Psychiatry/Mental Health Section

# Comparison of Mental Health and Foetal Attachment in Adolescent and Non-adolescent Pregnancies

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## ABSTRACT

**Introduction:** During adolescence, many physical and mental changes occur. According to evidence, adolescents begin their first sexual activity in younger age and do not use contraceptive methods. Therefore, unwanted pregnancies are more common in this group. The incidence of disorders such as depression, poverty, abuse, neglect and insecure mother to infant attachment are higher in such pregnancies.

**Aim:** To compare the mental health state and maternal to foetal attachment of adolescent and non adolescent mothers.

**Materials and Methods:** This was a descriptive-comparative study. Total 285 participants were considered and divided in two groups: adolescent (women aged 19 years or younger, n=145) and non-adolescent (women aged 20 years and older, n=140). General Health Questionnaire (GHQ-28) was used for assessing mental health; Cranley's Maternal-Foetal Attachment Scale (MFAS) was used to collect data about mother to infant attachment. Descriptive statistical methods, chi-square, t-test and Mann-Whitney U test were used for data analysis.

**Results:** No significant difference was found between two groups in terms of mental health score (p=0.23), while results of this study indicated a significant difference in terms of foetal attachment between the two groups of participants (p=0.002).

**Conclusion:** Mother-foetal attachment score was low among pregnant adolescent. More studies must be done about this global concern to find suitable intervention.

**Keywords:** Adolescence, Health behaviour, Pregnancy, Prenatal attachment

## INTRODUCTION

During adolescence, many physical and mental changes occur, which also includes mental health maturity, and acquisition of social values. Based on recent reports, adolescents begin their first sexual activity at a younger age than the past; and often do not use contraceptive methods [1]. Adolescent pregnancy is a public health concern in both developed and developing countries and usually occurs without any plan in adolescent girls younger than 19 years [2]. In developing countries, one-third to one-second of women become mothers before the age of 20; and mortality resulting from pregnancy complications has become a cause of death among them [3]. The incidence of pregnancy in adolescents is often considered as a coincidental phenomenon that needs to be prevented through increased awareness of the use of contraceptive methods [2]. Psychological complications such as depression occur in adolescent's pregnancies [3,4] and have potential to affect maternal health, foetal development and mother to infant bonding [5]. Due to unwanted pregnancies among adolescence, risk of depression, poverty, abuse and neglect in such pregnancies is higher [3,6].

Pregnancy at an early age can have a significant impact on including completing school education, job opportunities and social position [7]. Compared to older mothers, adolescent mothers are less likely to receive adequate prenatal care, higher risk of pregnancy postnatal nutritional deficits [8], higher odds of depression and drug abuse in the adulthood [9,10].

The importance of the mother-infant relationship has been well considered as the attachment theory. It has been found for the past 20 years that the relationship between a baby and mother is formed before the birth when the infant is a foetus, but the importance of this phenomenon has not been well studied as good as the mother-infant attachment. The relationship between mother and infant is crucial, as studies indicate a correlation between prenatal and postnatal attachment. In addition, optimal attachment at the beginning of infancy has been considered as a necessary component of the infant's future development [11]. Children of adolescent mothers are more prone to unsafe mother-infant attachment, less attachment

stability, behavioural problems, poor academic attachment, and delay in development of cognitive and lingual talents. In adolescence and adulthood, they show a range of unpleasant consequences, such as school dropout, less enthusiasm for academic education, unemployment and violence [9].

The present study aimed to compare the mental health state and maternal to foetal attachment of adolescent and non adolescent mothers.

## MATERIALS AND METHODS

The present study was a descriptive comparative study on the mental health and maternal-foetal attachment in adolescent and non-adolescent pregnant women. The research samples included all adolescent and non-adolescent pregnant women who visited health centers affiliated to Qom University of Medical Sciences, Qom, Iran during 2018-2019 and had the inclusion criteria. The participants were divided into two groups: adolescent (women aged 19 years or younger) and non-adolescent (women aged 20 years and older). Written informed consent was obtained from all the participants. The study was approved by the ethics committee of Shahroud University of Medical Sciences (IR.SHMU. REC. 1396.123 with letter number: 125/97027).

### Inclusion Criteria

- Women in reproductive age (15-45 years) in two groups: under or equal to 19 years with live foetuses and gestational age of 20 weeks or more; and women more than 20 years with live foetuses and gestational age of 20 weeks or more.

- Lack of any mental illness or history of psychiatric disease.

- Non-use of drugs for mental disorders such as anti-depressants.

- Non-use of any narcotic or psychotropic drugs, or no history of their use.

### Exclusion Criteria

Lack of willingness to participate in the study at any stage of the

research.

Since there was no similar descriptive-comparative study in Iran, 30 pilot samples were taken for each group. According to the statistical consultant of study, about 300 samples were considered suitable for this descriptive-comparative study. After sampling, 145 adolescent mothers (group 1) and 140 non-adolescent mothers (group 2) were included in the study. Total sample was 285 women.

Multistage sampling was used in this study. First, Qom City was divided into four classes, namely rich, middle, poor and very poor economic classes (the stratified sampling was the first stage). Then, all health centers of Qom were listed. Next, five centers were randomly selected for sampling within the regions. The demographic and obstetric questionnaire, the GHQ and Cranley's MFAS were used to collect data. The demographic and obstetric questionnaires were completed through interviews after explaining the research. The maternal mental health and Maternal–Foetal Questionnaires were responded by research samples in a quiet environment.

### Instruments

**Demographic and obstetric characteristic questionnaire:** It consists of two parts. First part, questions about demographic characteristics and socioeconomic status. Second part, about pregnancy information.

**GHQ:** The present study used a Persian version of 28-item GHQ to measure mental health. The 28-item questionnaire consists of four subscales, each containing seven questions. All items of the GHQ have four options and there were two types of scoring methods for these options. First, the GHQ scoring method that scores test options as (0-0-1-1). Therefore, a person's score ranges from zero to 28. Second, the Likert scoring method, based on which, each of the 4-point test questions is scored (0, 1, 2, 3) and thus the total score of a person varies from zero to 84. In both scoring methods, lower scores indicate better mental health. The present study utilised the Likert scoring [11]. The validity and reliability of the questionnaire were confirmed in studies done in Iran and around the world: In 2002, the sensitivity and specificity were calculated to be 64% and 79% for a 12-item questionnaire and 59% and 75% for a 28-item questionnaire [12]. In Iran in 2013, Cronbach's alpha coefficients were greater than 74% for each subscale and overall scale of Persian version of GHQ-28, indicating good internal consistency of subscales of the questionnaire [13]. In 2006, a study in Tehran obtained the reliability of the Persian version of the 28-item questionnaire equal to 0.6 by a test-retest, split half coefficient of 0.86 and a Cronbach's alpha of 0.94. The sensitivity of 0.83% and specificity of 0.76% were obtained for the questionnaire [14].

**Cranley's MFAS:** This questionnaire contains 24 items that describe maternal attachment behaviour with the foetus in five aspects: acceptance of maternal role (4 terms), interaction with foetus (5 terms), attribution of traits to foetus (6 terms), distinction between the foetus and herself (4 terms) and sacrifice (5 terms). The answers are based on a 5-point Likert scale (definitely yes= "5", yes= "4", not sure= "3", no= "2", definitely no= "1"), so that the minimum score is 24 and maximum is 120 [15]. The questionnaire was translated by Abasi E et al., and confirmed its validity by a content validity method and internal consistency by Cronbach's alpha (0.80) to approve its reliability [16]. In addition, Torshizi M showed the validity of this scale according to its content and reliability by the Cronbach's formula (0.83) [17].

### STATISTICAL ANALYSIS

Data was analysed by Statistical Package for Social Sciences (SPSS) version 23. Descriptive statistics methods and chi-square test for qualitative, t-test for quantitative variables and non-parametric Mann-Whitney U test were used. p-value less than 0.05 was considered as statistically significant.

### RESULTS

The mean age of total participants was 23±6 years. The mean age was 18.06±0.97 in group1 and 29±4 years in group 2. The mean age of marriage was 17±3 years in total samples, 16±1 years in group1, and 19±4.05 years in group 2. The majority of participants (43%) had academic degree. [Table/Fig-1] shows some socio-demographic characteristics of participants.

| Variable | Classification | Group 1 (n=145) Number (%) | Group 2 (n=140) Number (%) | |
|---|---|---|---|---|
| Educational level | Primary school | 7 (4%) | 8 (6%) | |
| | Middle school | 27 (19%) | 14 (10%) | |
| | High school | 66 (46%) | 38 (27%) | |
| | University education | 45 (31%) | 80 (57%) | |
| Ethnicity | Turkish-Iranian | 26 (18%) | 17 (12.1%) | Test result |
| | Fars | 112 (77%) | 122 (87.2%) | p=0.073[1] |
| | other | 7 (5%) | 1 (0.7%) | |
| Economic status (×1000) rial | 4000-8000 | 2 (1.4%) | 13 (9.3%) | |
| | 8000-10000 | 69 (47.6%) | 33 (23.6%) | p=0.043[1]* |
| | >10000 | 74 (51%) | 94 (67.1%) | |
| Residency | City | 140 (96.6%) | 136 (97.1%) | p=0.77[2] |
| | Village | 5 (3.4%) | 4 (2.9%) | |

**[Table/Fig-1]:** Socio-demographic characteristics of participants in groups of study.
*: Statistically significant; 1: Result from mann-whitney test; 2: Result from chi-square ($\chi^2$) test

About 69% of participants in group1 had their first pregnancy, while more than 80% of participants in group 2 were multiparous. The results indicate that almost half of the participants (49.8%) suffered a disease related to pregnancy such as diabetes, hypertension, pyelonephritis etc., during pregnancy and the majority (89%) had no history of hospitalisation, but the two groups did not differ significantly between in terms of two variables. (p=0.59 and p=0.3). There was no significant difference between the two groups in terms of wanted or unwanted pregnancy (p=0.27) [Table/Fig-2].

| Variable | Classification | Group 1 (n=145) Number (%) | Group 2 (n=140) Number (%) | |
|---|---|---|---|---|
| Number of pregnancy | 1 | 100 (68.9%) | 27(19.3%) | |
| | 2 | 31 (21.4%) | 50 (35.7%) | |
| | 3 & More | 14 (9.7%) | 63 (45%) | |
| Wanted pregnancy | Yes | 104 (71.7%) | 92 (65.7%) | Test result $\chi^2$ |
| | No | 41 (28.3%) | 48 (34.3%) | p=0.27 |
| Any disease in pregnancy | Yes | 70 (48.3%) | 72 (51.4%) | p=0.59 |
| | No | 75 (51.7%) | 68 (48.6%) | |
| Hospitalisation in pregnancy | Yes | 19 (13.1%) | 13 (9.3%) | p=0.3 |
| | No | 126 (86.9%) | 127 (90.7%) | |

**[Table/Fig-2]:** Obstetrics characteristics of participants in groups of study.
Result from chi-square ($\chi^2$) test.

[Table/Fig-3] shows the total acquired score of mental health and attachment in groups of study. According to results, more than 90% participant in group1 had score of ≤40 for mental health, while 56.4% of participants in group 2 acquired score of 21-40 for this variable. Most participants in both groups had score of 75-100 for attachment.

The independent t-test did not show any significant difference between two groups in terms of general health score (p=0.23); hence, mental health did not differ significantly between the two age

groups, while results of this test indicated a significant difference in terms of maternal-foetal attachment between the two groups of participants (p=0.002); and those in the age group of 20 years and over had higher scores of foetal attachment [Table/Fig-4].

| Variable | Category | Group 1 Number (%) | Group 2 Number (%) |
|---|---|---|---|
| Maternal mental health (Total score) | 0-20 | 66 (45.5%) | 49 (35%) |
| | 21-40 | 68 (46.9%) | 79 (56.4%) |
| | 41-60 | 8 (5.5%) | 10 (7.2%) |
| | 61-84 | 3 (2.1%) | 2 (1.4%) |
| Mother to infant attachment (Total score) | 24-50 | 16 (11%) | 7 (5%) |
| | 51-75 | 41 (28.2%) | 41 (29.2%) |
| | 75-100 | 73 (50.3%) | 74 (52.4%) |
| | 101-124 | 15 (10.4%) | 18 (12.8%) |

[Table/Fig-3]: Frequency of mental health and attachment score in groups of study.

| Variable \ Group | 1 Mean (±SD) | 2 Mean (±SD) | p-value t-test |
|---|---|---|---|
| Mental health score | 23.89 (±12.37) | 25.11 (±10.94) | p=0.23 |
| Foetal attachment score | 79.99 (±21.53) | 81.09 (±16.78) | p=0.002* |

[Table/Fig-4]: Comparison of mental health and attachment score in groups of study.
*Statistically significant; SD- Standard Deviation

## DISCUSSION

The result of this study could not show any significant difference in terms of mental health score between two groups, while a significant difference in terms of foetal attachment was found between participants of two groups of study.

The study was the first study in Iran that assessed these variables in adolescent pregnant mothers and compared their status with adult pregnant mothers. The authors did a thorough literature search to find relevant studies in terms of assessing mental health and maternal-foetal attachment in younger age pregnancies. Nevertheless, only a few studies were found comparing these variables in adults and teenage pregnancies and most of these articles were about attachment styles or depression in young age pregnancies without any control group.

In 2006, a study was conducted to compare the experience of pregnancy in adolescence and adulthood with unsafe attachment styles as a risk factor for depression during pregnancy. The research samples consisted of adolescent pregnant women and adult women in their third trimester of pregnancies. The result showed that, pregnant adolescents were almost three times more likely to exhibit unsafe attachment styles such as Enmeshed, Angry-Dismissive, and Fearful styles compared to pregnant adults [18]. Results of this study were consistent to the present study, as both of them emphasise upon worse attachment status of adolescent mothers than adult mothers.

Another study done by Emery J et al., showed seven factors as predictors of maternal-foetal attachment in adolescent mothers: adult mothers' attachment styles; childhood maltreatment; depression; parenting stress; sensitivity ratio; poor infant mood and social support. According to results of study, infants of adolescent mothers exhibit more inappropriate attachment styles as another end of the attachment spectrum; hence, results of study were consistent with the present study, but the difference between this study and the present study was in their instruments and time. In the study, attachment style was measured in infants and the maternal attachment to infant was assessed after birth. Depression was assessed in both as a scale of general health after childbirth. On the other hand, the study was purely a descriptive study and it had no control group for comparison. In the study, no attention was paid to measure the maternal attachment to the foetus during pregnancy, despite the fact that the attachment began at the time of

pregnancy [19]. The index study result was also in consistence with the study by Rowe HJ et al., and both observed lower attachment status among adolescent pregnant mothers [13].

Buzi RS et al., compared depressive symptoms in adolescent and non-adolescent pregnant women. This study did not show any significantly difference with respect to depression scores between case and control group. So the result of the present study about comparing depression between case and control groups was in consistent with Buzi's research, because in present study no significant difference between mental health in two groups was observed [20].

A cross-sectional study for comparing depression during pregnancy and the postpartum period was inconsistent with result from present study. The authors reported more depressive symptoms among adolescent mothers during pregnancy than the other group, unlike the present study [4].

The participants of a retrospective cohort study were women in first trimester of pregnancy. The results were consistent with the present study under which the pregnant adolescents had lower attachment than adults. However, the anxiety was also measured as a criterion of mental health and it was significantly different in pregnant adolescents from adult pregnant women [13].

By referring to results of the present study, pregnant adolescents had lower attachment status than pregnant adults. This result may be the cause of more unwanted pregnancies in this group. However, no statistically significant difference related to wanted or unwanted pregnancies between groups was observed. According to results of a previous study, the quality of maternal-foetal attachment is related to various aspects of the child's functions at all ages. The functions include the power of discovery at the one year of age, problem solving, socialisation of toddlers at age two, flexible behaviour management and control of pre-school [21].

### Limitation(s)

Qom is a religious city and marriage at a very younger age has been encouraged among Muslims to prevent some social problems such as corruption and prostitution. Therefore, one outcome for such marriages can be childbearing in younger age. In the same way, many participants of present study especially in adolescent group may be dissatisfied with their situation, but they cannot speak because ungratefulness is forbidden among Muslims, and this issue was a challenge, faced during completing the questionnaire. It could affect the study results especially in questions related to wanted/unwanted pregnancies, depression symptoms and the relationship with unborn baby.

## CONCLUSION(S)

As maternal-foetal attachment has an important role in child's future interactions with the world and the formation of the child's social personality. According to results of the present study, there is a need to take fundamental preventive measures in developing countries because they are more involved with such issues. So that, if it is impossible to prevent early marriages in adolescents, at least the occurrence of pregnancy must be prevented during the adolescence.

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