using the **Chi-square test** when expected cell counts were small. Quantitative (continuous) variables were tested for normality using the Shapiro-Wilk test; normally distributed data were expressed as means and standard deviations. To assess the efficacy of the community-tailored supportive intervention, the following inferential statistics were applied: **Independent t-test:** Employed to compare the mean scores of maternal depression (EPDS), body image dimensions (MBSRQ-AS), and offspring behaviors (SDQ) *between* the intervention and control groups at baseline, post-intervention, and follow-up phases. **Paired t-test:** Used to measure internal statistical differences within the *same group* across different timelines (pre-test vs. post-test vs. follow-up). **Analysis of Covariance (ANCOVA):** Applied during post-test evaluation to control for any baseline sociodemographic or clinical confounding variables between the non-equivalent groups. A statistically significant difference was strictly established at a p-value of <0.05, whereas a p-value of <0.01 was considered highly statistically significant.

Results:

Table 1: Sociodemographic and Clinical Characteristics of the Studied Samples (N=50)

Variables	Intervention Group (n=25)	Control Group (n=25)	Test of Sig. (χ^2 / t)	p-value
Maternal Age (Years) (Mean $\pm$ SD)	31.4 $\pm$ 4.2	32.1 $\pm$ 3.9	t = 0.61	0.545 (NS)
Education Level				
• Illiterate / Primary	5 (20.0%)	6 (24.0%)	χ^2 = 0.23	0.891 (NS)
• Secondary / Technical	12 (48.0%)	11 (44.0%)		
• University Graduate	8 (32.0%)	8 (32.0%)		
Employment Status				

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• Unemployed / Housewife	18 (72.0%)	19 (76.0%)	$\chi^2 = 0.10$	0.748 (NS)
• Employed	7 (28.0%)	6 (24.0%)		
Hemodialysis Duration (Years) (Mean $\pm$ SD)	3.8 $\pm$ 1.4	3.5 $\pm$ 1.2	t = 0.81	0.422 (NS)
Perinatal Stage				
• Pregnant	11 (44.0%)	10 (40.0%)	$\chi^2 = 0.08$	0.774 (NS)
• Postpartum (<1 year)	14 (56.0%)	15 (60.0%)		

Note: NS = Statistically Non-Significant ($p > 0.05$).

Table 1 demonstrates that there were no statistically significant differences ($p > 0.05$) between the intervention and control groups regarding their sociodemographic and clinical characteristics. The mean age of the intervention group was 31.4 ± 4.2 years compared to 32.1 ± 3.9 years in the control group.

Table 2: Comparison of Perinatal Depressive Symptoms (EPDS) Mean Scores Between Both Groups Across Study Phases (N=50)

Study Phases	Intervention Group (n=25) (Mean $\pm$ SD)	Control Group (n=25) (Mean $\pm$ SD)	Independent t-test	p-value
Pre-Intervention (Baseline)	14.8 $\pm$ 3.1	14.5 $\pm$ 2.9	0.35	0.728 (NS)
Immediate Post-Intervention	8.2 $\pm$ 2.0	14.1 $\pm$ 2.7	8.79	< 0.001 (HS)
3-Month Follow-Up	8.9 $\pm$ 2.2	14.6 $\pm$ 3.0	7.67	< 0.001 (HS)
Paired t-test (Pre vs. Follow-up)	t = 8.12, p < 0.001	t = 0.14, p = —	0.889	—

Note: HS = Highly Statistically Significant ($p < 0.001$); NS = Non-Significant ($p > 0.05$).

Table 2 displays a highly significant variation in maternal depressive symptoms between the two studied groups following the intervention track. At baseline, both the intervention and control groups exhibited elevated mean EPDS scores (14.8 ± 3.1 and 14.5 ± 2.9 , respectively), indicating a high probability of clinical perinatal depression. Immediately post-intervention, the intervention group's mean score fell substantially to 8.2 ± 2.0 , dropping below the clinical depression threshold (≥ 10), whereas the control group remained high (14.1 ± 2.7). This therapeutic improvement was maintained over time, as verified by the 3-month follow-up data (8.9 ± 2.2 vs. 14.6 ± 3.0 ; $p < 0.001$).

Table 3: Comparison of Body Image Relations (MBSRQ-AS Subscales) Mean Scores Across Study Phases (N=50)

MBSRQ-AS Subscales	Study Phases	Intervention (n=25) (Mean $\pm$ SD)	Control (n=25) (Mean SD)	Independent t-test	p-value
Appearance Evaluation (Score range: 1–5)	• Pre-test	2.1 $\pm$ 0.4	2.2 $\pm$ 0.5	0.78	0.439 (NS)
	• Post-test	3.9 $\pm$ 0.5	2.3 $\pm$ 0.4	12.50	<0.001 (HS)
	• Follow-up	3.8 $\pm$ 0.6	2.1 $\pm$ 0.5	10.89	<0.001 (HS)
Appearance Orientation (Score range: 1–5)	• Pre-test	4.2 $\pm$ 0.6	4.1 $\pm$ 0.5	0.64	0.525 (NS)
	• Post-test	3.1 $\pm$ 0.4	4.2 $\pm$ 0.6	7.64	<0.001 (HS)
	• Follow-up	3.2 $\pm$ 0.5	4.3 $\pm$ 0.4	8.59	<0.001 (HS)
Body Satisfaction (Score range: 1–5)	• Pre-test	1.9 $\pm$ 0.3	2.0 $\pm$ 0.4	1.00	0.322 (NS)
	• Post-test	3.7 $\pm$ 0.4	1.9 $\pm$ 0.5	14.17	<0.001 (HS)
	• Follow-up	3.5 $\pm$ 0.5	1.8 $\pm$ 0.4	13.28	<0.001 (HS)

up

Table 3 outlines the impact of the supportive program on patients' attitudinal body image. Prior to the intervention, both groups reported very low scores in Appearance Evaluation and Body Areas Satisfaction (BASS), paired with high Appearance Orientation scores, reflecting severe distress over somatic alterations from uremia and perinatal shifts. Post-intervention, the intervention group experienced a marked shift, with Appearance Evaluation scores increasing from 2.1 ± 0.4 to 3.9 ± 0.5 , and BASS scores rising to 3.7 ± 0.4 , demonstrating enhanced physical self-acceptance. Conversely, cognitive preoccupation and distress (Appearance Orientation) decreased significantly to 3.1 ± 0.4 ($p < 0.001$).

Table 4: Offspring Behavioral and Emotional Adaptation Outcomes (SDQ Scores) at 3-Month Follow-Up (N=50)

SDQ Domains	Intervention Group (n=25) (Mean $\pm$ SD)	Control Group (n=25) (Mean $\pm$ SD)	Independent t-test	p-value
Emotional Symptoms (0–10)	2.4 $\pm$ 0.9	4.8 $\pm$ 1.2	8.00	< 0.001 (HS)
Conduct Problems (0–10)	1.8 $\pm$ 0.7	3.5 $\pm$ 1.1	6.51	< 0.001 (HS)
Hyperactivity / Inattention (0–10)	3.1 $\pm$ 1.1	5.2 $\pm$ 1.4	5.88	< 0.001 (HS)
Peer Relationship Problems (0–10)	2.0 $\pm$ 0.8	3.9 $\pm$ 1.0	7.42	< 0.001 (HS)
Total Difficulties Score (0–40)	9.3 $\pm$ 2.4	17.4 $\pm$ 3.6	9.38	<0.001 (HS)
Prosocial Behavior (0–10)	7.9 $\pm$ 1.2	5.1 $\pm$ 1.4	7.59	< 0.001 (HS)

Table 4 illustrates the secondary long-term effects of the intervention on offspring psychological and behavioral adaptation at the 3-month follow-up. The children of mothers in the intervention group achieved a significantly lower Mean Total Difficulties Score (9.3 ± 2.4) compared to those in the control group (17.4 ± 3.6), demonstrating a robust statistical variance ($t = 9.38$, $p < 0.001$). Looking at individual subscales, children in the intervention track showed significantly less emotional distress (2.4 ± 0.9), fewer conduct problems (1.8 ± 0.7), and reduced hyperactivity (3.1 ± 1.1). Concurrently, their Prosocial Behavior scores were significantly higher (7.9 ± 1.2 vs. 5.1 ± 1.4 ; $p < 0.001$).

Table 5: Association Between Sociodemographic/Clinical Characteristics and Severe Perinatal Depression (Baseline EPDS $\geq$ 13) Among All Studied Patients (N=50)

Characteristics	Severe Depression (EPDS ≥ 13) (n=29)	No/Mild Depression (EPDS < 13) (n=21)	Test of Significance	p-value
Maternal Age (Years)				
• < 30	16 (55.2%)	6 (28.6%)	$\chi^2 = 3.54$	0.060 (NS)
• ≥ 30	13 (44.8%)	15 (71.4%)		
Education Level				
• Illiterate / Primary	9 (31.0%)	2 (9.5%)	$\chi^2 = 6.22$	0.045*
• Secondary / Technical	15 (51.7%)	8 (38.1%)		
• University Graduate	5 (17.3%)	11 (52.4%)		
Employment Status				
• Unemployed Housewife	25 (86.2%)	12 (57.1%)	$\chi^2 = 5.43$	0.020*
• Employed	4 (13.8%)	9 (42.9%)		
Hemodialysis Duration				

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• < 3 Years	8 (27.6%)	12 (57.1%)	$\chi^2 = 4.41$	0.036*
• ≥ 3 Years	21 (72.4%)	9 (42.9%)		

Note: χ^2 = Chi-square test; * = Statistically Significant at $p < 0.05$; NS = Non-Significant ($p > 0.05$).

Table 5 illustrates the statistical associations between baseline maternal characteristics and the severity of perinatal depression across the entire sample before the intervention. A statistically significant association was found between severe depression (EPDS ≥ 13) and maternal education ($p = 0.045$), with illiterate or primary-educated patients representing the highest percentage of severe cases (31.0%). Employment status also demonstrated a significant impact ($p = 0.020$), as 86.2% of severely depressed mothers were unemployed housewives. Furthermore, a highly significant association was observed regarding the clinical history of the disease; patients with a dialysis history of 3 years or longer were significantly more vulnerable to severe perinatal depression compared to those with shorter durations (72.4% vs. 27.6%; $p = 0.036$). No significant relation was established regarding maternal age.

Table 6: Pearson Correlation Matrix Between Maternal Psychological Measures and Offspring Behavioral Outcomes at 3-Month Follow-Up (N=50)

Variables	(1) Perinatal Depression (EPDS)	(2) Appearance Evaluation	(3) Appearance Orientation	(4) Body Areas Satisfaction	(5) Offspring Total Difficulties (SDQ)	(6) Offspring Prosocial Behavior
(1) Perinatal Depression (EPDS)	1					
(2) Appearance Evaluation	-0.54**	1				
(3) Appearance Orientation	0.48**	-0.39**	1			
(4) Body Areas Satisfaction (BASS)	-0.61**	0.72**	-0.42**	1		
(5) Offspring Total Difficulties (SDQ)	0.65**	-0.49**	0.36*	-0.52**	1	
(6) Offspring Prosocial Behavior	-0.58**	0.41**	-0.29*	0.46**	-0.70**	1

Note: * = Correlation is significant at the 0.05 level (2-tailed); ** = Correlation is significant at the 0.01 level (2-tailed).

Table 6 presents the Pearson correlation coefficient (r) matrix, mapping the linear relationships between maternal mental health, body image subscales, and offspring behavioral adaptation. The analysis indicates a highly significant positive correlation between maternal perinatal depression and offspring total difficulties on the SDQ ($r = 0.65$, $p < 0.01$).

Regarding body image, maternal depression was significantly and negatively correlated with both Appearance Evaluation ($r = -0.54$, $p < 0.01$) and Body Areas Satisfaction ($r = -0.61$, $p < 0.01$), but positively correlated with Appearance Orientation ($r = 0.48$, $p < 0.01$). Crucially, a child's behavioral problems (SDQ) were significantly worsened by lower maternal body satisfaction ($r = -0.52$) and higher maternal appearance anxiety ($r = 0.36$), while positive maternal body-image evaluation significantly predicted higher prosocial behavior in their offspring ($r = 0.41$, $p < 0.01$).

Discussion:

The current study addressed a critical but frequently overlooked area in nephrological and perinatal care: the efficacy of a community-tailored supportive intervention on perinatal depression, body image disturbance, and subsequent offspring emotional well-being among reproductive-aged female hemodialysis patients. Managing end-stage renal disease (ESRD) while navigating pregnancy or early motherhood subjects women to extreme physiological and psychological demands. The

discussion below interprets the empirical findings within the context of recent global literature.

The baseline statistical analysis demonstrated clear structural and sociodemographic homogeneity between the intervention and control groups, with no significant differences observed in variables such as maternal age, educational background, employment status, or dialysis duration. This baseline equivalence is crucial in quasi-experimental designs utilizing convenience sampling, as it minimizes selection bias and ensures that post-intervention variations can be directly attributed to the therapeutic program rather than pre-existing confounding variables.

This demographic profile aligns with recent studies by **Bhasin et al. (2025)**, which indicated that the cohort of hemodialysis patients attempting or achieving pregnancy globally is typically clustered in the early-to-mid 30s due to improved intensive dialysis regimens that restore fertility during these peak reproductive years. The high percentage of unemployed housewives in both groups also reflects the heavy physical burden of maintenance dialysis, which often restricts women from maintaining formal external employment, a socioeconomic reality that coincides with regional data published by **Lev-Wiesel et al., (2022)**.

The baseline findings revealed dangerously elevated EPDS scores across the entire sample, confirming that clinical perinatal depression is a pervasive epidemic among female dialysis patients. This initial baseline severity **strongly supports** the assertions of **Ono et al. (2025)**, who highlighted that the dual anxiety of navigating a high-risk chronic illness alongside fetal safety fears exponentially drives maternal affective distress.

Following the implementation of the 8-week intervention, the highly significant drop in mean EPDS scores in the intervention group (from 14.8 to 8.2) which was successfully maintained at the 3-month follow-up presents robust empirical proof of the program's utility. This psychological improvement **is** in absolute agreement with a randomized controlled trial conducted by **Iacob et al. (2025)**, which demonstrated that structured cognitive-behavioral counseling and specialized peer-support circles significantly buffer postpartum depressive symptoms in women dealing with high-risk somatic conditions. The reduction in depression occurred because the intervention

provided these mothers with a "Cognitive Triangle" framework to actively challenge feelings of maternal inadequacy and health-related helplessness.

Conversely, these findings **contrast with** the earlier work of **Yang et al., (2024)**, who reported that generic, non-tailored psychiatric interventions yielded no significant reduction in depression scores among pregnant dialysis patients. This discrepancy emphasizes the necessity of the "community-tailored" aspect of our intervention; by incorporating culturally familiar coping mechanisms and involving local informal support networks (Session 7), the program successfully bridged the gap between sterile hospital protocols and the patients' real-life domestic challenges.

Prior to the program, patients exhibited profoundly low scores in Appearance Evaluation and Body Areas Satisfaction, accompanied by heightened cognitive preoccupation (Appearance Orientation). This baseline data **accords with** findings by **Lev-Wiesel et al., (2022)**, who documented that somatic alterations from advanced kidney failure such as hyperpigmentation, surgical scarring from arteriovenous fistulas, and fluctuations in dry weight profoundly damage female self-perception. When these chronic illness modifications intersect with the rapid, visible physical alterations of pregnancy, severe body image disturbance is triggered.

Post-test and follow-up data showed a highly statistically significant improvement in the intervention group's body image satisfaction and a sharp reduction in distress. This success **is consistent with** the cognitive behavioral restructuring models advocated by **Rahmani et al., (2025)**, which prove that attitudinal body image can be positively altered when patients are trained to separate their global self-worth from physical appearance. The execution of body-neutrality exercises and guided somatic-gratitude tasks (Session 4) successfully shifted the patients' focus from aesthetic compliance to functional appreciation for what their bodies achieve (e.g., sustaining life through dialysis while nurturing a child).

On the other hand, this finding differs from studies by **Lev-Wiesel et al., (2022)**, who concluded that body image dissatisfaction in hemodialysis patients remains relatively fixed over time due to the permanent nature of surgical scars and uremic skin modifications. Our study disproves this static view, demonstrating that while the physical markers

of dialysis remain unchanged, the *psychological interpretation* and *attitudinal distress* associated with those markers can be significantly modified through targeted community-tailored support.

One of the most compelling findings of this study is the secondary, long-term impact of the maternal intervention on their children. At the 3-month follow-up, offspring of mothers in the intervention group displayed significantly lower SDQ Total Difficulties scores and higher Prosocial Behavior scores compared to the control group. This intergenerational emotional stabilization powerfully validates the maternal-infant attachment theories updated by **Hoffmann et al., (2022)**, which confirm that reducing maternal depression directly removes a major obstacle to responsive caregiving and maternal sensitivity.

By equipping mothers with stress-management techniques (such as Progressive Muscle Relaxation) and strategies for early bonding under medical restrictions (Sessions 5 and 6), the intervention enabled these chronically ill mothers to provide a more stable, secure, and emotionally predictable environment for their children. The lower scores in emotional symptoms, conduct problems, and hyperactivity among the intervention group's children strongly echo the clinical findings of **Abera et al. (2024)**, who observed that children raised by mothers whose perinatal depression was successfully treated exhibited superior self-regulation and fewer behavioral adjustments.

In contrast, the control group's children continued to display elevated total difficulty scores, which **corresponds with** longitudinal data from **Oliver & Midouhas, (2023)** showing that chronic maternal distress, when left unmanaged in dialysis settings, creates a chaotic family environment that increases the child's vulnerability to early emotional and social maladaptation.

The statistical analysis revealed that the severity of perinatal depression among female hemodialysis patients is heavily mediated by specific sociodemographic and clinical risk factors. Specifically, lower education levels and unemployment were significantly associated with severe depressive states (EPDS < 13). This vulnerability **aligns with** the socioeconomic models of health updated by **Howard & Khalifeh, (2020)**, which postulate that lower educational attainment severely restricts health literacy and limits access to

adaptive cognitive coping resources. When paired with unemployment, patients face dual financial stress managing the high economic costs of ongoing end-stage renal disease (ESRD) therapy while lacking personal financial autonomy during pregnancy or the postpartum phase. This systemic dependency creates a baseline of chronic anxiety that accelerates the onset of major affective disorders.

Clinically, a longer duration of maintenance hemodialysis (≥ 3 years) was found to be a highly significant predictor of severe perinatal depression. This finding **is consistent with** longitudinal observations by **Luca et al., (2026)**, who noted that prolonged exposure to life-sustaining dialysis induces structural biological exhaustion. Over years of treatment, the cumulative burden of uremic toxicity, chronic anemia, severe fluid restrictions, and recurring cardiovascular shifts depletes the patient's physical resilience. When this chronic somatic depletion intersects with the physiological and hormonal upheavals of the perinatal state, the biological and psychological threshold for stress is breached, triggering severe depressive pathology.

The Pearson correlation matrix demonstrated a robust, highly significant bidirectional relationship between maternal affective states and attitudinal body image constructs. Maternal depression was strongly and negatively correlated with Appearance Evaluation and Body Areas Satisfaction, while displaying a significant positive correlation with Appearance Orientation. This complex matrix confirms the existence of a distressing psychosomatic loop in young female dialysis patients.

This correlation powerfully validates the cognitive-behavioral body image theories formulated by **Jaiswal et al., (2026)**, which indicate that individuals who place excessive cognitive investment in their appearance (high Appearance Orientation) are exceptionally vulnerable to emotional distress when their physical reality changes. Advanced kidney disease permanently alters the female body through structural scarring from arteriovenous fistulas, central venous lines, and uremic skin hyperpigmentation. When these changes are compounded by the rapid somatic modifications of the perinatal state, patients who over-monitor their appearance experience a profound collapse in self-esteem.

Our findings strongly echo the work of **Hards et al., (2023)**, who explained that this negative self-evaluation acts as a direct cognitive driver of clinical depression. The patient perceives her body not as a source of maternal life, but as a damaged, medicalized object, thereby worsening her depressive withdrawal.

Perhaps the most critical academic contribution of this correlation analysis is the clear empirical link established between maternal psychological distress and subsequent offspring behavioral adaptation. Maternal perinatal depression exhibited a highly significant positive correlation with Offspring Total Difficulties on the SDQ, alongside a strong negative correlation with Prosocial Behavior.

This pattern of intergenerational transmission coincides with and expands upon the maternal sensitivity frameworks documented by **Saharoy et al. (2023)**. Perinatal depression characterized by cognitive fatigue, emotional flatness, and high self-preoccupation directly impairs the mother's capacity to engage in responsive caregiving. Chronically ill mothers experiencing high levels of depression and body image distress struggle to accurately decode and promptly respond to their infant's or child's emotional and behavioral cues. This breakdown in early relational mechanics disrupts the development of a secure attachment style.

As a result, as demonstrated in our control sample and baseline data, the offspring develop early emotional instability, behavioral difficulties, conduct problems, and hyperactive tendencies due to an unpredictable domestic environment. Conversely, by demonstrating that lower maternal depression and improved body satisfaction significantly predict higher prosocial behaviors, our study provides solid empirical evidence that protecting maternal psychological well-being is an essential prerequisite for optimizing the emotional and social development of the next generation.

Conclusion

Based on the empirical findings of the current study, it can be concluded that the community-tailored supportive intervention is an exceptionally effective and high-utility therapeutic approach for female hemodialysis patients of childbearing age. The structured integration of cognitive-behavioral strategies, body image restructuring, and positive parenting guidelines successfully mitigated the

severity of perinatal depressive symptoms (EPDS scores) and substantially improved maternal body image acceptance (MBSRQ-AS subscales). Furthermore, the positive ramifications of enhanced maternal mental health extended directly to the next generation, as evidenced by a significant reduction in behavioral difficulties and an increase in prosocial behaviors among their offspring (SDQ scores). Ultimately, bridging the gap between hospital-centered medical therapy and the patient's socio-cultural reality provides a comprehensive protective buffer that improves long-term holistic health outcomes for both chronically ill mothers and their children.

Recommendations

To translate the empirical findings of this study into standard clinical practice and future research tracks, the following recommendations are proposed:

- Implementing routine, standardized mental health and body image screening protocols (using validated scales like the EPDS) for all female hemodialysis patients of reproductive age during regular dialysis shifts and perinatal follow-up visits.
- Formally integrating specialized psychiatric-mental health nurses and clinical psychologists into the core multidisciplinary care teams within nephrology units and obstetric outpatient clinics.
- Establishing structured community-tailored psychoeducational and support group programs as a routine, non-pharmacological adjunct to standard medical and obstetric care for chronically ill mothers.
- Developing and widely distributing simplified, bilingual (Arabic/English) illustrated educational brochures and multimedia digital resources (audio relaxation tracks, instructional video clips) focusing on somatic coping mechanisms and maternal-infant bonding under dialysis constraints.
- Actively involving husbands, primary family caregivers, and experienced peer mentors in counseling sessions to build a strong, sustainable community-based informal support network around the patient.
- Modifying the structural environment of hemodialysis units to provide private, quiet spaces that facilitate counseling sessions and

private mother-child dyadic bonding during or between treatment shifts.

- Providing continuous professional development workshops and training seminars for hemodialysis and obstetric nursing staff regarding the early detection of perinatal depression and the unique biopsychosocial vulnerabilities of this population.

Limitations of the Study:

- The utilization of a non-probability purposive sample restricts the external validity of the study. A total sample size of 50 participants (n=25 per group), while statistically sufficient for a highly specific and rare clinical population (pregnant or postpartum hemodialysis patients), limits the broader generalizability of the findings to different healthcare facilities, rural communities, or diverse geographical regions.
- Because a true randomized controlled trial (RCT) layout was not feasible due to administrative and logistical constraints within the dialysis units, a quasi-experimental design was applied. This approach presents a susceptibility to potential selection bias, although baseline socio-demographic and clinical homogeneity was strictly established to counteract this effect.

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Conflict of Interest

The author declares no potential conflicts of interest with respect to the research, authorship, and/or Publication of this article.

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