Research Article

The Relationship Between Unwanted Pregnancy with Mother and Father Attachment to Infant

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Abstract

Background and Objectives: Parents' attachment is a strong and fundamental indicator in the formation of infant secure attachment and provides a model for the present-future emotional-social functioning. Since the unwanted pregnancy has harmful consequences for the health of the mother and the child and can affect the attachment of the parent to infant, this study was to determine the relationship between unwanted pregnancy and parental attachment in Ahvaz city.

Methods: The sample consisted of 320 couple (320 mothers and 320 fathers) who have visited the healthcare centers for their 2 to 6-month-old infants. The data were collected through Muller (for mothers), Condon (for fathers), and demographic-reproductive questionnaires. Data analysis was conducted using SPSS version 24.

Findings: According to the scores of two distinct questionnaires, the father attachment mean score in the group of unwanted was obtained 68.43 ± 15.5, and 79.77 ± 10.63 in the group of wanted. The mother attachment mean score was obtained 87.51 ± 5.13 in the group of unwanted and, 97.33 ± 7.91 in the group of wanted. There was a significant difference in father's and mother's attachment scores between the two groups of wanted and unwanted pregnancy ($P < 0.001$). Based on the multivariate regression, variables of unwanted pregnancy, general marital satisfaction, spouse-to-child attachment, and children numbers, were determined as the effective predicting variables on the attachment of mothers and fathers.

Conclusions: To improve parental attachment regarding parents exposed with this type of pregnancy, serious attention should be given to the issue of unwanted pregnancies through making decisions about giving training and consultation services to the parents in healthcare centers.

Keywords: Infant, Mother Attachment, Father Attachment, Unwanted Pregnancy

1. Background

Neurologists believe that the emotional state of children in infancy is a critical factor in neurological and psychological development of infants (1, 2). Emotional status in the first year of the infant's life depends highly on the social environment. The relationship of parents with children is the primary social experience of the child. Maternal-infant bonding within the first few months of infant life is a strong indicator of secure attachment (3, 4). The formation of secure attachment between caregiver and child during infancy is a key step in social and emotional development and an important predictor of subsequent relationship patterns (5-7). Attachment theory is the most prominent achievement of the contemporary psychology. From Bowlby's point of view, attachment is pivotal for healthy growth and is one of the fundamental

needs of human beings (8). He describes attachment as: "a stable emotional relationship between two persons". He believes that mother (parent)-to-child attachment is a natural phenomenon which describes a gradual process of emotional involvement of mother (care giver) with child, and the development of this relationship is two-sided and mutual (9). The infants and children, also, attach to those who are sensitive and responsive in their attachment toward them (3). Children with unsafe parental attachment are characterized as having lower mental and emotional evolution, having weak social correlations, school scape, aggressive and hostile behavior (8). Various motherhood and infancy factors are effective in mother-to-infant attachment. Different studies have shown that psychological disorders, moods and style of mother attachment, Social support received by mother, the level of attachment to the

fetus in pregnancy period, and Physical illness, influence mother-to-infant attachment (10, 11). Personal and reproductive characteristics such as age, education, income, job, and the number of pregnancies are other factors considered in studies (12, 13). The infancy factors effective on the parental attachment include immaturity, health problems, and infancy moods (11). Some of the factor affect father-to-infant attachment like the father-mother marital relationship, age of becoming a father, previous experiences of being father, high risk pregnancy, number of children, education level, age and birth weight of the infant (14, 15). A relationship between unplanned pregnancy and attachment to the child has been reported in some studies (12, 16). Unwanted pregnancy has dangerous consequences on the mother and child's health including mother's depression, mother's suicide, unsuccessfulness in breastfeeding, mother's low self-esteem, partner's violence, mortality of infants and children, delay in growth and social character, and behavioral and psychological disorders of children (17-20). Unwanted pregnancy means a pregnancy which is unwanted by at least one of the partners. This gestation has two types: 1. The mistimed pregnancy which occurs unplanned and is not desired by one of the partners at the now time; 2. The definite unwanted pregnancy occurs unplanned and is not desired by parents neither now nor in future (21, 22). In the study by Alrezgh and Perry et al. was found a significant relationship between unwanted pregnancy and mother's attachment (12, 23), however, the study by Miller et al. showed no relation between unwanted pregnancy and secure infant attachment. Ispa's study detected that pregnancy unacceptance did not affect father warmth (24, 25). There are only Few studies which have focused on the father's attachment (15, 26, 27) and they have focused mostly on father's participation. In some studies, there was a negative relationship between unwanted pregnancy and father's participation in taking care of infants (28, 29) and their attachment to their teenagers in future (16). Since an important part of a natural infant growth in the breastfeeding period depends on emotional reactions between parents and the infant, and due to the rather high prevalence of unwanted pregnancy, as a behavioral-hygienic issue (30, 31), and the probability of its relationship with parents-to-infant attachment, the current study was designed to determine the relationship in Ahvaz city. We hope the findings would help to take a step forward enhancing infants and mothers' health in the society.

1.1. The Type and Aims of the Study

This is an analytical cross sectional study. The independent variable of the study is unwanted pregnancy and the independent variable is parent to infant attachment. The following are the purposes of the study:

- The determination of the relationship between unintended pregnancy and father's attachment.

- The determination of the relationship between unintended pregnancy and mother's attachment.

- The determination of predictive value variable of unwanted pregnancy and the variables of demographic, reproductive, general marital satisfaction, and Spouse attachment, on the fathers and mothers attachment.

2. Methods

2.1. Sample

The study population includes all fathers and mothers having 2 to 6-month-old infants (the reason for choosing this age range is based on Bowlby's theory 1969, saying parents-to-infant attachment forms in the first six months after birth) who had visited the health centers of Ahvaz for health cares and vaccination of their infant within the period June to September of 2016. Sampling was through regional-clustered non-random method. It divided the health centers of Ahvaz into the west and east geographical zones to cover all the urban regions. Then, from each zone, three centers (4, 8, and 9) were randomly selected from east and three centers (3, 4, and 19) were selected from the west. Then, samples were selected by the continuous non-random method in each center. To determine the sample size, After conducting a pilot study, using the average comparing formula of comparison means with $\alpha = 0.05$, $\beta = 0.01$, the least sample volume in each of the four groups of Pregnancy (mothers with wanted pregnancy- mothers with unwanted pregnancy- fathers with wanted pregnancy- fathers with unwanted pregnancy) was obtained 67, totally 268, however for a more detailed study, a total sample of 320 couples (320 mothers and 320 fathers) 110 couples (husband and wife) with wanted pregnancies and 210 couples (husband and wife) with unwanted pregnancies were collected. The study inclusion criterion were having a 2 to 6-month-old infant with a weight of more than 2,500 g at birth, Parent age 18 to 45 years, having one wife for fathers, and having at least primary education. The exclusion criteria included sever stress in recent years like the death of someone of a familial close-notch, serious sickness of one of parents, divorce decision, sever familial tension, drug or stimulant addiction of the father or mother, a history of severe psychological disorders during the past year (a history of physician visits, medication, or hospitalization).

$$n = \frac{\left(S_1^2 + S_2^2\right)^2 \left(z_{1-\frac{\alpha}{2}} + z_{1-\beta}\right)^2}{\left(\overline{x}_1 - \overline{x}_2\right)^2} \tag{1}$$

2.2. Tools

Data gathering tool included questionnaires:

2.2.1. Demographic-Reproductive Questionnaire

Control variables were collected by a demographic-reproductive questionnaire that was made based on the texts of literature and its content was validated by 10 members of the Faculty of Ahvaz nursing –midwifery.

The questionnaire included the age of mother and father, education of mother and father (1-less than high school; 2-diploma; 3- academic), Job of mother and father (1-unemployed; 2-employed), income (numeral), type of housing (1- rental home; 2- property home), lifestyle (1-Extended family: living with other families such as paternal family or Aunt family, etc; 2-Nuclear family: having an independent life), number of children, pregnancy and delivery number, type of delivery (1- caesarean section; 2- natural delivery), Interval between the two recent pregnancies, getting full prenatal care (1- prenatal care received less than 4 times; 2- prenatal care received 4 times and more), age and gender of the infant.

General marital satisfaction: as a confounding factor both mothers and fathers were asked one general question about their marital satisfaction in their relationship with their spouses. Parents were asked how happy they were with their spouse, on a 4-point Likert scale (1-Very dissatisfied; 2- Moderately dissatisfied; 3-Fairly satisfied; 4-Very satisfied),

2.2.2. The Main Predictor Variable in This Study was Unwanted Pregnancy

The mothers and fathers were asked whether they agreed with the lately pregnancy (having child), or whether they wanted to have children at later or any time. Fathers and Mothers who did not agree with having children at later or any time were assigned into the unwanted pregnancy group.

2.2.3. Maternal and Paternal Attachment

The main outcome variable of this study was maternal and paternal attachment and was measured through the following questionnaire.

Muller attachment questionnaire: was developed to measure maternal attachment by Muller (1994), it consists of 26 questions with a score ranging from 26 to 104. Validity tool was confirmed by the content validity method, and its reliability through the Cronbach alpha coefficient α = 0.89 by Jafarnezhad et al. (2009) (32).

Condon attachment questionnaire was invented by Condon (2008) to measure father feelings of attachment toward infant, consisting of 19 questions with a score range

from 19 to 95. Its validity was confirmed by the content validity method and the reliability was confirmed through the Cronbach alpha coefficient α = 0.86 by Arshadi Bostanabad et al. (2014) (33).

Three questions of: wanted or unwanted pregnancy, attachment, and general marital satisfaction were, separately, asked to each of fathers and mothers, but the other questions such as the number of children, type of delivery, and income were answered by one of the parents.

2.3. Procedure

This article is a result of a project named "The relationship between unwanted pregnancy with mother and father attachment to infant" which has been done after acquiring ethics committee code (IR.AJUMS.REC.1395.7). The researcher settled in a special place in considered health centers and after acquiring oral permission, using continuous non random sampling, couples (father and mother) who had been qualified for the study were interviewed and filled the questionnaires. Common questions that related to both couples, such as type of housing were reported by one member of the couple (father or mother), but not common and private questions such as Marital satisfaction, etc were answered individually.

2.4. Analytic Strategy

First, to determine which of the controlled variables between wanted and unwanted pregnancy parents is significant, Statistical tests of independent samples t test and chi square were conducted, then, to compare the attachment score between wanted and unwanted pregnancy, confounding factors were entered in the analysis of covariance for controlling and based on the adjustment mean, the relationship between two variables; Dependent and independent, was performed. To examine the predictive value variables of unwanted pregnancy, general marital satisfaction, spouse-infant attachment, and the number of variables of demographic-reproductive on the attachment of fathers and mothers to infant, multivariate linear regression with the enter method was used. The data in SPSS statistical software version 24 was analyzed. P < 0.05 was considered significant.

3. Results

3.1. Baseline Characteristics of Study Subjects

In this study, the Mean (SD) age of all mothers was: 29.4 $\pm$ 5.5, all of fathers: 33.5 $\pm$ 6.05, and all of infants: 4 $\pm$ 1.55 months. Mothers, 40.6 % less than diploma, 30.7 % were diploma graduates. Education level of all fathers was almost academic education (36 %) and after that, less than

diploma (31.4 %). Mothers were mostly housewife (88.9 %) and Most of the fathers were employed (93.1 %), and most of them were self-employed (64.7%). 45% of infants were boys and 55% were girls. More than half of the mothers had cesarean section. The majority of the mothers had received full prenatal care (88.3%). The mean attachment of all mothers was 94.8 $\pm$ 10.5, and 77.01 $\pm$ 12.8 for fathers. Of all total units of research, average income was 1 069 375 toman. 53.6% of all families had a civilian home.

3.2. Characteristics of Study Subjects According to the Type of Pregnancy

Table 1 shows the comparison of the number of demographic- reproductive factors between wanted and unwanted pregnancy of the parent. There were no significant differences in education level, employment, family type, income received, gender infant, type of delivery, prenatal care between unwanted pregnancy and wanted pregnancy of fathers and mothers. There were significant differences in age, number of children, interval between the two recent pregnancies, parity number, and general marital satisfaction between two groups. More mothers with unwanted pregnancies, significantly, were living in rental houses, but the difference was not significant between the two groups (wanted and unwanted) of fathers.

3.3. The Determination of the Relationship Between Unintended Pregnancy and Attachment of Parents

For a better understanding of the relationship between unwanted pregnancy and parent attachment level, using ANCOVA test, the confounding variables shown in Table 1 (age, number of children, general marital satisfaction, interval between the two recent pregnancies, housing type) were controlled between the two wanted and unwanted pregnancy groups and an optimization mean was obtained and a comparison was conducted based on it. The test results showed that in both fathers and mothers, there is a statistically significant difference in scores of attachment of parents between the two groups of wanted and unwanted pregnancy (P < 0.001) Table 2.

3.4. The Determination of Predictive Variable Value of Unwanted Pregnancy and Variables of Demographic- Reproductive, General Marital Satisfaction, and Spouse Attachment in the Fathers and Mothers Attachment

To determine the predictive power of the unwanted pregnancy variable and variables of demographic- reproductive, general marital satisfaction (Table 1), and spouse attachment with fathers and mothers attachment, at first using linear regression models separately for each of variables with attachment as the dependent variable, the variables whose p-value were less than 0.2 were identified and

then entered in multiple regression model. Finally, unwanted pregnancy (P = 0.003), spouse-to-child attachment (P < 0.001), and the general marital satisfaction (P = 0.009) on mothers, and unwanted pregnancy (P = 0.021.) and children numbers (P = 0.003), spouse-infant attachment (P < 0.001), and general marital satisfaction (P < 0.001) in the group of fathers had direct effect on the attachment of parent to child, so that those mothers and fathers with unwanted pregnancy had lower attachment scores comparing with the wanted group. Also, with increase in spouse-to-child attachment and the general marital satisfaction, mother-to-infant attachment would increase. Father's attachment score decreases with increase in children numbers and heightens with better marital relationship and spouse-to-child attachment. This model accounted 47% for mothers and 51% for fathers of the variance in total attachment (Tables 3 and 4).

4. Discussion

Parent-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. The results of the current study revealed that the majority of the study subjects had positive attachment towards their infant.

According to two separate questionnaires, the total mean of attachment was 94.8 $\pm$ 10.5 for mothers and 77.01 $\pm$ 12.8 for fathers, which was acceptable based on the maximum scores of the questionnaires. The total average score of father's attachment was compatible with Arshadi Bostanabad's study results (80.5 $\pm$ 6.7) (33), Also mean attachment of mothers in our study was consistent with the study by Jafarnezhad (97.4 $\pm$ 6.1) (32).

Based on the findings of this study about the main purposes after controlling for a rich set of other factors, unwanted pregnancy predicted the level of attachment parental With statistically significant differences (P = 0.000). When mothers and fathers reported unwanted pregnancy, they were more likely to respond lower score attachment. This finding is consistent with previous research demonstrating an association between unwanted and insecure parental attachment. In the study by Rezgh, mother-to-child attachment decreased one month after delivery in women with unplanned pregnancy which was similar to this study results. Guterman et al. found unplanned pregnancy as the predictor for child maltreatment by parent (12, 34). The study results of McCrocry et al. and Bahk et al. indicated that unwanted pregnancy causes the increase of parents' stress score, depression in mothers, and decrease of fathers' participation in taking care of

Table 1. Demographic-Reproductive Characteristis Comparison, Based on the Type of Pregnancy (P < 0.05)

Variable	Father			Mother		
	Wanted	**Unwanted**	**P Value**	**Wanted**	**Unwanted**	**P Value**
Age	31.8 ± 5.6	35.2 ± 6.5	< 0.001	27.9 ± 5.4	30.9 ± 5.7	< 0.001
Education level			0.797			0.149
Less than high school	31.1	33.7		34.5	46.8	
High school	31.9	31.08		33.7	27.8	
Collegiate	36.9	35.1		31.6	25.3	
Employment						0.295
Employed	94.2	92.1	0.226	12.	10	
Unemployed	5.7	7.8	0.957	87.8	90	
Income	1070491.8 ± 670137.8	1065789.4 ± 670137.6		1081250 ± 678312	1033750 ± 601883.9	0.576
Family type			0.692			1
Nuclear family	64.3	60.5		63.7	63.7	
Extended family	35.6	39.4		36.3	36/3	
Housing type			0.466			0.03
Property	57.3	52.6		59.5	63.7	
Rental	42.6	47.3		40.5	36.2	
Marital satisfaction			0.004			0.000
Very satisfied	82	64.4		84.1	55	
Fairly satisfied	14	22.3		12.9	38.7	
Moderately dissatisfied	2.4	5.2		1.6	3.7	
Very dissatisfied	1.6	7.8		1.3	2.5	
Gender infant			0.07			0.208
Girls	50.4	59.2		52	55.5	
Boy	49.5	40.8		48	44.43	
Number of mother parity	1.9 ± 1.1	2.8 ± 1.2	0.54	1.7 ± 2.8	2 ± 1.09	< 0.001
Number of children	1.7 ± 0.8	2.4 ± 10.1	0.000	1.7 ± 0.8	2.4 ± 1	< 0.001
Type of mother delivery			0.963			0.896
Normal	41.8	43.1		41.6	42.5	
Caesarean section	58.1	57.9		58.3	57.5	
Prenatal care			0.540			0.085
Complete	90.5	89.4		91.6	85	
Incomplete	9.4	11.4		8.3	15	
Interval between the two recent pregnancies	3 ± 3.2	4.5 ± 3.4	0.001	3 ± 3.3	4.3 ± 3.4	0.002

the child (29, 35). However, the study of Miller (7), Ispa (8) observed that there is no correlation between unwanted pregnancy and attachment to the child. In Cabrera e al. study results (28), The Mother-baby interaction and father involvement in child care were not influenced by the pregnancy disagreed by parents. The incompatibility of these studies with our study may be an unwanted pregnancy assessment tool or the different culture of the studied population. In these studies, the acceptance of pregnancy in which the desires and feelings of parents toward having child had been used instead of traditional questions asked about wanted / unwanted pregnancy. Also cultural differ-

Table 2. Summary Results of ANCOVA (Univarite Analysis of Variance) Test on the Relationship Between Unwanted Pregnancy with the Attachment of Parents[a]

	Adjusted Mean Attachment		Ss	df	MSc	F	P Value
	Wanted	**Unwanted**					
Father	78.6 ± 0.6	71.9 ± 1.3	2883.153	1	2883.153	22.789	< 0.001
Mother	96.7 ± 0.6	89.1 ± 1.1	2933.699	1	293.699	33.542	< 0.001

Abbreviation: Ms, mean squre; Ss, sum of sequre.
[a] Dependent variable: father-infant attachment and Mother-infant attachment.

Table 3. Regression Analysis to Determine the Predictive Value of Unwanted Pregnancy Variable and Other Variables on Mother-Infant Attachment[a,b]

Enter Model	B	Std. Error	Beta	t	P Value
Mother age	0.082	0.101	0.044	0.809	0.419
Mother education	0.017	0.660	0.001	0.026	0.979
Income	-5.463E-9	0.000	0.000	-0.007	0.994
Type of house	0.702	0.888	0.033	0.790	0.430
Number of live children	-1.399	0.793	-0.126	-1.764	0.079
Interval between the two recent pregnancies	0.311	0.196	0.101	1.584	0.114
Maternal care	-1.314	1.489	-0.038	-0.882	0.378
General Marital satisfaction	-2.132	0.812	-0.119	-2.625	0.009
spouse- infant attachment	0.423	0.041	0.520	10.237	< 0.001
Unwanted pregnancy from perspective mother	-3.446	1.142	-0.142	-3.018	0.003

[a] R = 0.666; R^2 = 0.471; adjusted R^2 = 0.454; F = 27.445.
[b] Dependent variable: mother-infant attachment.

Table 4. Regression Analysis to Determine the Predictive Value of Unwanted Pregnancy Variable and Other Variables on Father-Infant Attachmen[a,b]

Enter Model	B	Std. Error	Beta	t	P Value
Father age	-0.067	0.113	-0.031	-0.591	0.555
Father education	0.929	0.749	0.059	1.239	0.216
Father job	1.180	1.188	0.050	0.993	0.321
Income	1.526E-8	0.000	0.001	0.015	0.988
Number of live children	-2.747	0.914	-0.200	-3.006	0.003
Interval between the two recent children	0.194	0.236	0.051	0.823	0.411
Maternal care	1.326	1.751	0.031	0.757	0.449
General Marital satisfaction	2.917	0.820	0.155	3.559	< 0.001
spouse- infant attachment	0.597	0.057	0.486	10.543	< 0.001.
Unwanted pregnancy from perspective father	-3.212	1.369	-0.105	-2.347	0.020

[a] R = 0.720; R^2 = 0.518; Adjusted R^2 = 0.5.2; F = 32.675.
[b] Dependent variable: Father- infant Attachment.

ences may be possible. Cultural-religious beliefs of the values of society can be protected against the negative effects of unwanted pregnancy.

According to the regression models, the findings of this study showed that among mothers, unwanted pregnancy, father's attachment, general marital satisfaction were related to maternal attachment. Among fathers, mother attachment, number of children, general mari-

tal satisfaction, and unwanted pregnancy had direct influence on the attachment of parent to child.

Perry et al. based on their own regression study, estimated the unwanted pregnancy as a variable with negative effects on mother attachment ($\beta = 1.36; P < 0.05$) (23). Also Cabrera et al. among various demographic and pregnancy variables, determined that unwanted pregnancy is the only effective variable associated with the reduction of fatherhood warmth ($\beta = 0.2, P < 0.05$) and predicted 15% of fathers' attachment score (28). In our regression model, increase in the attachment of one parent to the infant caused increment the other partner's attachment score. This result is compatible with a few studies (27, 36), whereas the study by George et al. found that the child attachment to each one of the parents is determined separately and independently by parental activities (26). In the following discussion of regression model, marital satisfaction has a significant relationship with attachment of parents (mothers and fathers). Foroch et al. found that the positive quality of marital relationship could enhance the secure child-father attachment (37). According to Mercer et al.'s study, parents' attachment to each other leads to a satisfactory and emotional relationship and can influence the parental commitment toward child care which is compatible with this study (38). In the regression model, children number had a negative relation with father-with-infant relationship. This result is compatible with the studies of Alrazgh, Ustunsoz et al. and Jamshidimanesh et al. (12, 14, 39). However, using multivariable regression test, Cobrrera et al. did not report any connection between fatherhood warmth and children numbers. It may originate from the culture of the studied population (28).

Given the previous literature's reliance on maternal reports of pregnancy intentions as the primary focus, these findings suggest that earlier research was missing an important piece of the equation in attempting to understand pregnancy intention and early family dynamics related to attachment. These findings suggest not only that father's perspectives can have equal weight as the mothers' regarding pregnancy intentions and later parenting practices, but also that fathers' desires can substantially impact the circumstances surrounding a pregnancy which can have lasting consequences upon parental attachment.

The infant is psychologically neglected and studies mostly have concentrated on its physiological needs whereas having emotional stability and safe attachment with infant is the key factor in psychological structure and the present -future character of the infant, in addition to its effect on his physical growth. Further studies are recommended on the factors affecting the psychomotor domain in this critical period of life. The study of fathers' attachment is rarely done. Regarding this study, as well as the importance of the parental role of father, further study is recommended.

5. Conclusions

Since these findings show a connection between unwanted pregnancy and parent attachment, serious works of the authorities on unwanted pregnancy subject is necessary for the psychological social and physical growth, and the evolution of infants and their mothers. They should provide plans about necessary guidance and special cares for the parents having this kind of pregnancy. Special attention should be paid to the midwives as the first and most important communicative and hygienic elements with parents who can play influential roles in parental training and responsibility.

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Footnote

Conflict of Interest: On the behalf of all authors, the corresponding author states that there is no conflict of interest.

References

1. Schore A. Affect regulation and the origin of the self: The neurobiology of emotional development. Routledge; 2015.
2. Schore AN. Contributions from the decade of the brain to infant mental health: An overview. *Infant Ment Health J.* 2001;**22**(1-2):1–6.
3. Berlin LJ. Enhancing early attachments: Theory, research, intervention, and policy. Guilford Press; 2007.
4. Bowlby J. Attachment and Loss: Attachment; John Bowlby. Basic Books; 1969.
5. Bretherton I, Ridgeway D, Cassidy J. Assessing internal working models of the attachment relationship. Attachment in the preschool years: Theory, research, and intervention. ; 1990.
6. Bowlby J. The nature of the child's tie to his mother. *Int J Psychoanal.* 1958;**39**(5):350–73. [PubMed: 13610508].
7. Cassidy J, Shaver PR. Handbook of attachment: Theory, research, and clinical applications. Rough Guides; 2002.
8. Abbas I. Investigating the degree of mother-infant attachment among the visitors of Bandar Abbas hospitals. ; 2015.
9. Holmes J. John Bowlby and attachment theory. Psychology Press; 1993.
10. Hoseini VM. Impact of maternal attachment style on mother to infant attachment. *Qom Univ Med Sci J.* 2012;**5**(3).

11. Mills-Koonce WR, Gariepy JL, Propper C, Sutton K, Calkins S, Moore G, et al. Infant and parent factors associated with early maternal sensitivity: a caregiver-attachment systems approach. *Infant Behav Dev.* 2007;**30**(1):114–26. doi: 10.1016/j.infbeh.2006.11.010. [PubMed: 17292784].

12. Rizk SA. Factors Associated with Maternal-infant Attachment One Month Postnatally. *J High Inst Public Health.* 2016;**42**(2):103–18.

13. Dadipoor S, Rajaei M, Madani A, Ahmadi Kani Golzar A, Karimi T, Eghbali R, et al. Investigating the degree of mother-infant attachment among the visitors of Bandar Abbas hospitals. ; 2015.

14. Ustunsoz A, Guvenc G, Akyuz A, Oflaz F. Comparison of maternal- and paternal-fetal attachment in Turkish couples. *Midwifery.* 2010;**26**(2):e1–9. doi: 10.1016/j.midw.2009.12.006. [PubMed: 20172635].

15. PATERNAL . Newborn Bonding And Its Related Factors. *J Nurs Midwifery Urmia Univ Med Sci.* 2014;**12**(8):777–83.

16. Boden JM, Fergusson DM, Horwood LJ. Outcomes for Children and Families Following Unplanned Pregnancy: Findings from a Longitudinal Birth Cohort. *Child Indicat Res.* 2014;**8**(2):389–402. doi: 10.1007/s12187-014-9241-y.

17. McNeil TF, Schubert EW, Cantor-Graae E, Brossner M, Schubert P, Henriksson KM. Unwanted pregnancy as a risk factor for offspring schizophrenia-spectrum and affective disorders in adulthood: a prospective high-risk study. *Psychol Med.* 2009;**39**(6):957–65. doi: 10.1017/S0033291708004479. [PubMed: 18945377].

18. Tavakoli M, Rafiee G, Bakhshi H, Moosavi SM, Shafiee N. Unwanted pregnacy and related factors in 1995 in Rafsanjan. *J Rafsanjan Univ Med Sci.* 2002;**1**(1):20–5.

19. Kheiriat M, Zamani alavijeh F, Araban M. Exploration into causes of unwanted pregnancy: A qualitative study. *Evid Based Care.* 2014;**4**(1):41–52.

20. Hromi-Fiedler AJ, Perez-Escamilla R. Unintended pregnancies are associated with less likelihood of prolonged breast-feeding: an analysis of 18 Demographic and Health Surveys. *Public Health Nutr.* 2006;**9**(3):306–12. [PubMed: 16684381].

21. Mohammadpoorasl A, Rostami F, Ivanbagha R, Torabi S. Prevalence of unwanted pregnancy and multivariate analysis of its correlates in Tabriz city, 2004. *Med Sci J Islamic Azad Univ Tehran Medical Branch.* 2005;**15**(4):201–6.

22. Brown SS, Eisenberg L. The best intentions: Unintended pregnancy and the well-being of children and families. National Academies Press; 1995.

23. Perry DF, Ettinger AK, Mendelson T, Le HN. Prenatal depression predicts postpartum maternal attachment in low-income Latina mothers with infants. *Infant Behav Dev.* 2011;**34**(2):339–50. doi: 10.1016/j.infbeh.2011.02.005. [PubMed: 21402409].

24. Ispa JM, Sable MR, Porter N, Csizmadia A. Pregnancy Acceptance, Parenting Stress, and Toddler Attachment in Low-Income Black Families. *J Marriage Fam.* 2007;**69**(1):1–13. doi: 10.1111/j.1741-3737.2006.00339.x.

25. Miller WB, Sable MR, Csizmadia A. Pregnancy wantedness and child attachment security: is there a relationship? *Matern Child Health J.* 2008;**12**(4):478–87. doi: 10.1007/s10995-007-0254-8. [PubMed: 17641960].

26. George MR, Cummings EM, Davies PT. Positive Aspects of Fathering and Mothering, and Children's Attachment in Kindergarten. *Early Child Dev Care.* 2010;**180**(1-2):107–19. doi: 10.1080/03004430903414752. [PubMed: 20657740].

27. Goodsell TL, Meldrum JT. Nurturing fathers: a qualitative examination of child–father attachment. *Early Child Dev Care.* 2010;**180**(1-2):249–62. doi: 10.1080/03004430903415098.

28. Cabrera NJ, Shannon J, Mitchell S, West J. Mexican American Mothers and Fathers' Prenatal Attitudes and Father Prenatal Involvement: Links to Mother-Infant Interaction and Father Engagement. *Sex Roles.* 2009;**60**(7-8):510–26. doi: 10.1007/s11199-008-9576-2. [PubMed: 20300483].

29. Bahk J, Yun SC, Kim YM, Khang YH. Impact of unintended pregnancy on maternal mental health: a causal analysis using follow up data of the Panel Study on Korean Children (PSKC). *BMC Pregnancy Childbirth.* 2015;**15**:85. doi: 10.1186/s12884-015-0505-4. [PubMed: 25881099].

30. Abdollahy F, Mohamadpor RA. Evaluation of adverse outcomes of unwanted pregnancy on the women referring to Mazandran medical university hospitals, 1999-2000. *J Mazandaran Univ Med Sci.* 2004;**14**(44):87–94.

31. Jalili Z, Rouhani AA, Mohammad AS, Jafari S, Sharifi M. Perceptions of gynecologists and general physicians about therapeutic (legal) abortion: A study from Kerman, Iran. ; 2006.

32. Jafarnezhad F, Moghadam HV, Soltanifar A, Ebrahimzadeh S. Study of the relationship between domestic violence intensity during pregnancy and mother-infant attachment. 2009

33. Arshadi Bostanabad MVS, Rezanezhad J, Jabbari T. PATERNAL- Newborn Bonding And Its Related Factors. *J Urmia Nurs Midwifery Faculty.* 2014;**12**(18):7.

34. Guterman K. Unintended pregnancy as a predictor of child maltreatment. *Child Abuse Negl.* 2015;**48**:160–9. doi: 10.1016/j.chiabu.2015.05.014. [PubMed: 26070372].

35. McCrory C, McNally S. The effect of pregnancy intention on maternal prenatal behaviours and parent and child health: results of an irish cohort study. *Paediatr Perinat Epidemiol.* 2013;**27**(2):208–15. doi: 10.1111/ppe.12027. [PubMed: 23374066].

36. Caldera Y. Paternal Involvement and Infant-Father Attachment: A Q-Set Study. *Fathering J Theory Res Pract Men Fathers.* 2004;**2**(2):191–210. doi: 10.3149/fth.0202.191.

37. Frosch CA, Mangelsdorf SC, McHale JL. Marital behavior and the security of preschooler-parent attachment relationships. *J Fam Psychol.* 2000;**14**(1):144–61. [PubMed: 10740688].

38. Ferketich SL, Mercer RT. Paternal-infant attachment of experienced and inexperienced fathers during infancy. *Nurs Res.* 1995;**44**(1):31–7. [PubMed: 7862543].

39. Jamshidimanesh MSL, Behbood Ymqdm Z, Taghizadeh Z. , Haqqani H. . Maternal-fetal attachment behaviors and related factors. *Tehran Univ Med Sci J.* 2012;**18**(5):12.