

CASE SERIES

# Supporting Maternal Role Attainment in Women with High-Risk Pregnancy after Infertility through the Integration of King's Goal Attainment and Mercer's Becoming a Mother Theories: A Case Series



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## Article Info

### Article History:

Received: 22 December 2023

Revised: 26 December 2025

Accepted: 29 December 2025

Online: 31 December 2025

### Keywords:

Becoming a mother;  
Goal attainment; high-risk pregnancy; infertility

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## Abstract

**Background:** Women with high-risk pregnancies following infertility are vulnerable to anxiety, which may contribute to adverse pregnancy outcomes and impaired prenatal attachment. While previous studies have examined anxiety in infertility or high-risk pregnancy separately, limited evidence exists on theory-based nursing interventions that integrate both conditions to support maternal role attainment. This study addresses this gap by applying an integrated nursing model based on King's Goal Attainment and Mercer's Becoming a Mother theories.

**Purpose:** This study aimed to describe how an integrated theory-based nursing model is operationalized within the nursing care process to support maternal role attainment in women with high-risk pregnancies following infertility.

**Methods:** This case series applied an integrated theory-based approach in the nursing care of five women. A seven-day nursing care period was provided to support learning and behavioral adaptation during pregnancy. Participants were pregnant women with a history of infertility who achieved natural conception and presented with high-risk conditions. The integrated model facilitated interactive communication, shared goal setting, and support for maternal role attainment.

**Results:** Participants demonstrated adequate knowledge and strong commitment to pregnancy care but experienced psychosocial challenges, suboptimal prenatal attachment, and limited preparation for childbearing. Theory-based nursing care actively engaged clients in problem identification, goal setting, and collaborative care planning, and was accompanied by improved understanding of health conditions, reduced anxiety, strengthened commitment to prenatal care, and enhanced prenatal attachment across cases.

**Conclusion:** Clients' participation supported maternal adaptation and role attainment during pregnancy. The integrated theory-based nursing model offers a practical and person-centered framework for women with high-risk pregnancies following infertility. The findings emphasize the importance of shared goal setting and interactive communication as core components of theory-based nursing care in this population.

**How to cite:** Parmawati, I., Afiyanti, Y., & Rachmawati, I. N. (2025). Supporting maternal role attainment in women with high-risk pregnancy after infertility through the integration of King's Goal Attainment and Mercer's Becoming a Mother theories: A case series. *Nurse Media Journal of Nursing*, 15(3), 423-438. <https://doi.org/10.14710/nmjn.v15i3.60904>

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## 1. Introduction

Pregnant women undergo physiological changes across multiple organ systems to support fetal growth and development (Pascual & Langaker, 2022). However, these changes may also cause anxiety (Ishaq et al., 2022). According to Salih Joelsson et al. (2017), mothers with a history of infertility may experience anxiety during pregnancy regardless of whether conception occurs through assisted reproductive techniques or natural means. Anxiety can hinder the development

of effective coping mechanisms due to the anticipation of negative outcomes and fear of disappointment related to pregnancy (Covington, 2015).

Pregnancy after infertility often creates ambivalence. While pregnancy is typically a period of appreciation and satisfaction, high-risk pregnancy conditions may provoke fear and anxiety, reduce self-esteem and self-confidence in managing pregnancy, and lead to self-blame (Covington, 2015). High-risk pregnancy places both mother and fetus at increased risk of morbidity or mortality during pregnancy or childbirth (Jemila et al., 2021). Such pregnancies are associated with adverse outcomes, including preterm birth, low birth weight, fetal growth restriction, perinatal death, antepartum and postpartum bleeding, maternal and fetal death, fetal abnormalities, macrosomia, chromosomal abnormalities, and anemia (Hafez et al., 2014; Majella et al., 2019). Previous reviews indicate that women with high-risk pregnancies require not only support in identifying and managing physical health risks but also assistance in addressing misinformation, fears, and worries, as well as disruptions in fulfilling their roles. Accordingly, women with high-risk conditions require comprehensive care support, access to accurate information and services, and strengthened adaptive coping mechanisms (Banafshi et al., 2025).

Prenatal anxiety has been associated with increased activation of the fetal hypothalamus–pituitary–adrenal axis. Maternal and fetal plasma cortisol levels are interrelated, and elevated cortisol may affect fetal development (Setodeh et al., 2018). Prenatal stress has also been linked to reduced prenatal attachment (Coşkun et al., 2019), unhealthy behaviors, and inadequate prenatal care (Saridi et al., 2022). In addition, anxiety may reduce sexual activity during pregnancy (Kulhawik et al., 2022). A history of infertility, combined with care needs and psychological distress, may also influence partner responses and marital relationships (Covington, 2015). High-risk pregnancy following infertility may therefore increase anxiety, affect maternal adaptation, and influence the mother's relationship with her partner. According to Çelik and Güneri (2020), pregnant women who are adaptive tend to demonstrate strong prenatal attachment, emotional resilience, and motivation to feel competent and satisfied in their maternal roles. Planned pregnancies may further support maternal adaptation.

Natural conception among women with a history of infertility is relatively uncommon without medical treatment, particularly with increasing maternal age (Walker & Tobler, 2021). Fertility potential tends to decline over time, further complicating the achievement of pregnancy in this population (Covington, 2015). High-risk pregnancy is associated with increased anxiety and a higher risk of premature birth. Although infertility often reflects an underlying pathological condition, couples who achieve spontaneous conception without medical treatment face a higher risk of preterm delivery and low birth weight infants. Women experiencing fertility problems are also at increased risk of depressive and anxiety symptoms; therefore, healthcare professionals should recognize these risks and plan appropriate interventions (Salih Joelsson et al., 2017).

Pregnancy involves a process of psychological reorganization as women develop their maternal identity, and nursing care plays an essential role in supporting coping abilities during this transition to parenthood. Previous studies have examined anxiety and depression among women with pregnancy complications or infertility; however, limited evidence describes the application of nursing theory–based interventions for women with high-risk pregnancy following infertility (Biaggi et al., 2016). These women require support in adapting to pregnancy, achieving prenatal attachment, strengthening emotional resilience, and enhancing competence and satisfaction in their maternal role (Çelik & Güneri, 2020).

This case series addresses this gap by integrating King's Goal Attainment and Mercer's Becoming a Mother theories to provide a theory-based, participatory nursing approach that supports adaptation and maternal role attainment. The cases illustrate the application of integrated nursing theories to support psychosocial adaptation and prenatal attachment in a high-risk pregnancy following infertility. This approach combines interactive goal setting and maternal identity development, as both theories complement each other in promoting holistic well-being and active client participation.

Mercer's Becoming a Mother Theory explains stages of maternal role identity development (Mercer, 2004). This theory supports women with a history of infertility in facing pregnancy-related realities, adapting to pregnancy, and developing confidence, competence, and preparation related to fetal development and prenatal attachment (Boz et al., 2018). Meanwhile, King's Goal Attainment Theory emphasizes interactive processes between healthcare providers and clients, with active client engagement in care decisions (King, 2007). Women with high-risk pregnancy

following infertility are vulnerable to physical complications, psychological distress, and challenges in maternal role attainment. Mercer's theory supports adaptation through commitment to pregnancy, preparation for childbirth, and maternal-fetal attachment, while King's theory facilitates the fulfillment of care needs through structured nurse-client interactions. Accordingly, this case series aimed to describe how both theories are applied within the nursing care process for women with a history of infertility and high-risk pregnancy. It examines how the theories guide problem identification, goal setting, decision-making, nurse-client interaction, and maternal role attainment. The research question guiding this case series is: How are the two theories operationalized within the nursing care process to facilitate effective nurse-client interaction and support maternal role attainment during the anticipatory phase?

## 2. Case presentation

### 2.1. Patient description

As presented in Table 1, the report covers five cases. All participants were first-time pregnant women who conceived naturally after experiencing infertility. Two participants had an additional high-risk factor, namely maternal age  $\geq 35$  years. The cases were obtained from three different healthcare service settings. The duration of infertility history and pregnancy complications varied across cases. The five cases represented diverse educational levels and cultural backgrounds.

**Table 1.** Characteristics of the patients

Characteristics	Case 1	Case 2	Case 3	Case 4	Case 5
Ethnicity	Javanese	Javanese	Javanese	Betawi	Madurese
Age (years)	33	26	41	28	35
Education	Bachelor	Senior High School	Diploma	Senior High School	Senior High School
Obstetrical status	G1PoAo	G1PoAo	G1PoAo	G1PoAo	G1PoAo
Gestational age (weeks)	25	33	27	23	30
Complications during pregnancy	Abruptio placenta	Pre-eclampsia, intra-uterine growth retardation	Anemia	Pre-eclampsia, obesity	Pre-eclampsia, epilepsy, and diabetes mellitus type II
Duration of history of infertility (years)	4	3	14	2	7
Type of health service	Regional Public Hospital	Regional Public Hospital	Community Health Centers	Central General Hospital	Central General Hospital

### 2.2. Case history

Across the five cases, similar patterns emerged in health behavior, prenatal attachment, and anxiety. Most clients showed low adherence to lifestyle recommendations, weak engagement with the fetus, and moderate to severe anxiety centered on fetal well-being and childbirth. Sexual activity was commonly avoided due to fear of harming the fetus, and delivery plans were directed to referral hospitals following clinical advice. Overall, anxiety was strongly associated with poor commitment to health behaviors, limited prenatal interaction, and uncertainty regarding pregnancy outcomes and delivery decisions. Detailed case characteristics are shown in Table 2.

### 2.3. Assessment

Maternal role identity develops through anticipatory, formal, informal, and personal stages, with the anticipatory stage marked by commitment, prenatal attachment, and preparation for childbirth (Mercer, 2004). King's Goal Attainment Theory highlights collaborative nurse-client interaction in identifying goals, making decisions, and carrying out action-interaction-transaction processes to achieve agreed-upon outcomes (King, 2007). In this nursing care, King's Goal Attainment Theory serves as the framework for nurse-client communication, while Mercer's Becoming a Mother Theory provides the substantive content of care. Integrating both theories into nursing care included assessment, diagnosis, collaborative goal setting, implementation, and

evaluation to build commitment, strengthen prenatal attachment, and support maternal role preparation.

**Table 2.** Summary of clinical and psychosocial characteristics of the five cases

Case	Condition	Anxiety	Commitment	Attachment	Preparation	Sexuality
1	Vaginal bleeding; previous hospitalization	Severe, mainly about the fetal condition	Did not avoid non-nutritious foods; resigned from work; wanted to prevent bleeding	Felt fetal movement at night; limited interaction/ imagination	Unsure between vaginal vs. cesarean birth; wanted another hospital	Abstained due to fear of harming the fetus
2	Swollen legs, dizziness, and high blood pressure at 30 weeks	Severe, related to fetal growth	No diet for blood pressure control; sleep difficulty; wanted information on diet	Still unable to imagine/interact with the fetus	Planned referral hospital; would follow the recommended method	Desire present, but husband refused
3	Underweight (BMI = 16.89); Hb = 10.3 g/dl; referred for laboratory tests	Moderate, related to fetal nutrition and maternal age	Decreased appetite; continued working	Felt fetal movement at night; limited interaction; no name prepared	Planned referral hospital; worried about the ability to deliver vaginally	Husband refused intercourse
4	High blood pressure; hospitalized	Moderate, related to childbirth	Unable to avoid salty foods	Felt movements; limited interaction	Planned referral hospital; fear of labor pain	Abstained due to fear
5	Hyperemesis, a recently diagnosed disease	Severe, related to fetal nutrition	No diet for blood sugar/blood pressure control	Felt movements after eating; limited interaction	Planned referral hospital; fear of childbirth pain	Rare intercourse due to fear

During the assessment phase, interactive communication enabled the nurse to explore the client's perceptions and form a shared understanding. The application of King's Goal Attainment Theory provided a structured interaction framework through perception and appraisal processes, in which the nurse assessed the client's biopsychosocial, sociocultural, and spiritual needs. The assessment emphasized factors supporting maternal role attainment during pregnancy, consistent with Mercer's anticipatory stage (commitment, attachment, and preparation). Communication and observation were used to verify client perceptions, identify influencing factors, and assess competence and readiness for pregnancy, childbirth, and the postpartum period.

#### 2.4. Nursing care plan and expected outcomes of the nursing care plan

During the planning phase, King's Goal Attainment Theory provides a framework for nurse-client interaction through exploration of meaning (problem identification), collaborative goal setting (shared decision-making), mutual goal agreement, and determination of the means to achieve the goals. Mercer's Becoming a Mother Theory was integrated into this phase by defining the goals to be achieved during the anticipatory stage, namely the development of commitment, prenatal attachment, and preparation for childbirth.

Nursing diagnoses were formulated according to the Indonesian Nursing Diagnosis Standards (DPP PPNI, 2017), with the highest priority given to the risk of fetal injury. Other diagnoses identified in this case are presented in Table 3 as part of the nursing diagnostic process. The nurse and client jointly identified goals and actions to support maternal role identity in the anticipatory phase by aligning the client's priorities with nursing objectives and selecting action plans based on the client's willingness to participate.

During the planning phase, clients committed to lifestyle adjustments, care preparation, and role adaptation while forming realistic expectations, including the possibility of preterm birth. The integration of King's and Mercer's theories supported this stage by strengthening commitment and maternal role identity. The nursing care plan included high-risk pregnancy care,

fetal movement counting, attachment behavior counseling, sexual counseling, anxiety reduction interventions (guided imagery and health education), and nutritional counseling. The third client received nutritional counseling as part of the care plan (DPP PPNI, 2018).

### *2.5. Implementation*

During the implementation phase, nurses and clients engaged in transactions, taking joint actions aligned with agreed goals by clarifying steps, timing, rationale, and goal congruence (Alligood, 2014a). Nursing implementation consisted of four action categories: observational, therapeutic, educational, and collaborative interventions (DPP PPNI, 2018). In this phase, King's Goal Attainment Theory provided an interaction framework through the transaction process, enabling shared perceptions and coordinated actions to help clients attain the agreed goals. The implemented activities aimed to support maternal role identity during the anticipatory stage as described in Mercer's Becoming a Mother Theory.

### *2.6. Actual outcomes*

During the evaluation stage, the nurse assessed whether the interventions supported goal achievement and maternal role identity, identified actions to continue or discontinue, reviewed client responses, addressed barriers, and planned follow-up modifications. King's Goal Attainment Theory guided evaluation by identifying goal attainment, interpreting outcomes, and recognizing facilitating factors and barriers. Meanwhile, Mercer's Becoming a Mother Theory served as the outcome framework, with three indicators assessed during the anticipatory stage: commitment, prenatal attachment, and preparation for childbirth.

Of the four primary diagnoses identified across the five cases (risk of fetal injury, anxiety, ineffective sexual patterns, and readiness for enhanced parenting), evaluated outcomes included commitment (maternal–fetal well-being and sexual function), attachment, and preparation for childbirth (understanding the risk of preterm birth, preparation of hospital bags, and anxiety levels). The complete evaluation is presented in Table 3 and detailed in Appendix A1, where the integration of King's Goal Attainment and Mercer's Becoming a Mother theories is described across the nursing process in high-risk pregnancy after infertility.

Furthermore, Figure 1 (Appendix A2) illustrates the effects of high-risk conditions on pregnant women with a history of infertility, showing their understanding of health conditions, psychosocial responses, prenatal attachment, and commitment to pregnancy and high-risk care. This framework analysis was conducted in five stages: familiarization, coding, indexing, charting, and mapping and interpretation (Rauf et al., 2021).

## **3. Discussion**

This case series aimed to describe how an integrated theory-based nursing approach supports maternal role attainment in women with high-risk pregnancies following infertility. The findings show that maternal role attainment during the anticipatory phase was supported through participatory nurse–client interactions, shared goal setting, and individualized nursing care that strengthened commitment to pregnancy, enhanced prenatal attachment, improved preparation for childbirth, and reduced anxiety across cases.

People of reproductive age experience different fertility conditions, and some women with a history of infertility can still conceive naturally (Covington, 2015). Such pregnancies often involve heightened anxiety, although adaptation may later strengthen prenatal attachment (Covington, 2015; Çelik & Güneri, 2020). In high-risk pregnancies, the transition to motherhood is perceived as demanding and emotionally complex (Ozdemir & Kulakac, 2023). Long-term infertility can further intensify anxiety and lead to restrained emotional involvement as a protective coping response (Pellerone et al., 2023). In line with this evidence, most women in this study had high anxiety: three of five participants experienced severe anxiety, and two reported moderate levels.

The integrated theories in this study provide a unified framework for supporting maternal role development through collaborative goal setting. Mercer's theory emphasizes fostering maternal commitment, prenatal attachment, and preparation for childbirth during the anticipatory stage, while King's focuses on how nurses observe, interpret, and intervene to strengthen clients' coping abilities (Alligood, 2014a). Goal achievement is facilitated through nurse–client interactions involving reactions, communication, transactions, roles, and stress, as well as coping processes (Berman et al., 2022). Both theories guided a comprehensive assessment

**Table 3.** Integrated application of King’s Goal Attainment and Mercer’s Becoming a Mother theories across the nursing process in women with high-risk pregnancies following infertility

Nursing Process Stage	King’s Goal Attainment Theory	Mercer’s Becoming a Mother Theory	Integrated Application
Assessment	<ul style="list-style-type: none"> <li>- Perception and mutual validation through nurse–client interaction</li> <li>- Use of personal, interpersonal, and social systems to identify needs</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment of anticipatory maternal role components: commitment, prenatal attachment, preparation</li> </ul>	<ul style="list-style-type: none"> <li>- Physical: age, parity, vital signs, comorbidities, pregnancy complaints, fetal well-being (USG, FHR, CTG, fetal movements)</li> <li>- Psychological: anxiety, perception of maternal competence, fetal interaction, expectations of motherhood</li> <li>- Social, cultural &amp; spiritual: family communication, support, decision-making, partner involvement, cultural beliefs, health policies, religious practices</li> </ul>
Nursing Diagnosis	<ul style="list-style-type: none"> <li>- Reaction and shared meaning formed through the interpretation of assessment findings</li> </ul>	<ul style="list-style-type: none"> <li>- Identification of maternal role challenges in the anticipatory stage</li> </ul>	<ul style="list-style-type: none"> <li>- Primary diagnoses: risk of fetal injury, anxiety, ineffective sexual patterns, readiness for enhanced parenting</li> <li>- Additional diagnoses: readiness for childbirth, spiritual distress, impaired social interaction, altered family processes, risk of attachment disorders (DPP PPNI, 2017)</li> </ul>
Planning	<ul style="list-style-type: none"> <li>- Shared decision-making</li> <li>- Mutual goal setting and agreement on actions</li> </ul>	<ul style="list-style-type: none"> <li>- Goals focused on anticipatory maternal role identity</li> </ul>	<ul style="list-style-type: none"> <li>- Planned outcomes: maternal–fetal well-being, increased knowledge, reduced anxiety, improved attachment, and childbirth readiness</li> <li>- Planned interventions: high-risk pregnancy care, fetal movement counting, attachment counseling, sexual counseling, anxiety reduction, nutritional counseling (DPP PPNI, 2018; 2019)</li> </ul>
Implementation	<ul style="list-style-type: none"> <li>- The transaction process aligning perceptions and actions</li> <li>- Active nurse–client collaboration</li> </ul>	<ul style="list-style-type: none"> <li>- Enactment of behaviors supporting commitment, attachment, and preparation</li> </ul>	<ul style="list-style-type: none"> <li>- Observation: danger signs, fetal well-being, anxiety</li> <li>- Therapeutic: monitoring vital signs, FHR, therapeutic communication, family involvement</li> <li>- Educational: coping strategies, guided imagery, attachment behaviors (talking to fetus, belly touching, fetal movement counting)</li> <li>- Collaborative: medical management of high-risk conditions</li> </ul>
Evaluation (Actual Outcomes)	<ul style="list-style-type: none"> <li>- Evaluation of goal attainment and identification of barriers</li> </ul>	<ul style="list-style-type: none"> <li>- Assessment of maternal role indicators in the anticipatory stage</li> </ul>	<ul style="list-style-type: none"> <li>- Commitment: improved lifestyle adherence, stable maternal–fetal condition</li> <li>- Attachment: high prenatal attachment achieved (mean = 69.20 ± 9.731)</li> <li>- Preparation: understanding of preterm birth risk, childbirth preparation</li> <li>- Anxiety: decreased across cases (mean reduction = 7.80 ± 4.025)</li> </ul>

Notes. The detailed operationalization of the integrated theoretical framework across the nursing process is presented in Appendix A1.

of physical, psychological, social, cultural, spiritual, cognitive, emotional, and environmental factors influencing maternal role attainment during the anticipatory stage. Consistent with King's theory, nurses examined clients' personal systems to identify disruptions and formulate individualized goals and interventions.

All five women experienced physical complications related to high-risk pregnancy and perceived themselves as not yet ready for the maternal role. Socially, they interacted with the fetus, partner, family, and healthcare providers, but developed excessive coping responses to pregnancy-related stress. There were no cultural barriers to care, and spiritually, they viewed the pregnancy as a blessing. In line with Alligood (2014a), these findings demonstrate that individuals function as open, unique personal systems. Across cases, clients showed limited knowledge about high-risk pregnancy care, heightened anxiety and sexual avoidance, strong commitment to maintaining the pregnancy, and a need for further information to enhance prenatal attachment and prepare for safe pregnancy and childbirth management.

During the King's reaction and interaction stages, nurses and clients collaboratively set goals, explored strategies, and agreed on action plans, which correspond to the planning phase of the nursing process. The main nursing diagnoses across all five cases were risk of fetal injury, anxiety, ineffective sexual patterns, and readiness for enhanced parenting. These findings align with previous research showing that infertility can provoke shame, regret, and low self-esteem (Margan et al., 2022). For women with a history of infertility, pregnancy complications may impose both physical and psychological burdens, affecting marital relationships, maternal stress, fetal well-being, and the achievement of developmental tasks like prenatal attachment and parental role preparation (Covington, 2015). Women conceiving after infertility may either doubt the pregnancy, delaying early prenatal care, or exhibit heightened vigilance, repeatedly seeking reassurance despite normal findings (Garner in Covington, 2015). Anxiety tends to be elevated in these women (Crespo & Bestard, 2016), reducing energy for partner and family interaction (Golchin et al., 2022) and decreasing sexual activity due to fear of harming the fetus (Miranda et al., 2019). Stress related to miscarriage, fetal health, and anticipated family changes can further heighten anxiety and helplessness (Huang et al., 2020). Conversely, couples actively trying to conceive show stronger preparedness for parenthood, allocating mental and emotional resources toward the expected child (Pellerone et al., 2023).

The King's theory guided nurses in setting goals and achieving them collaboratively (Rouhi Balasi et al., 2020). During the anticipatory stage, clients commit, prepare, adapt, form realistic expectations, and envision their future roles (Alligood, 2014b). In this case series, the theory-guided nurse–client interactions throughout the nursing process, while Mercer's theory directed interventions to support maternal role attainment. King's framework has introduced a new approach to reproductive health communication (Endres et al., 2025). As noted by Heron (2023), this approach enables nurses to develop care plans that reflect each patient's priorities and goals. Nurses provide person-centered care that fosters active participation, responsibility, and shared decision-making. Through collaborative goal-setting, meaningful communication, and therapeutic engagement, patients are empowered to achieve desired health outcomes, enhancing agency, confidence, and resilience.

In this study, the primary nursing diagnosis was risk of fetal injury, and clients received medical management tailored to their high-risk pregnancies. Nurse–client interactions focused on monitoring danger signs, managing pregnancy risks, preparing for complications, supporting lifestyle changes, and providing education and emotional support. Consistent with the guidelines by the Ministry of Health of the Republic of Indonesia (2013), continuous monitoring is essential for complicated pregnancies. These interactions enhanced client confidence, anxiety management, active participation, decision-making, commitment, self-efficacy, and positive attitudes (Erkaya et al., 2017; Khakbazan et al., 2022; Mojahed et al., 2021). Most clients experienced antenatal anxiety related to fetal well-being, highlighting the need for collaborative planning and emotional support (Deklava et al., 2015; Madhavanprabhakaran et al., 2015).

During the implementation phase, the two theories merged through a transactional process that aligned perceptions and promoted collaborative actions toward maternal role identity. Interventions included anxiety monitoring, emotional support, family involvement, relaxation training, motivation through shared experiences, and fostering adaptive coping and realistic expectations for high-risk pregnancy outcomes. Consistent with prior studies, social support and shared experiences improve problem-solving skills, self-esteem, and health behaviors, while

education on anxiety and coping strategies reduces stress and enhances well-being (Evans et al., 2020; Huang et al., 2022; Ilska et al., 2022; Khakbazan et al., 2022).

The clients were diagnosed with ineffective sexual patterns due to fear of harming the fetus. Pregnant women with a history of infertility often prioritize the baby over their own needs (Covington, 2015). Sexual counseling, provided together with partners, included scientific explanations of pregnancy anatomy and physiology (Heidari et al., 2018; Márta et al., 2019). All clients received interventions to enhance prenatal attachment and prepare for childbirth, including support for decision-making, encouragement of family–fetus interactions, explanations of fetal development, attachment-focused counseling, and positive reinforcement. Activities such as counting fetal movements, touching the abdomen, talking to the fetus, and imagining its appearance support prenatal attachment and maternal role development (Çelik & Güneri, 2020; Allgood, 2014b; Abasi et al., 2021). For women with a history of infertility, the desire to become a mother may strengthen fetal attachment; increased interactions with the fetus encourage interpretation of fetal movements as meaningful characteristics, reinforcing maternal role identity and supporting emotional adjustment, and future planning (Pellerone et al., 2023).

During the evaluation phase, nurses and clients assess outcomes, contributions, and barriers to goal achievement. Goals were considered met when women with high-risk pregnancies and a history of infertility gained confidence and satisfaction in fulfilling their maternal role, reflecting maternal role identity during the anticipatory stage. Realistic expectations are essential for achieving satisfaction (Khakbazan et al., 2022). All clients demonstrated strengthened commitment to pregnancy care, decreased anxiety, increased prenatal attachment, and improved preparation for childbirth. Maternal role identity continues to develop during the formal, informal, and personal stages postpartum, resulting in attachment, competency, and satisfaction in role performance (Allgood, 2014b).

In this study, nursing care integrating the King's and Mercer's theories contributed to a significant reduction in anxiety, demonstrating that combining these frameworks effectively supports high-risk pregnant women. This aligns with previous research demonstrating that psychological interventions, including supportive counseling, motivational interviewing, and mindfulness-based approaches, effectively reduced anxiety in pregnant women (Firrahmawati et al., 2025). Provider communication, collaboration, and empowerment further reduce anxiety and promote positive health behaviors. Interactions that integrate education and guidance enhance confidence, comfort, and emotional well-being (Nicoloro-SantaBarbara et al., 2017). Integrating King's and Mercer's theories enables structured, stepwise nurse–patient interactions that support goal achievement, with educational content tailored to the anticipatory stage of maternal role development.

Maternal–fetal attachment in this study was assessed only after the nursing care period; therefore, changes from baseline could not be determined. Nevertheless, post-care prenatal attachment levels were high across cases, suggesting favorable attachment during the anticipatory phase. Previous studies have reported inconsistent findings regarding the relationship between anxiety and prenatal attachment. Barut and Baransel (2024) found lower attachment among women with psychological risk factors, whereas Ghanbari-Homaie et al. (2022) reported no significant association between anxiety and attachment, indicating that outcomes may vary depending on measurement tools and contextual factors. Gestational age has also been identified as an important contributor to prenatal attachment. In the present study, reduced anxiety observed during nursing care coincided with high levels of prenatal attachment. However, this relationship could not be statistically tested due to the small sample size. These observations provide descriptive insight into prenatal attachment among women with high-risk pregnancies following infertility within a theory-based nursing care context.

#### **4. Implications and limitations**

This study highlights important implications for nursing practice, particularly in providing theory-based, person-centered care for women with high-risk pregnancies following infertility. Integrating King's Goal Attainment with Mercer's Becoming a Mother theories supports nurse–patient interactions that are centered on individual concerns, expectations, and maternal role identity. This approach enables nurses to actively involve women in goal setting and decision-making, which is especially important for those experiencing heightened anxiety and uncertainty related to pregnancy after infertility. The findings further suggest that interactive counseling and

participatory communication can support emotional adaptation by helping women manage anxiety, strengthen prenatal attachment, and focus attention on fetal well-being. Involving family members in nursing care enhances understanding of high-risk pregnancy management and reinforces commitment to home-based care. Given the cautious attitudes commonly observed among women with high-risk pregnancies following infertility, the provision of clear health information, realistic goal setting, and family engagement may facilitate better preparation for pregnancy and childbirth.

This case series has several limitations that should be considered when interpreting the findings. The small number of cases limits the transferability of the observed patterns to broader populations of women with high-risk pregnancies following infertility. The descriptive case-series design and purposive sampling approach may also introduce selection bias, and reliance on self-report questionnaires increases the possibility of response bias. Furthermore, although maternal attachment scores were high after the nursing care period, assessment occurred only at the end of care, preventing evaluation of changes over time. As a result, maternal-fetal attachment could be described but not compared across the care period.

## 5. Conclusion

Integrating King's Goal Attainment Theory and Mercer's Becoming a Mother Theory provides a person-centered framework to support maternal role attainment in women with high-risk pregnancies following infertility. The findings highlight the importance of collaborative goal setting and interactive communication as key components of this approach in facilitating maternal adaptation during pregnancy. Future studies involving larger and more diverse samples, as well as longitudinal assessment designs, may help further explore how theory-based nursing care supports maternal role development during high-risk pregnancy following infertility.

## 6. Consent

Each client provided written informed consent to confirm voluntary participation and compliance with ethical requirements. Permission to report this study was also obtained, and anonymity was ensured throughout reporting.

## Acknowledgment

The authors would like to thank Universitas Gadjah Mada and Universitas Indonesia for their support in the conduct of this research.

## Author contributions

IP, YA, and INR contributed to the study in supportive roles. The study design was developed collaboratively by all authors. IP prepared the study materials, collected the data, conducted the analysis, and wrote the final manuscript draft. All authors approved the final manuscript.

## Conflict of Interest

The authors state that there is no conflict of interest in this study.

## Declaration of Generative AI in Scientific Writing

None to declare.

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## **Appendix A1**

### **Detailed operationalization of King's Goal Attainment and Mercer's Becoming a Mother theories across the nursing process**

#### **A. Assessment Phase**

##### Theoretical orientation

- King's Goal Attainment Theory: perception, mutual validation, and interaction to establish a shared understanding of needs.
- Mercer's Becoming a Mother Theory: assessment of anticipatory maternal role indicators (commitment, prenatal attachment, preparation for childbirth).

##### Physical assessment

- Maternal age and parity
- Gestational age
- Pregnancy discomforts and complaints
- Vital signs
- Pregnancy complications and comorbidities
- Signs of stress
- Fetal well-being indicators: ultrasonography (USG), fetal heart rate (FHR), cardiotocography (CTG), perceived fetal movements

##### Psychological assessment – Mercer's components

- Perception of ability to perform high-risk pregnancy care, prepare for childbirth and baby care, and engage in prenatal attachment behaviors
- Self-assessment of psychological condition: anxiety status, recognition of fetal well-being, perceived fetal responses, acceptance of pregnancy, attitudes toward pregnancy, maternal role expectations, satisfaction with role performance

##### Psychological assessment – King's personal system

- Growth and development: pregnancy and childbirth experiences, prenatal class participation, attachment behaviors, barriers to role performance
- Physical self-image and self-esteem related to appearance
- Learning needs, motivation, information access, gestational timing, and recognition of high-risk conditions
- Personal space: acceptance of nurse interaction (intimate, personal, social, public)
- Coping responses to pregnancy and complications

##### Social, cultural, and spiritual assessment

- Social: family communication, partner involvement, roles, coping, support, decision-making, healthcare access
- Cultural: beliefs and healthcare policies influencing pregnancy
- Spiritual: religious practices and prayer as coping strategies

##### Assessment findings

- Commitment: fairly good commitment to pregnancy care through lifestyle modification and antenatal visits
- Prenatal attachment: acceptance present, but attachment behaviors are limited
- Preparation for childbirth: adequate understanding of prognosis and outcomes
- Psychosocial problems: anxiety and changes in sexual patterns
- Pregnancy care preparation: present but limited (nutrition, rest, fetal harm prevention, social support, childbirth preparation)

#### **B. Nursing Diagnosis Phase**

##### Primary diagnoses

- Risk of fetal injury

- Anxiety
- Ineffective sexual patterns
- Readiness for enhanced parenting

#### Additional diagnoses

- Readiness for childbirth
- Spiritual distress
- Hopelessness
- Impaired social interaction
- Altered family processes
- Readiness for enhanced family processes
- Risk of attachment disorders
- Parenting role attainment
- Readiness for enhanced nutrition
- Ineffective role performance (DPP PPNI, 2017)

### **C. Planning Phase**

#### Planned outcomes

- Improved maternal–fetal well–being
- Increased knowledge of high-risk pregnancy care
- Improved sexual functioning
- Strengthened parenting role readiness (commitment, attachment, readiness for childbirth)
- Reduced anxiety (DPP PPNI, 2019)

#### Planned nursing interventions

- High-risk pregnancy care
- Fetal movement counting
- Attachment behavior counseling
- Sexual counseling
- Anxiety reduction (guided imagery, health education)
- Nutritional counseling (DPP PPNI, 2018)

### **D. Implementation Phase**

#### Observation

- Pregnancy danger signs
- Fetal well-being
- Anxiety symptoms
- Maternal role attainment indicators

#### Therapeutic actions

- Monitoring vital signs and FHR
- Fluid balance management
- Nasogastric tube feeding (as indicated)
- Therapeutic communication
- Family involvement and partner–fetus interaction

#### Educational actions

- High-risk pregnancy education
- Motivation for pregnancy care commitment
- Coping strategies and guided imagery
- Peer discussion
- Sexual counseling
- Attachment behaviors (fetal movement counting, belly touching, talking to the fetus, naming, belly mapping, responding to movements, positive imagination)

Collaborative actions

- Fluid management
- Fetal lung maturation therapy
- Pre-eclampsia management
- Blood glucose control
- Epilepsy prevention
- Hemoglobin optimization

**E. Evaluation Phase (Actual Outcomes)**

Commitment

- Normal FHR
- Stable blood pressure
- Normal blood glucose
- Absence of epileptic episodes
- Minimal vaginal spotting
- Reduced pregnancy discomfort
- Improved lifestyle adherence
- Harmonious sexual function through non-intercourse affection

Prenatal attachment

- All clients had high prenatal attachment
- Mean prenatal attachment score:  $69.20 \pm 9.731$

Preparation for childbirth

- Understanding of preterm birth risk
- Preparation of hospital bags

Anxiety

- Anxiety scores decreased across cases
- Mean reduction:  $7.80 \pm 4.025$

Appendix A2

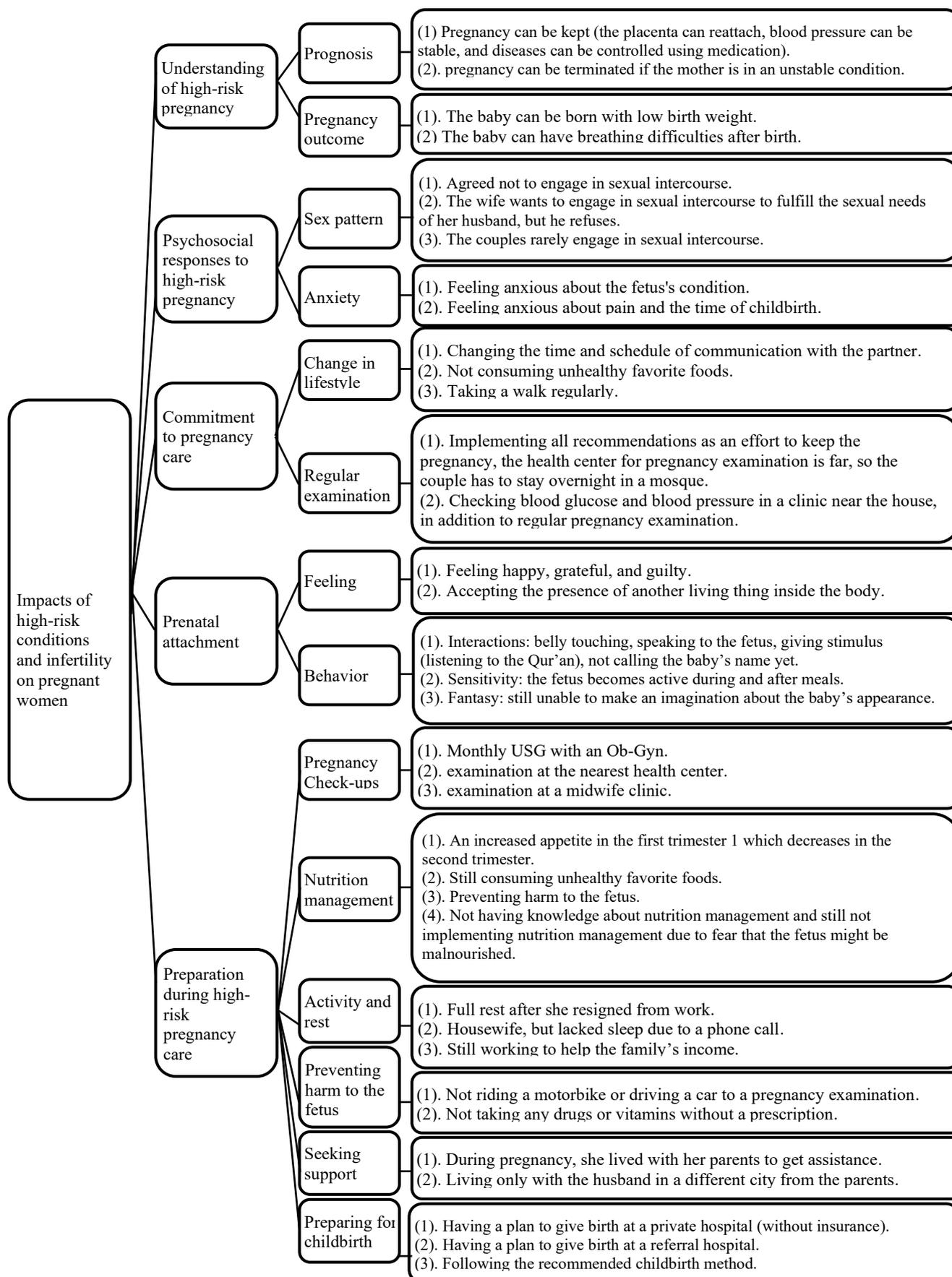


Figure 1. Effects of high-risk pregnancy status on pregnant women with a history of infertility