

## CONCEPT ANALYSIS

# CONCEPT ANALYSIS OF MATERNAL-FETAL ATTACHMENT

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### Abstract

**Background:** Knowing about prenatal attachment is crucial because it plays a significant role in pregnant women and their babies' health. Healthcare providers, particularly midwives, need to understand the concept of attachment between mother and unborn baby. However, surrogate terms to apply the concept of maternal-fetal attachment are found, and ambiguity on the definition remains.

**Objective:** To provide a more precise definition of the concept of maternal-fetal attachment

**Method:** The Walker and Avant's concept analysis approach was applied.

**Results:** The attributes of maternal-fetal attachment include (i) having a positive emotion, (ii) paying attention to the physical progress of the fetus and mothers themselves, (iii) having a reciprocal interaction with the baby, (iv) monitoring and imaging the unborn baby, and (v) having a desire to protect her unborn baby from harm and increase her health practices. Maternal-fetal attachment is the affection relationship, desire for protection, building the interaction, and the emotional tie between the mother and her unborn baby during the pregnancy. This personal connection is developed, mainly when the quickening is present during the late stage of pregnancy. Maternal-fetal attachment creates an emotional relationship with the unborn baby and leads the mother to express it with behavior.

**Conclusion:** This concept analysis provides new insight into the maternal-fetal attachment concept used for nurses and midwives in their practice.

### KEYWORDS

maternal-fetal attachment; pregnancy; infant; fetal movement; emotions; attentions; mothers; midwifery; nursing

## BACKGROUND

Maternal-fetal attachment is the crucial basis for the mother to establish her relationship with the fetus during pregnancy (Müller, 1989). Many studies provide evidence of the maternal-fetal attachment and its impact on maternal role identity and infant development (Abazari et al., 2017; Alhusen et al., 2013; Siddiqui & Hägglöf, 2000; Wada et al., 2020). This emotional tie promotes the maternal emotional wellbeing during pregnancy following after birth and decreased risk possibility to experience anxiety, fear of childbirth, depression, and postpartum blues (Abazari et al., 2017; Clout & Brown, 2016; Dubber et al., 2015; Goebel et al., 2018; Hwang, 2013; Kav et al., 2017; Yarcheski et al., 2009). A loving relationship between a mother and her unborn baby also contributes to the mother's sense of protection (Sandbrook, 2009). A previous study indicated that a robust attachment between mother and infant impacts on the mother's health practices during pregnancy, such as the absence of alcohol consumption and tobacco, increased consumption of healthy food, increased effort to seeking for antenatal care, as well as information for preparing birth (Lindgren, 2001).

The maternal-fetal attachment has been defined differently among expertise, led to different arguments and tools to measure maternal attachment during pregnancy (Condon & Corkindale, 1997; Cranley, 1981; Muller & Mercer, 1993). The term maternal-fetal attachment is frequently used to describe the emotional relationship, rather than the interaction and behavior response between mother and unborn baby. The awareness about maternal-fetal attachment is essential in the health of pregnant mothers and their unborn babies. The right information and definition not only would increase the perception of nurses, midwives, or other medical teams about the process of attachment itself, but it would also provide the possibility for planning proper interventions to improve the maternal-fetal relationship. However, appropriate clarification and explanation about maternal-fetal attachment remain unclear. Therefore, to emphasize the understanding of maternal-fetal attachment, we analyze the concept's attributes and characteristics.

Walker and Avant (2014) 's framework is used for concept analysis, which consists of (1) select a concept, (2) determine the aims or purpose, (3) identify all uses of the concept, (4) determine the defining attributes, (5) identify a model case to describe the example, (6)

identify additional cases, (7) identify antecedents and consequences, and (8) define an empirical reference. Each step is described in the following:

**SELECT A CONCEPT**

Attachment is a complex phenomenon that occurs during life span (Bowlby, 1958). This theory explained the children feel severe when they live separately from their mother. The refining concept of maternal-fetal attachment in this paper can help clarify the overused or vague concept prevalent in nursing practice. Thus, everyone who subsequently uses the term will be a language of the same issue.

**AIM OF ANALYSIS**

This analysis aims to provide precise meaning to the concept of maternal-fetal attachment by differentiating it from other related concepts, for instance, maternal-infant bonding. The analysis seeks to provide a more accurate definition of maternal-fetal attachment for use in operational definition creation. Ultimately, a better understanding of the concept will be gained.

**USES OF THE MATERNAL-FETAL ATTACHMENT CONCEPT**

This step supports and validates the defining attributes' choices and provides evidence for our analyses by identifying as many uses of the concept as possible (Walker & Avant, 2014). According to Walker and

Avant, to investigate the uses, dictionaries, thesaurus, colleagues, and available literature are accessed. A concept of maternal-fetal attachment was searched of literature by using critical electronic databases: PubMed, CINAHL with full text, MEDLINE, and Cochrane Library. A dictionary search of the word maternal-fetal was also done (See Table 1). Also, the scale to measure maternal-fetal attachment was searched. There are many researchers adopted the maternal-fetal attachment scale into their language and occupied the term in the medical and psychology literature (Bielawska Batorowicz & Siddiqui, 2008; Chen et al., 2011; Lingeswaran & Bindu, 2012; Siddiqui et al., 1999; Suryaningsih, 2015; Ustunsoz et al., 2010; Vedova et al., 2008). Several projects to explore the predicting factors of maternal-fetal attachment also have been found (Alhusen et al., 2012; Bielawska Batorowicz & Siddiqui, 2008; Doan & Zimmerman, 2008; Maas et al., 2014). The impact of maternal-fetal attachment both on mother and infant have been highlighted in the literature, for instance, the effect on the maternal mood states (Van Den Bergh & Simons, 2009), the health practices during pregnancy (Abasi et al., 2013; Alhusen, 2008; Yarcheski et al., 2009), the mother-infant bonding (Busonera et al., 2017; Rossen et al., 2016), and the infant's outcome (Dokuhaki et al., 2017). The studies investigating other issues related to the concept of maternal-fetal attachment were also found (Alhusen, 2008; Dayton et al., 2010; Mehran et al., 2013; Sandbrook & Adamson-Macedo, 2004; Sedgmen et al., 2006). The researchers use the term 'maternal-fetal attachment' to describe the developing of affection feeling, love, and protection as the intense emotional relationship between the mother and her unborn baby during pregnancy.

Table 1 Dictionary definitions of maternal-fetal, attachment, and bonding

Dictionary	Maternal	Fetal	Attachment
American Heritage Dictionaries	[Adjective] Relating to or characteristic of a mother or motherhood; motherly: maternal instinct. Inherited from one's mother: a maternal trait. Related through one's mother: my maternal uncle.	[Adjective] Of, relating to, characteristic of, or being a fetus	[Noun] The act of attaching or the condition of being attached Something, such as a tie, band, fastener that connects one thing to another. An emotional bond, as of affection or loyalty; fond regard A supplementary part; an accessory: bought a vacuum cleaner with several attachments. A supplementary document that is attached to a primary document: stapled two attachments to the memorandum A file that is attached to an email
Oxford Dictionaries	Relating to a mother, especially during pregnancy or shortly after childbirth.	Relating to a fetus.	[Noun] An extra part or extension that is or may be attached to something to perform a particular function. Affection, fondness, or sympathy for someone or something. Temporary secondment to an organization. The action of attaching something.

**DEFINING ATTRIBUTES**

Based on Walker and Avant (2014), defining attributes of a concept is the heart of concept analysis. The exact definition of maternal-fetal attachment could be directly found through studies. However, maternal-fetal attachment has been defined differently based on its dimension. There are three most commons definitions, according to the experts. First, according to Cranley (1981), maternal-fetal attachment is defined as the extent to which women engage in behaviors that represent an affiliation and interaction with their unborn child. Second, Muller and Mercer (1993) described maternal-attachment as the unique and affectionate relationship between a woman and her fetus during pregnancy. Third, Condon (1993) defined maternal-fetal attachment is

the emotional tie or bond, which generally develops between the pregnant woman and her unborn fetus. In this concept analysis, the definition was developed based on critical attributes. The key attributes are described as follow:

*1) Having a positive emotion*

This positive emotion includes having tender and loving versus feeling irritated, feeling emotionally close versus emotionally distant (Condon, 1993; Cranley, 1981; Hart & McMahon, 2006). The theorist (Gottlieb, 1978) explained that when women have developed positive attachment feelings, they communicate their desire to be close to their child, possess it, and need to feel proud of it. All these feelings climaxed in professed love.

## 2) Paying attention to the physical progress of the fetus and mothers themselves

When pregnant women have a good quality of maternal-fetal attachment, they will feel encouraged to attempt and guess the infant's personality based on the infant's movement ([Félix Teixeira et al., 2016](#)), as well encourage to get information about the development of the baby ([Condon, 1993](#); [Cranley, 1981](#); [Hart & McMahon, 2006](#)). The mother will also actively focus on developing fetal life inside her womb ([Sandbrook, 2009](#)). The attached mother will have high satisfaction with her body development during pregnancy or body image as the component of self-image ([Muller & Mercer, 1993](#)).

## 3) Having a reciprocal interaction with the baby

As the gestational age increases, it is natural for pregnant women to interact with her fetus and manifest to her behavior and attitudes. For instance, she is stroking the belly, talking to the baby, stimulating him, caressing him to respond to their action ([Bielawska Batorowicz & Siddiqui, 2008](#); [Rincy & Nalini, 2014](#); [Siddiqui et al., 1999](#)).

## 4) Monitoring and imaging the unborn baby

The mother attached to her unborn baby will notice the pattern of her baby, such as when the baby sleeps or awakes, and she is also trying to picture what the developing baby looks like ([Bayrami et al., 2012](#); [Gau & Lee, 2003](#); [Granier-Deferre et al., 2011](#)). This awareness, according to [Vedova et al. \(2008\)](#), is crucial to the development of maternal-fetal attachment.

## 5) Having a desire to protect her unborn baby from harm and increase her health practices

According to [Lindgren \(2001, 2003\)](#) and [Brandon et al. \(2009\)](#), the existence of maternal-fetal attachment during pregnancy increases participation in good health practices. For instance, the mother takes less alcohol and cigarettes when she has more attachment to her baby ([Sedgmen et al., 2006](#); [Slade et al., 2011](#)) and illicit drugs such as cocaine or heroin ([Shieh & Kravitz, 2006](#)).

## MODEL CASE

This step is an example of the use of the concept that demonstrates all the defining attributes of the concept of maternal-fetal attachment ([Walker & Avant, 2014](#)). The model case below represents the concept of maternal-fetal attachment, including all the clinical attributes of the concept.

L is a 29-year-old pregnant woman in her late stage of pregnancy. As an ordinary expectant mother, she and her husband come to the antenatal clinic to visit the antenatal care and yoga exercise biweekly. L takes an iron tablet regularly and eats healthily. Now she is preparing to buy some stuff for her unborn baby and choose several optional names for him. Over the past four weeks, she has found herself talking to the baby more frequently than before. L loves to share her activity and her thought and to feel to the baby in the womb. L is very excited to imagine her baby's face and always wondering how the baby's face looks.

## ADDITIONAL CASES

### Borderline case

The borderline case is the example that contains most of the defining attributes of the concept being examined but not all of them ([Walker & Avant, 2014](#)). A borderline case is presented below.

LL is a 27-year-old pregnant woman in her second trimester of pregnancy. She has already felt the baby's movement in her tummy, and she is very

excited and tries to stop drink alcohol for her baby's health. She started to imagine her baby's face and called her baby with the name. But sometimes, when she argues with her husband, LL feels so upset, hits her belly, and expresses her anger to her unborn baby. The idea of killing the baby also sometimes comes into her mind.

Based on the example, the mother feels so happy with her pregnancy and has a unique emotional tie, such as imagining the baby's face all of the time and trying to connect with the baby by calling his name. However, she fails to express her protection and affection to the unborn baby because of her emotional impairment to her husband when they have a conflict. This is the borderline case of maternal-fetal attachment, in which the affection, excitement, and health practices are present, but the desire to protect the unborn baby from harm is absent. The attachment to the fetal may still appear, but it will be challenging.

### Contrary case

While the model case provides all critical attributes of the concept of maternal-fetal attachment, the contrary case presents a contrast. There were no vital attributes shown in the maternal-fetal attachment.

T is a 30-year-old pregnant woman during her third trimester of pregnancy. She cannot stop her lousy habit of taking cigarettes since her early pregnancy until this trimester. If T feels stress and fatigue, she blames her fetus and starts to hit her unborn baby. Imagining the baby's face is not worth it for her, and she still cannot believe if she will have a baby.

In this case, the woman has no desire to protect the fetus from harm from her careless behavior to the unborn baby. She also fails to meet the criteria from imagination nor increased the health practices during pregnancy.

### Related cases

Related cases are those that are similar to the original concept. They are connected in some ways to the related concept and help describe the network of similar concepts ([Walker & Avant, 2014](#)). The related case is presented below.

B has one boy who just entered elementary school this year. She expresses her affection by preparing breakfast for her boy every morning and driving him to the school. One day she felt something wrong with her boy during school time, but she had no idea about her feeling. Then she decided to see her boy as soon as possible and was driving the car quickly. When she arrived at school, and she saw her boy get hurt fighting with his friends. B was so mad and talked to the teachers and made sure if the same incident will not be happening again because she wanted to protect her boy from something terrible.

## ANTECEDENTS

According to [Walker and Avant \(2014\)](#), antecedents must occur or must be in place before the occurrence of the concept. Based on the literature, there are seven antecedents of maternal-fetal attachment:

### 1) Maternal age

Some studies highlighted a significant relationship between maternal age and the quality of the mother's attachment to her fetus ([Bloom, 1995](#); [Kemp & Page, 1987](#)).

### 2) Income

There are conflicting findings to the variable of income to the quality of maternal-fetal attachment. [Lerum and Lobiondo-Wood \(1989\)](#)

found that income was negatively correlated to the maternal-fetal attachment, while another study found it contradicted (Cranley, 1981).

### 3) Depression and anxiety

Studies highlighted the critical role of anxiety and depression-related pregnancy to the maternal-fetal attachment (Alhusen et al., 2012; Brandon et al., 2008; Mcfarland et al., 2011). Beck (1999) depressive symptom distracts mother for seeking or maintaining a social relationship across various connections; the negative outcome may significantly impact the prenatal attachment. Pregnant women with higher stress levels are difficult to fully engage in an affectionate relationship with their fetus, resulting in a low quality of maternal-fetal attachment. It is similar to the study conducted by Mcfarland et al. (2011) found that major depressive and anxiety disorder affects the quality of maternal-fetal attachment during pregnancy.

### 4) Social support

Some studies provided the consistent results that the mothers who received sufficient social supports from partner or family tend to have more level of attachment to her fetus rather than those with a lack of social supports (Alhusen et al., 2012; Barone et al., 2014; Condon & Corkindale, 1997; Koniak Griffin, 1988; Maas et al., 2014; Mercer et al., 1988).

### 5) Personality

Maternal personality is a strong predictor of maternal-fetal attachment, affecting the mother's way in pregnancy adaptation on the physic and physical process (Maas et al., 2014). The negative personality, according to some researchers, is associated with lower levels of supportiveness and less positive, responsive, and adaptive parenting (Kochanska et al., 2004; Prinzie et al., 2009; Verhoeven et al., 2007).

### 6) Pregnancy-related factors

These factors include (1) *Parity*, mothers with the first-time pregnancy tend to have higher levels of prenatal attachment than the mothers with the second or multi-time pregnancy (Wilson et al., 2000; Zimmerman, 2003); (2) *Gestational age*, studies found the consistent increase of prenatal attachment for the pregnancy (Koniak Griffin, 1988; Koniak-Griffin et al., 1993; Muller & Mercer, 1993; Phipps et al., 1986; Vedova et al., 2008; Wayland & Tate, 1993). While Barone et al. (2014) also found the same result on the level of maternal-fetal attachment through the increasing gestational age. Nishikawa and Sakakibara (2013) emphasized as the gestational age increases, the fetus and the belly grow. As the feeling of active fetal movements increases, the maternal-fetal attachment and sense of self-fulfillment of the pregnant woman also increase. Also, one study in Indonesia recorded the same result (Sukriani & Suryaningsih, 2018); (3) *Planned pregnancy*, Bielawska Batorowicz and Siddiqui (2008) found there is a significant level of maternal-fetal attachment between the mothers who planned and unplanned their pregnancy. They compared the mean scores of prenatal attachments among Swedish and Polish pregnant women. They found that the unplanned mother had a lower pregnancy level than the planned pregnancy between those two ethnicities. Zimmerman (2003) also found that there is a high level of attachment among non-pregnant women who wanted to become pregnant; (4) *Ultrasound*, studies found that there is an effect of ultrasound on mother's attachment during pregnancy (Boukydis et al., 2006; Heidrich & Cranley, 1989; Pavlova et al., 2015; Pretorius et al., 2006; Righetti et al., 2005; Sedgmen et al., 2006). The effect of ultrasound is seen

from the duration of the ultrasound performance, the sufficient information from the physician regarding the image, and the use of 2D or 3D; (5) *Fetal movement*, Cunen et al. (2017) observed that when mothers have fetal awareness intervention during pregnancy, such as abdominal palpation and fetal counting, then the mother's attachment to her fetus was increased. It is in line with the other studies found that the maternal-fetal attachment has increased among pregnant women who have more fetal movement (Malm et al., 2016; Rincy & Nalini, 2014).

### 7) Previous attachment and childhood history

Priel and Besser (2000) explained a significant correlation between a woman's previous attachment style and her attachment with the fetus during pregnancy. Similarly, another study reported that the women with a secure attachment style, more emotional warmth from their mothers, and rejection from their fathers are better in establishing the quality of emotional ties with their unborn baby (Siddiqui & Hägglöf, 2000). The experience developed during childhood can influence one's ability to be attached to one's growing unborn baby. However, women with insecure maternal attachment style, particularly an avoidant attachment style, are related to significantly lower maternal-fetus attachment levels during pregnancy (Alhusen et al., 2012; Alhusen et al., 2013; Van Bussel et al., 2010). Besides, Schwerdtfeger and Goff (2008) found the correlation between the traumatic history of the mother's childhood and her attachment during pregnancy. The traumatic history includes childhood sexual or physical abuse and adult domestic violence. Similarly, Van Bussel et al. (2010) also found that the mother's own childhood experience strongly affected the quality of the mother's attachment to her fetus. Another study confirmed the same result, the better the memory of maternal care during childhood, the higher the attachment between pregnant women and fetus (Carvalho, 2011). In a recent study, Félix Teixeira et al. (2016) explained that the higher the positive memory of parental care, the higher the maternal-fetal attachment.

## CONSEQUENCES

Walker and Avant (2014) suggested that consequences are events or incidents that occur as a result of the occurrence of the concept or the outcomes of the concept. The consequences of maternal-fetal attachment are dependent on the quality of the attachment itself, which affects the fetal and mother's health and development. Mothers who have low attachment may feel more anxiety and fear that could risk the fetus (Vedova et al., 2008) (Figure 1).

## EMPIRICAL REFERENCE

The empirical referents are classes or categories of actual phenomena that, by their existence or presence, demonstrate the occurrence of the concept itself (Walker & Avant, 2014). The maternal-fetal attachment concept consists of physical and behavioral performance to the unborn baby, such as increasing health practices during pregnancy, including diminishing smoking, drug, drinking alcohol, or other negative behaviors. Playing an image of the baby, the emotional feeling and thought that unique, and capable of rating them on a Likert- scale. There are many tools to measure the concept of maternal-fetal attachment (Beck, 1999; Cranley, 1981; Muller & Mercer, 1993). The widely used instrument is the Prenatal Attachment Inventory (PAI) developed by Muller and Mercer (1993). However, although the PAI

is a promising and psychometrically sound instrument, further research is needed to examine its dimensions.

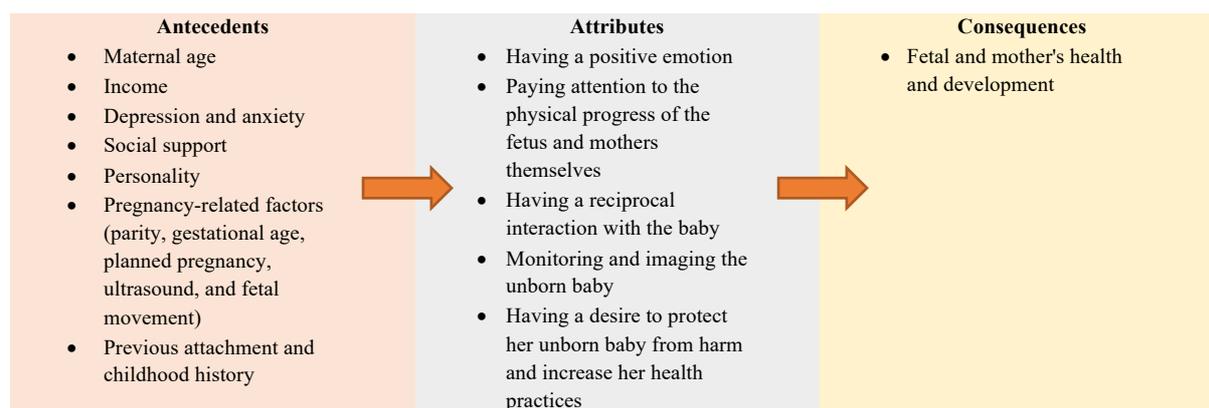


Figure 1 Antecedents, attributes, and consequences of maternal-fetal attachment

## IMPLICATION FOR NURSING PRACTICE

This concept analysis aimed to establish a more precise definition of maternal-fetal attachment by identifying the attributes, antecedents, and consequences of the concept. Based on the analysis above, the maternal-fetal attachment can be defined as affection, desire for protection, building the interaction, and the emotional tie between the mother and her unborn baby during the pregnancy. This emotional feeling and thought more obviously the late stage or when the quickening was present. The maternal-fetal attachment creates an emotional relationship with the unborn baby and leads the mother to express with behavior. This finding, however, bridges the gap of the definition of maternal-fetal attachment between [Cranley \(1981\)](#), [Muller and Mercer \(1993\)](#), and [Condon \(1993\)](#).

This concept analysis has implications for nurses and midwives in the maternity unit, where part of their autonomy to provide antenatal care during the sensitive period. Since maternal-fetal attachment is essential for both mother and fetus during pregnancy and postpartum, nurses' and midwives' role cannot be ignored in alerting women during pregnancy ([Dokuhaki et al., 2017](#)). They can help mothers promoting attachment by discussing all the potential factors that may encourage them to attach with their unborn baby.

## CONCLUSION

The present analysis identified attributes, antecedents, and consequences for maternal-fetal attachment. Healthcare providers, particularly nurses and midwives, need to know and understand the concept of maternal-fetal attachment to apply and develop appropriate interventions in prenatal care practices.

## Declaration of Conflicting Interest

The authors declare that there is no conflict of interest.

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## Authorship Contribution

E.K.S drafted the main article. M.L.G criticized the article and provided valuable inputs. W assisted in data collection and input suggestions on the manuscript. All authors approved the final version of the manuscript.

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