

Factors Associated with Maternal-infant Attachment One Month Postnatally

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Abstract

Background: maternal-infant attachment (MIA) or bonding is a vital process which has tremendous implications for both mother and infant and is affected by many factors. Identifying such factors enable healthcare staff to detect those mothers with bonding difficulties and in need of individualized attention during their postpartum period. **Objectives:** To identify factors associated with MIA one month after child birth. **Methods:** We executed a cross-sectional descriptive study that included a convenience sample of 150 postnatal women attending El Shatby Maternity University hospital in Alexandria, free of any medical condition and willing to participate in the study. A structured validated interview questionnaire was used to collect socio-demographic characteristics, reproductive history and the MIA Scale. **Results:** A month after delivery, 48(32%), 31(20.7%) and 71(47.3%) of mothers respectively had negative, unclear and positive MIA. Positive MIA was significantly more among educated (50.8%), employed (52.7%), socially supported (61.1%), primigravida (60.7%) and primiparous (58%) mothers having urban residency (53%), full-term (54.2%) breast fed (61.3%) boy (63.5%), planned pregnancy (58.4%) and no history of abortion (52.7%) ($p < 0.05$). **Conclusion:** Bonding is significantly associated with maternal and infant factors. Maternal factors include women education, occupation, residence, social support, gravidity, parity, abortion and pregnancy planning status, whereas infant related factors included infant gender, feeding pattern, maturity and type of care received.

Key words: *Mother-infant attachment, bonding, postnatal period.*

INTRODUCTION

After birth, MIA is assumed to be an adaptive mechanism that is biologically driven, mainly by bonding is a natural phenomenon that is oxytocin.⁽³⁾ The attachment process has described as a gradual process of emotional tremendous implications for both mother and involvement.⁽¹⁾ MIA refers to the affective infant and is also encouraged by physical dimension in the mother–infant relationship.⁽²⁾ It contact between them. The quality of this is the development of the reciprocal attachment can be influenced by several relationship between the mother and her infant. maternal and infant related factors. The infant

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factors are prematurity, physical pathology and irritable temperament while the maternal ones include mother's style of attachment, support network and development of physical illness.⁽⁴⁾ Attachment is also linked to mothers' previous experiences and early postnatal mood; for example, depressed mothers have worse attachment, compared to mothers with elevated mood after delivery.⁽⁵⁾

The first minutes, hours and days following delivery represent a very sensitive and period critical for bonding during which the baby and the mother become intimately involved with each other through behaviors and stimuli that provoke further interactions and stimulate more specific infant social skills likely to emerge.⁽⁶⁾ The mother-infant bond is enhanced by early and continuous contact.⁽⁷⁾

Attachment usually develops through three phases. The first is "pre-attachment phase", where babies orient and signal to people without discrimination of figures. Soon thereafter, during the second phase "attachment-in-the-making", they begin to

show discrimination in directing their various attachment behaviors to different figures, and these figures may also differ in how readily they can terminate an attachment behavior, such as crying. By the end of the first year of life, most babies usually reach the third phase; a "clear-cut attachment" to one or more specific caregiver. They not only show simple preference of these figures over others, but also actively seek and maintain proximity and contact with their attachment figures and react with distress to separation.⁽⁸⁾ Although a clear-cut attachment has been formed at the end of the first year, attachment security can change during infancy, childhood, and adolescence when the family environment changes.⁽⁹⁾

According to Bowlby's proposed internal working models of attachment theory, attachment is an interdisciplinary study encompassing the fields of psychological evolutionary, and ethological theory. This theory states that infants become attached to

individuals who are sensitive and responsive in social interactions with them, and who remain as consistent caregivers for some months to two years of age; a matter which is known as sensitive responsiveness.⁽¹⁰⁾ When an infant begins to crawl and walk they begin to use attachment figures (familiar people) as a secure base to explore from and return to. Caregivers' responses lead to the development of patterns of attachment. These, in turn, lead to internal working models which will guide the individual's perceptions, emotions, thoughts and expectations in later relationships.⁽¹¹⁾

There are controversial empirical results regarding the presence of MIA after delivery. Several authors agreed that attachment does not immediately establish after childbirth, and intensifies gradually with time.^(1,11,12) They rely on the fact that better attachment can be observed some months later rather than soon after childbirth. Other studies elaborated that bonding develops after birth and continues to develop beyond the early postnatal period.^(11,12)

Researchers and health professionals have pointed out the importance of studying attachment among parents, especially from mothers' perspective not only from infant one. Mothers' emotional involvement is a decisive element to the quality of care and interaction provided by them. It is of critical importance for establishing a successful relationship and mutual understanding between caregiver and infant.^(13,14) The determinant factors associated with infant attachment can influence infant development as well. Identifying such factors enables healthcare staff to detect those mothers experiencing bonding difficulties and in need of individualized attention during postpartum period. Accordingly, this study aimed to identify factors associated with maternal-infant attachment one month after childbirth.

SUBJECTS AND METHODS

Study design and setting: We followed an exploratory descriptive cross-sectional research design, where a convenience sample of 150 postnatal women (up to one month after

delivery) attending the family planning and gynecological clinics at El-Shatby University Hospital in Alexandria were invited to participate in the study. This setting was of particular interest because of the satisfactory number of attendants. Nevertheless, the number of participants was limited because bonding evolves soon after birth and continues to develop beyond the early postnatal period, and so the best period for data collection was one month postnatally.⁽¹²⁾ The inclusion criteria for the study subjects were:

- Being free of any medical or gynecological diseases.
- Willing to participate in the study.

Data Collection Tools: Two tools have been used: **Tool I:** A structured pre-coded interview questionnaire was used for collection of the socio-demographic data and reproductive history. This was developed by the researcher after extensive review of relevant and recent literature, and includes two parts describing maternal as well as infant variables. Maternal variables

covered data about the socio-demographic characteristics and reproductive history of postnatal women, such as age, educational level, occupation, residence, gravidity and parity. whereas fetal variables included data relevant to general characteristics of the infant such as gender and maturity.

Tool II: Mother-to-Infant Attachment Scale (MIAS)⁽¹⁵⁾; that was originally developed by Bhakoo et al to measure mothers' affectionate attachment to their infants. This scale was adapted, modified and translated by the researcher to suit the Egyptian culture. It consists of 15 statements; 8 statements reflected positive affectionate attachment and 7 for the negative one. Subjects' responses to each item varied from "not at all"; scoring zero to "very much" scoring 2. Subjects' total scores ranged between 0-30 and hence categorized as follows:

Positive attachment	< 10
Unclear attachment	10-20
Negative attachment	> 20

Methods: This study was approved by the ethical committee of the faculty of nursing- Alexandria University and the responsible authorities of the study settings. A written informed consent was provided by all participants prior to enrollment, after explaining the aim and concerns of the research. Tools were tested for content validity by a jury of 5 experts in the related field.

Tool II reliability was accomplished by the split half reliability technique. The instrument showed reasonable score of internal consistency (Cronbach alpha= 0.620).

A pilot study was carried out on 15 of postnatal women and thus served to evaluate clarity, applicability, time of administration for questionnaire and possible obstacles and problems that may arise during the actual work. Based on the pilot results; there was no need for amendment in the developed tools. However, subjects of the pilot were not included in the main study sample.

Data collection covered a period of four months; from the beginning of January to the mid of April 2011. Data sheets were coded under strict anonymity respecting the confidentiality of participants' information.

Statistical analysis was performed using SPSS version 16.0 for windows and employing appropriate statistical tests; percentage, mean, standard deviations, and Chi Square test. The significance level calculated for a particular Chi-square statistic is less than or equal to 0.05 ($P\text{ value} \leq 0.05$).

RESULTS

Analysis of the socio-demographic characteristics of postnatal women revealed that about two-thirds (68%) of the study subjects aged 30 years or older and about 64% were covered by a social support system. Approximately one half of the surveyed mothers (43.3%) had a secondary school education or higher and almost equal proportions of housewives and employees were presented (49.3% and 45.3% respectively). About three-fifths (59.3%) did

perceive their family income as adequate and the majority (89.3%) were urban residents. Considering the reproductive history of postnatal women, about one-third of the study subjects were either primigravida (36.7%) or primiparas (31.3%) and history of abortion was reported by only 26.7%. Almost half (51.3%) of them had their last pregnancy been planned and about 54.7% had normal delivery. As regards infant general characteristics, it was obvious that the majority of infants (87.3%) were born full-term and about two-thirds (67.3%) have received routine care. More than half (56.7%) of the studied infants were boys while 10.7% were twins (boy and girl). Breast-fed infants rated 64% while more than one-tenth (12.7%) were born premature.

Patterns of MIA among postnatal women one month postnatally are clarified in (Table 1). The majority of the study subjects reported that

their infants were much affectionate (92%) to them and when their infants were out of their sight they always worry that something may happen to them (89.3%). Meanwhile, equal percentages of mothers were proud of their infants (78.7%) or perceived that their infants had great fortune (78.7%). Less than two-thirds of the study subjects (60%) believed that their infants are promising. On the other hand, only minorities felt that they don't like their infants (3.3%), were angry with (5.3%) or annoyed by their infants (8%), or were troubled a lot by them (10.70%). About half (47.3%) of the mothers had positive attachment to their infants at one month postnatally. Negative attachment was recorded by 32% of mothers, while only one-fifth (20.7%) of them had unclear attachment. [Table 1 and Figure 1]

Table 1: Distribution of postnatal women according to items of maternal-infant Attachment

Items of Mother Infant Attachment	Very Much		Little		Not at all	
	No	%	No	%	No	%
• I feel that I don't like this infant	5	3.3	12	8.0	133	88.7
• I love this infant so much that I cannot bear to be away from him (her) even for a short time	108	72.0	8	5.3	34	22.7
• This infant is difficult to bring up	25	16.7	56	37.3	69	46
• I am extremely proud of this infant	118	78.7	12	8.0	20	13.3
• When this infant is out of my sight I always worry that something may happen to him (her)	134	89.3	4	2.7	12	8.0
• I am annoyed by this infant	12	8.0	20	13.3	118	78.7
• It seems that this infant has great fortune	118	78.7	24	16.0	8	5.3
• It seems that this infant obeys me	61	40.7	61	40.7	28	18.6
• This infant has troubled me a lot	16	10.7	28	18.6	106	70.7
• This infant is of my expectation	49	32.7	69	46.0	32	21.3
• This infant has increased our difficulties	49	32.7	24	16.0	77	51.3
• I feel angry with this infant	8	5.3	24	16.0	118	78.7
• This infant is much affectionate to me	138	92.0	8	5.3	4	2.7
• This infant seems to be promising	90	60.0	56	37.3	4	2.7
• This infant has a lot of patience	45	30.0	47	31.3	58	38.7

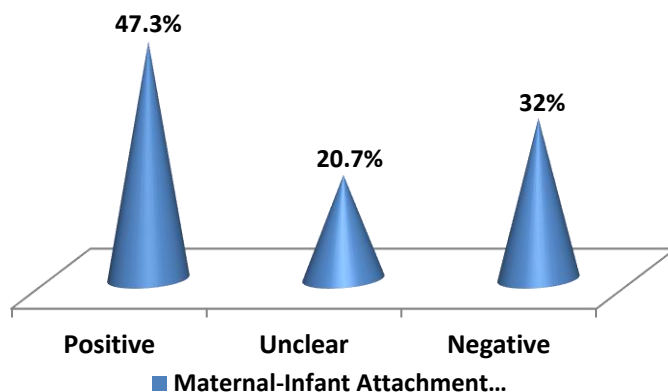


Figure 1: Postnatal women according to their total scores on Maternal-Infant Attachment Scale (MIAS)

Table2: When we investigated relationship compared to 52.4% illiterate, 35.3% between MIA among postnatal women and housewives, 75% rural residents, and 42.7% their socio-demographic characteristics, we women not subjected to social supportive observed that positive attachment was more system that mainly showed negative encountered among highly educated mothers attachment. Accordingly, MIA was found (50.7%), employed (52.7%), those living in significantly related to the educational level, urban residence (53%), and mothers covered occupation, residency and social supportive by a social support system (61.1%), if system ($P<0.05$).

Table 2: Relationship between maternal-infant attachment among postnatal women and their socio demographic characteristics

General characteristic	Maternal Infant Attachment								χ^2 / FET (P-value)
	Positive (n=71)		Unclear (n=31)		Negative (n=48)		Total (n=150)		
	No	%	No	%	No.	%	No.	%	
Age (years):									
<30	25	52.1	6	12.5	17	35.4	48	100	2.87
≥30	46	45.1	25	24.5	31	30.4	102	100	(0.238)
Level of education:									
Illiterate/read & write	6	28.6	4	19.0	11	52.4	21	100	
<Secondary education	32	50.0	7	10.9	25	39.1	64	100	15.97
≥Secondary education	33	50.8	20	30.8	12	18.4	65	100	(0.003)*
Occupation:									
Housewife	32	47.1	12	17.6	24	35.3	68	100	
Worker	0	0.0	8	100.0	0	0.0	8	100	32.90
Employee	39	52.7	11	14.9	24	32.4	74	100	(0.000)*
Perceived income:									
Adequate	45	51.1	20	22.7	23	26.2	88	100	2.56
Inadequate	26	42.0	11	17.7	25	40.3	62	100	(0.278)
Residence:									
Urban	71	53.0	27	20.1	36	26.9	134	100	18.99
Rural	0	0.0	4	25.0	12	75.0	16	100	(0.000)*
Social support system:									
Not Present	38	39.6	17	17.7	41	42.7	96	100	14.07
Present	33	61.1	14	25.9	7	13.0	54	100	(0.001)*

χ^2 Chi Square Test

FET Fisher Exact Test*

Significant $P<0.05$

Table 3: The study of MIA among postnatal women in relation to mother's reproductive history revealed that, positive attachment was a common feature among women who were either primigravida (60.7%) or primipara (58.1%), who didn't experience abortion before (52.7%), and those having their pregnancy been planned (58.4%). Meanwhile, negative MIA was evident among all postnatal women who have had one abortion. More than two-fifths of them were either multigravida (48.7%) or multipara (53.7%) while only 38.4% had unplanned pregnancy. MIC was found significantly related to gravidity, parity, abortion and pregnancy planning status ($P=0.05$).

Table 3: Relationship between maternal-infant attachment among postnatal women and their reproductive history

Reproductive History	Maternal Infant Attachment								χ^2 /FET (P-value)
	Positive (n=71)		Unclear (n=31)		Negative (n=48)		Total (n=150)		
	no	%	no	%	no	%	no	%	
Gravidity:									
1	34	60.7	5	8.9	17	30.4	56	100	
2-3	12	30.8	8	20.5	19	48.7	39	100	17.26
>3	25	45.5	18	32.7	12	21.8	55	100	(0.002) *
Parity :									
1	36	58.0	5	8.1	21	33.9	62	100	
2-3	12	29.2	7	17.1	22	53.7	41	100	29.98
>3	23	49.0	19	40.4	5	10.6	47	100	(0.000) *
Type of delivery:									
Normal	39	47.6	15	18.3	28	34.1	82	100	0.75
Instrumental	32	47.1	16	23.5	20	29.4	68	100	(0.685)
No of abortions:									
0	58	52.7	20	18.2	32	29.1	110	100	
<2	0	0.0	0	0.0	8	100.0	8	100	22.00
≥2	13	40.6	11	34.4	8	25.0	32	100	(0.000) *
Pregnancy planning status:									
Planned	45	58.4	12	15.6	20	26.0	77	100	7.90
Unplanned	26	35.6	19	26.0	28	38.4	73	100	(0.019) *
<hr/>									
χ^2 Chi Square Test			FET Fisher Exact Test			* Significant P≤ 0.05			

Table 4: addressed the relationship between characteristics of their infants. Positive MIA among postnatal women and general attachment was demonstrated by almost

two thirds of postnatal women; either their infants were boys (63.5%) or receiving breast feeding (61.4%), whereas mothers who had negative attachment were those having girls (51%) or bottle-fed infants (50%). Positive MIA was also obvious among postnatal women whose infants were born full-term (54.2%) or have received routine care (53.5%). Meanwhile, negative MIA was associated with postnatal women whose infants were premature (68.4%) or did receive medical care (51%). We can state thus a statistically significant relationship between MIA and infant gender, feeding pattern, type of care received, and infant maturity ($P < 0.01$).

Table 4: Relationship between postnatal women by maternal-infant attachment scale and their general characteristics of the infant

General characteristics of the infant	Maternal infant attachment						Total (n=150)		χ^2 /FET (P-value)
	Positive (n=71)		Unclear (n=31)		Negative (n=48)				
	no	%	no	%	no	%	no	%	
Gender									
Boy	54	63.5	12	14.1	19	22.4	85	100	20.42 (0.000)*
Girl	12	24.5	12	24.5	25	51.0	49	100	
Twins	5	31.2	7	43.8	4	25.0	16	100	
Feeding Pattern:									
Breast feeding	59	61.4	16	16.7	21	21.9	96	100	14.07
Bottle feeding	12	22.2	15	27.9	27	50.0	54	100	(0.001)*
Infants' care received:									
Routine care	54	53.5	24	23.8	23	22.8	101	100	9.68(0.008)*
Medical care	17	34.7	7	14.3	25	51.0	49	100	
Maturity									
Full-term	71	54.2	25	19.1	35	26.7	131	100	20.57(0.000)*
Premature	0	0.0	6	31.6	13	68.4	19	100	

χ^2 Chi Square Test

FET Fisher Exact Test*

Significant $P \leq 0.05$

DISCUSSION

Maternal–infant attachment is of critical importance for establishing a successful relationship and mutual understanding between caregiver and infant, which itself provides the basis for the cognitive and socio-emotional development of the infant.

Post-partum period is a sensitive stage during which the baby and the mother become intimately involved with each other through behaviors and stimuli that are complementary and provoke further interactions. Identifying the attachment behaviors and parents' emotional involvement is a decisive element to the quality of care and interaction provided by them. Therefore, determining factors associated with infant attachment enables the health care staff to detect those mothers experiencing bonding difficulties and in need of individualized attention during postpartum period.⁽¹⁴⁾

Regarding responses of postnatal women to items of maternal-infant attachment, the results of the current study revealed that the majority of the study subjects had positive attachment towards their infants one month after delivery. They reported that they were proud of their infants, believed that their infant had great fortune or promising. This finding is

consistent with that of Figueiredo *et al*⁽¹⁶⁾ who indicated that the majority of the mothers and fathers scored strong (very much) positive emotions like 'loving', 'protective' and 'joyful' toward their infants after delivery. Moreover, the study provided evidence that parents usually show a high positive emotional involvement with their newborns as early as the first day after delivery.⁽¹⁶⁾ Taylor *et al*⁽¹²⁾ added that bonding intensifies gradually during the postpartum period. On the other hand, negative maternal-infant attachment was reported by small number of the study subjects. They mentioned that they didn't love their infants, were angry with or annoyed by them, or experienced a lot of trouble with them. Likewise, Figueiredo *et al*⁽¹⁴⁾ stated that, some mothers and fathers feel 'not at all' or 'at least a little'; 'disappointed', 'resentful', 'dislike', 'aggressive', 'sad', 'neutral' or 'fearful' with their neonates. They added that negative emotional involvement with the newborn

was absent among the majority of their study sample.

On investigating the maternal infant attachment among postnatal women and their general characteristics, it was obvious that about half of the study subjects who were living in urban residence had positive attachment toward their infant. This is in line with Mickelson *et al*⁽¹⁷⁾ who found that, attachment was associated with several socio-demographic factors including income, age, and race.

Concerning mother education and employment, our results revealed that positive maternal infant attachment was significantly present among postnatal women who were highly educated and employed. On the other hand, negative attachment was more commonly found among postnatal mothers who were illiterate and housewives. This agreed with several studies, which stated that development of some maternal infant attachment behaviors is significantly

associated with mother's education. They also found that most babies of employed mothers are more securely attached to them.^(18, 19) Alhusen *et al*⁽²⁰⁾ also observed that the development of certain pattern of maternal infant behavior was significantly affected by mothers' education. He added that higher education is a predictor of more positive attachment.

The results of the present study also revealed that there is a significant positive relationship between the total score of maternal infant attachment and the existence of a social supportive system. This finding is supported by Cooper *et al*⁽²¹⁾ who mentioned that, providing social support, enhances maternal identity, and facilitates maternal-infant attachment.

No significant relationship was found between maternal infant attachment and total family income. Similarly, Shaw *et al*,⁽²²⁾ who noted that, mother believes that her baby is the best, most beautiful, and most perfect baby in the world so she feels

able to care for her baby regardless of her economic status. However, Cooper and co-workers⁽²¹⁾ declared that women with low socioeconomic status had less stable attachments. In the present study, we recovered a significant correlation between maternal-infant attachment among postnatal women and their reproductive history. Positive attachment was common among primigravida and primipara who didn't experience abortion before; a finding which also agreed well with that of Feldman *et al*⁽²³⁾ who reported that primipara started to love her baby since they are pregnant.

Concerning the pregnancy planning status, it was evident in the present work that maternal infant attachment is significantly associated with planned pregnancy. This coincided with results of Alhusen *et al*⁽²⁰⁾ who stated that maternal-fetal attachment is consistently related to the planning of pregnancy, strength of marital relationship, and gestational age. There was no significant association

between maternal infant attachment and type of delivery in our study. This disagreed with Mohamed *et al* who mentioned that mother who experience cesarean delivery are at a great risk to encounter difficulties in attachment.⁽¹⁹⁾

In the present work, maternal infant attachment among postnatal women was significantly associated with the general characteristics of their infant. Positive attachment was associated with postnatal women whose infant was mature and have received routine care, whereas negative attachment was associated with postnatal mothers having had premature infant that received special care. These results are in line with previous investigators who mentioned that the period of close contact between mother and infant immediately after birth facilitates establishment of a close bond. Moreover, parental neglect, abuse and even infanticide do occur among infants with poor survival prospects, either due to ill health or detrimental circumstances.^(24, 25)

A significant relationship between total score of maternal infant attachment and infant's gender was evident in the current study. Postnatal women who delivered a baby boy were more likely to have positive maternal infant attachment than those having had a baby girl. These findings assured the statement of Mohamed *et al* that in Egypt, mothers giving birth to baby boy establish more attachment with their babies than who had baby girl.⁽¹⁹⁾ On the other hand, Taylor *et al.*, ⁽¹²⁾ mentioned that secure, ambivalent and avoidant attachments are about equally common in boys and girls in infancy period. Other studies found that boys were more vulnerable than girls to be at a greater risk of anxious attachment.^(14, 16)

As regards the pattern of feeding, our results conformed those of Gribble *et al* ⁽²⁶⁾ that mothers who choose to breastfeed display enhanced sensitivity during early infancy which, in turn, may foster secure attachment.

CONCLUSION AND RECOMMENDATIONS

Guided by the study results we can elaborate that maternal-infant attachment is significantly associated with several maternal and infant related factors. Those maternal factors are socio-demographic characteristics like education, occupation, residence and social support system and reproductive factors including gravidity, parity, number of abortions and pregnancy planning status. The infant related factors entail infant gender, feeding pattern, maturity and type of care receive after birth. In the light of the study results, it is recommended that maternity nurses should assess postnatal women and their infants for their attachment behaviors and allocate more time to educate them about attachment process and how to accomplish it. Also, further researches are needed to explore different patterns of attachment behaviors and their deviating forms.

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