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maternal fetal bonding in three trimesters among primigravida-A comparative study

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Original Research

Maternal-fetal bonding (MFB) in three trimesters among primigravida - A comparative study

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Abstract

Introduction: The relationship between pregnant women and their fetuses is termed as maternal-fetal bonding. The frequency and intensity of maternal-fetal bonding increases as the pregnancy advances, particularly after quickening at approximately 18 to 22 weeks of gestation **Objective:** The aim of this study was to compare maternal-fetal bonding in three trimesters. **Methods:** A quantitative-evaluative research approach was selected. Data were collected by the interview method using a nonprobability convenience sampling technique, and the sample size was 120 primigravida mothers. Maternal-fetal bonding among primigravida mothers across three trimesters was assessed using a rating scale. The mother was asked about the present trimester and to recollect the events of her first and second trimesters. **Results:** Primigravida mothers had high maternal-fetal bonding in all three trimesters. **Conclusion:** Maternal-fetal bonding occurs when every thought, emotion, and feeling that a pregnant woman experiences are shared and incorporated into the development of her fetus.

Keywords: maternal-fetal bonding, primigravida, trimesters.

Introduction

Pregnancy is one of the most significant events during a woman's lifetime. The pregnant woman has to undergo deep physiological, psychological, and social changes and development. The expectant mother and her fetus live in symbiosis; she thinks about, imagines and talks to her fetus, communicating with him whatever she feels (Soma-Pillay, et al., 2016). Healthcare professionals term the nature of this relationship as maternal-fetal bonding, where every thought, emotion, and feeling that the pregnant woman experiences is shared and incorporated into the development of her fetus. Pregnant women often felt so bad physically and struggled to accept that they were experiencing a 'normal' pregnancy. As the fetus grows, the baby's movements become prominent. In the third trimester (begins at 25 weeks and ends at delivery), the mother experiences discomfort, such as Broxton hick contractions, shortness of breath, backaches, frequent urination, and heartburn (Curry, 2013).

The relationship between the pregnant woman and the fetus is termed as maternal-fetal bonding (MFB). The frequency and intensity of maternal-fetal bonding increases as the pregnancy advances, particularly after quickening at approximately 18 to 22 weeks of gestation (Dutta, 2004). MFB plays a role in improving the well-being of pregnant and postnatal mothers. MFB has many benefits to the mother and her baby in the uterus. It is a key element of maternal identity and is necessary for adaptation to motherhood (Nichols, et al., 2007).

The development of the fetus's brain and autonomic nervous system is affected by low MFB. The child's social development across the lifespan, beyond infancy, has been influenced by this. It is believed to occur

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through laying the foundations required for successfully accomplishing the developmental tasks in social and cognitive skills (Hassan, 2017).

Inquiry into women's psychological reactions and adjustments during pregnancy began in the 1970s. There are few scientific data available on women's thoughts or feelings about their pregnancy during this period. The concept of maternal-infant attachment has not been well studied or defined and is relatively new, as reported by Cannella (2005).

There are limited studies regarding maternal-fetal bonding and the difference in MFB at each trimester makes us interested in conducting this study. Each primigravida's attachment towards her fetus varies. Therefore, the researcher was interested in conducting a study to compare maternal-fetal bonding among primigravida in all three trimesters in selected settings in Chennai (Rekha, 2020).

Objectives:

1. To assess the maternal-fetal bonding among primigravida in trimesters by using a rating scale.
2. To compare the maternal-fetal bonding between the three trimesters among primigravida.
3. To find the association of maternal-fetal bonding with the selected demographic variables of primigravida.

Materials and Methods:

A quantitative evaluative research approach and descriptive design was selected for the study. Data were collected in the year 2019 for a period of four weeks by the interview method, and primigravida in the third trimester of pregnancy were selected using a nonprobability convenient sampling technique. A total of 120 samples (40 samples from each) setting was included in the study (VHS Multispeciality Hospital, Taramani, St Isabel Hospital, Mylapore & Sri Ranga Hospital., Mandaveli, Chennai).

Maternal-fetal bonding among primigravida across three trimesters was assessed using a rating scale. The tool was validated by five experts, two Obstetricians and three Obstetrics and Gynecology Nursing experts. The reliability of the tool was calculated by test-retest method using Karl Pearson's correlation coefficient formula. The score was 0.9 for maternal-fetal bonding scales which indicated an acceptable level of reliability of a tool.

Each trimester had 10 items in the scale. Items related to acceptance of the pregnancy, concentration on the mother's own needs and the fetus, avoiding food, fruit and activities thinking it may harm the baby were included in the first trimester. In the second trimester, items related to acceptance of the baby, movement of the baby, massaging the abdomen, and wanting to hear the fetal heart sounds were included. Items related to preparing the baby's clothes, cots or bed, eagerness to give birth, feeling upset to let the fetus go, enjoying watching the tummy jiggle as the baby kicks inside, etc were included in the third trimester. The mother was interviewed once during the third trimester and asked about the present trimester and to recollect her experience in the first and second trimesters. Informed consent was obtained from the samples for their willingness to participate in the study. The total scores (60) were arbitrarily classified in three trimesters as Low bonding 1-20, Moderate bonding 21-40, and High bonding 41-60. The study was approved by the ethical committee constituted by the college. Permission was obtained from the concerned authority of the selected hospital in Chennai. Informed consent was obtained from the samples for their willingness to participate in the study.

Descriptive statistics and inferential statistics such as frequency and percentage distribution was used to describe the demographic variables and maternal-fetal bonding, mean and standard deviation was used to compare the maternal-fetal bonding in three trimesters. The 't' test was used to compare the maternal-fetal bonding in three trimesters. and the chi-square test was used to associate maternal-fetal bonding with the selected demographic variables (Sudha, 2017).

Results

Table 1

Frequency and percentage distribution of primigravida based on demographic variables.

N=120

Demographic variables	Frequency (F)	Percentage (P)
Type of family		
a. Nuclear family	60	50.0
b. Joint family	58	48.3
c. Extended family	02	01.7
Marital life		
a. Less than 1 year	42	35.0
b. 1-3 years	60	50.0
c. More than 3 years	18	15.0
Type of marriage		
a. Consanguineous marriage	23	19.2
b. Nonconsanguineous marriage	97	80.8
Was this pregnancy planned		
a. Yes	92	76.7
b. No	28	23.3
Weeks of gestation		
a. 25 to 28 weeks	17	14.2
b. 29 to 32 weeks	27	22.5
c. 33 to 36 weeks	55	45.8
d. > 36 weeks	21	17.5

Out of 120 primigravida, the majority (50%) of the primigravida mothers were from nuclear families, and their marital life was between 1 and 3 years. Most of the (80.8%) primigravida mothers had nonconsanguineous marriages, 76.7% of the primigravida mothers had planned their pregnancies, and 45.8% of the primigravida mothers had gestational ages between 33 and 36 weeks.

Figure 1

Percentage distribution of primigravida based on maternal-fetal bonding

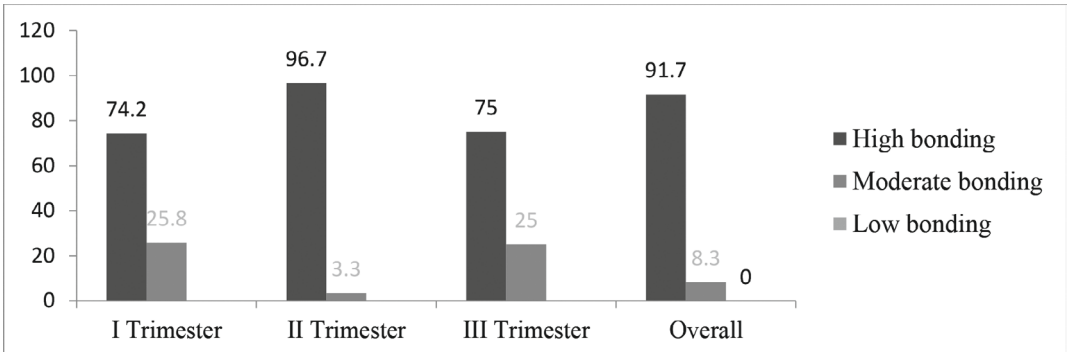

Figure 1 shows that 74.2%, 96.7%, and 75% of the primigravida mothers had high maternal-fetal bonding in the first, second, and third trimesters, respectively. The overall score showed that the majority (91.7%) of the primigravida mothers had high maternal-fetal bonding, and only 8.3% of primigravida mothers had moderate bonding.

Table 2

Comparison of Maternal-fetal Bonding between the Trimesters among Primigravida

N = 120

Variables	Mean	Standard deviation	Mean difference	Paired '*t*' test *p* value
First trimester	14.65	2.278	3.47	*t* = -16.32
Second trimester	18.12	1.911		*p* = < 0.00001 ***
Second trimester	18.12	1.911	2.26	*t* = 10.79
Third trimester	15.86	2.367		*p* = < 0.00001 ***
First trimester	14.65	2.278	0.089	*t* = 4.7
Third trimester	15.86	2.367		*p* = < 0.00001 ***

Note. Level of significance $p < 0.001$*** significant.

Table 2 shows the MFB mean score for the first trimester was 14.65 ± 2.278, the second trimester was 18.12 ± 1.911 and the third trimester was 15.86 ± 2.367. The calculated paired *t* test values for the first and second trimesters, second and third trimesters, and third and first trimesters, were significant at $p < 0.001$ level of significance. The MFB in the second trimester was comparatively high compared to that in the other two trimesters.

Table 3

Association of Maternal-Fetal Bonding with Demographic Variables

N = 120

Demographic variables	Maternal-Fetal Bonding				Chi-square test χ^2	*df*	*p* value
	Moderate bonding		High bonding				
	f	%	*f*	%			
Type of family							
Nuclear family	4	3.3	56	46.7			
Joint family	6	5.0	52	43.3	0.707	*2*	*0.702*
Extended family	0	0.0	2	1.7			
Marital life							
Less than 1 year	5	4.2	37	30.8			
1-3 years	4	3.3	56	46.7	1.101	*2*	*0.577*
More than 3 years	1	0.8	17	14.2			
Type of marriage							
Consanguineous marriage	4	3.3	19	15.8	3.056	*1*	*0.080*
Nonconsanguineous marriage	6	5.0	91	75.8			

Demographic variables	Maternal-Fetal Bonding				Chi-square test χ^2	*df*	*p* value
	Moderate bonding		High bonding				
	f	%	*f*	%			
Planned pregnancy							
Yes	5	4.2	87	72.5	4.337	*1*	*0.037**
No	5	4.2	23	19.2			
Weeks of gestation							
25 to 28 weeks	2	1.7	15	12.5			
29 to 32 weeks	1	0.8	26	21.7	1.848	*3*	*0.605*
33 to 36 weeks	6	5.0	49	40.8			
> 36 weeks	1	0.8	20	16.7			

Note. $\chi 2$ = Chi-square; *df* = Degree of freedom; *p* value = Level of significance; * = $p < 0.05$, Significant.

Table 3 shows that there was a statistically significant association between maternal-fetal bonding and planned pregnancy at a 0.05 level of significance. There was no statistically significant association between maternal-fetal bonding and type of family, marital life, type of marriage, and weeks of gestation.

Discussion

The study results show that the primigravida mothers had high maternal-fetal bonding in all trimesters, which was increased in the second trimester compared with the first and third trimesters.

The above findings were supported by a cross-sectional study to assess maternal-fetal attachment behavior and some related factors conducted by Jamshidimanesh et al., (2013). The study findings showed that the mothers had a good attachment to their fetus.

The MFB was high among the mothers in the three trimesters, which was significant at the $p < 0.001$ level of significance. The findings of this study fit with Reva Rubin's maternal role attainment theory (1967), which addresses maternal role identity. The model consists of three activities of incorporating role identity. These include taking-in activities, taking-on activities and let-out activities. In the first trimester, the mother often experiences fear and concentrates on her own needs more than the fetus, and the mother is passive and dependent during taking-in activities. Taking-on activities: during the second trimester, the mother becomes independent and focuses on the fetus and self-care activities. In the third trimester, the mother often feels exhausted and wants to deliver the fetus, which happens in letting-go activity, which indicates that the pregnancy events would be more frequent and maternal-fetal bonding is expected to reduce again. The finding of this study was in conformity with this theoretical concept, where the mean maternal-fetal bonding score during the second trimester was 18.12, which was higher than that in the first and third trimesters (Basavanthappa, 2007).

There was no statistically significant association between maternal-fetal bonding and type of family, marital life, type of marriage or weeks of gestation. There was a statistically significant association between maternal-fetal bonding and planned pregnancy at $p < 0.05$. The above findings were supported by a cross-sectional study to assess maternal-fetal attachment behavior and some related factors conducted by Jamshidimanesh et al., (2013). Race, higher maternal age, planned pregnancy, sex of the fetus and assessment of the health of the fetus had positive effects on prenatal attachment. In nursing practice implication, nurses can teach mothers about the daily fetal movement counting, provide positive reinforcement to the mothers to help them cope with developing fetus and newborn care and encourage regular antenatal check-ups. The investigator did not face any limitations.

Maternal-fetal bonding is the process by which a woman develops a close emotional and physical connection

with her unborn child. It is a complex process that is influenced by a variety of factors, including the woman's personality, her experiences during pregnancy, and the health of the fetus. There is a growing body of evidence that maternal-fetal bonding is important for both the mother and the baby. For the mother, bonding can help reduce stress and anxiety during pregnancy, and it can also lead to a more positive and rewarding childbirth experience. For the baby, bonding can help to promote healthy development and attachment.

Conclusion

The study concludes that 50% of the primigravidas were in the age group of 26-30 years, all the primigravidas were literate but 60.8% of the primigravidas were unemployed, 50% of primigravidas were from nuclear family and their marital life was between 1-3 years, majority (80.8%) of the primigravidas had a nonconsanguineous marriage, 41.6% of the primigravida's family income was between 15,000 to 25,000, 76.7% of the primigravida had planned their pregnancy, 45.8% primigravida's gestational age was between 33-36 weeks. The majority (91.7%) of the primigravidas had high maternal-fetal bonding and only 8.3% of primigravida had moderate bonding.

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