Prevalence and correlates of antenatal depression among women registered at antenatal clinic in North India

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INTRODUCTION

Depression during pregnancy and postpartum is an emerging public health problem, especially in developing countries. World Health Organization has highlighted that nearly one in three pregnant women suffers a significant mental health problem in developing countries [1]. Gender is one of the main determinants of mental health status. Woman passes through many stages, i.e., menarche, puberty, menstrual cycle, pregnancy, abortion, menopause, etc., in her lifetime. These phases are associated with different levels of stress. However, if women are not able to cope with these stresses, it may result in anxiety and depression.

Pregnancy is one of very crucial phases in the lifetime of a woman. The increased recognition of antenatal depression is an area of concern worldwide due to increasing trend of postpartum depression in both the developed and developing nations. Antenatal depressive symptoms are found to be associated with decreased cognitive development irrespective of postnatal depression [2]. According to a systematic review, antenatal depression affects women from lower and lower-middle-income countries in the range of 5.2%–32.9% in contrast to the high-income countries (7%–20%) [3]. Many studies have revealed that Asian women have increased rates of depression during pregnancy than North American women [4].

Plentora of factors determine the risk for depression during pregnancy such as financial security, previous girl child, inner want for male child, family pressure for male child, infertility treatment, previous complications in pregnancy, stressful life

Objective: Women pass through many stages throughout her lifetime. Among these phases, pregnancy is crucial phase. If women are not able to cope with this stress, it may lead to adverse outcomes of pregnancy. Early detection of possible depression in pregnant women may lead to decrease in incidence of depression and adverse outcomes of pregnancy.

Materials and Methods: The present study was done in an urban primary health center of east Delhi where antenatal and postnatal services are provided. Two hundred pregnant women who attended antenatal clinic for their antenatal checkup were included in the study. Edinburgh postnatal depression scale was used to diagnose possible depression. The presence of a statistically significant difference between possibility of depression in terms of various socioeconomic, obstetric, gender issues, life events, previous psychiatric history and family relationships was ascertained using Chi-square/Fisher’s exact test. Logistic regression was carried out to determine important confounding variables. Results: The mean age of participants was 25.32 ± 3.86 years. Of total 200 women, 42 (21%) women were found to be suffering from possible depression. The possibility of depression was found to be significantly higher in literate participants ($P = 0.001$) and in women who were married after 18 years of age ($P = 0.016$). Participants who wanted the present pregnancy and whose spouses were alcoholic were found to be associated significantly ($P = 0.00$). On applying logistic regression, age and abortion history was found to be significant.

Conclusion: This study demonstrates that the prevalence of antenatal depression is high in developing countries, and universal screening of depression during antenatal and postnatal period is feasible along with other antenatal and postnatal services provided to them.

Keywords: Antenatal depression, Antenatal services, Pregnancy

Access this article online

Website: www.tcmjmed.com

DOI: 10.4103/tcmj.tcmj_97_19

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How to cite this article: Dahiya N, Aggarwal K, Kumar R. Prevalence and correlates of antenatal depression among women registered at antenatal clinic in North India. Tzu Chi Med J 2020; 32(3): 267-71.
events, relationship problems, previous abortions, education status of mother, support from in-laws and marital violence. According to many studies, the depressive symptoms during pregnancy such as loss of interesting pleasurable activities, recurring thoughts of death or suicide, hopelessness, difficulty in concentrating, sadness, feeling of worthlessness, feeling of guilt and change in sleep and eating food may also exaggerate the other medical conditions in the women [5,6].

Antenatal depression is also identified as a main risk factor for preterm birth, low birth weight, birth defects, postnatal depression, etc. [7-9]. If the risk of impaired mental health is assessed in the early phase of these stages and treated accordingly, it will lead to decrease in the incidence of impaired mental health and suicidal rate among women. Several studies suggested that females were more likely to follow up for mental health evaluation if they screened positive for depression in antenatal period than postnatal period [10].

The present study is done with the objective to assess the prevalence of possible depression in pregnant women and to identify the possible association of various socioeconomic factors, obstetric and gender issues, life events, previous psychiatric history, family relationships with antepartum depression, and feasibility of screening depression in primary healthcare settings.

**MATERIALS AND METHODS**

These are the findings of a cross-sectional pilot service started to see the feasibility of screening and refer the women suffering from possible mental distress. We included all pregnant women attending antenatal clinic in an urban primary health center of east Delhi where antenatal and postnatal services are provided. Screening for noncommunicable diseases such as hypertension, diabetes, and hypothyroidism is a routine service given to all pregnant females. This center caters to the population of 29,000 with 2404 houses and 5827 families in 2018. It comprises of 15,599 males and 13,643 females. Two hundred pregnant women who attended the antenatal clinic for their antenatal checkup during September 2017–January 2018 were included in the study irrespective of their gestation period. Pregnant women with any mental illness, deliberate illness, and previously diagnosed depression were excluded from the study. The study was conducted in accordance with the Declaration of Helsinki and was approved by the local ethics committee of the institute (Approval No. CM/2819/MAMC obtained on Oct. 8 2017). Informed written consent was waived because the study was a retrospective data analysis. All routine information such as personal details, sociodemographic details, obstetric history, and other possible risk factors were taken through a semi-structured questionnaire from all the eligible women.

**Study tools and statistical analysis**

Edinburgh postnatal depression scale (EPDS)[11] was used to diagnose possible depression in the study participants. This is a ten-question self-rating scale and can be used in pregnant or postnatal women to screen possible depression. The scale indicates how the mother had felt during the last week. Scoring was done, and if the score was found to be 10 or >10, she was referred to higher center where the psychiatric facilities were available for further diagnostic evaluation and treatment. EPDS is one of the widely used screening tools for antenatal depression. It has 86% sensitivity, 78% specificity, and 73% positive predictive value in primary health-care setting [12]. The collected data were entered in the Excel sheet and analyzed using SPSS version 20 (IBM Corp, Armonk, New York, USA). The data were expressed in frequency and proportion for categorical variables. The presence of a statistically significant difference between possibility of depression in terms of various socioeconomic factors, obstetric and gender issues, life events, previous psychiatric history, and family relationships was ascertained using Chi-square/Fisher’s exact test. Logistic regression was carried out to determine important confounding variables. Possible depression positivity was taken as dependent variable whereas other risk factors such as sociodemographic profile and education were taken as independent variables.

**RESULTS**

We analyzed data of 200 women. The mean age of participants was $25.32 \pm 3.86$ years. Most of the participants (183, 91.5%) were equal to or less than 30 years of age [Table 1]. Ninety-four percent (188) of them were homemakers. Most of them (171, 85.5%) were literate. One hundred and
eighty-four (92%) were Hindu followed by Muslim (15, 7.5%). Thirteen participants (6.5%) did not know about their family income. Most of them (144, 72%) were living in joint families. Seventy-seven (38.5%) participants were living in overcrowding. Sixty percent (120) participants were living in their own house.

Of total 200 women, 42 (21.0%) women were found to be suffering from possible depression using EPDS. The possibility of depression was found to be significantly higher in literate participants as compared to illiterate participants ($P = 0.001$). There was no association found between possibility of depression with age, occupation, religion, family income, family type, overcrowding, and house type [Table 2]. The possibility of depression was found to be significantly higher in women who were married after 18 years of age as compared to women married earlier ($P = 0.016$). Participants who wanted the present pregnancy suffered more from possible depression as compared to other participants ($P = 0.036$).

There was no association found between possibility of depression with history of abortion, whether the pregnancy was planned or not, and participants were pressurized for male child or not [Table 3]. The possibility of depression was found to be significantly higher in participants whose spouses were alcoholic as compared to other participants ($P = 0.00$). There was no association found between possibility of depression with previous personal history of psychiatric illness, family history of psychiatric illness, support of parents, spouse, in-laws, and history of violence/abuse in their family [Table 4]. On applying logistic regression, age and abortion history were found to be significant.

**Discussion**

The current study shows that 42 women (21%) of the 200 participants had possible antenatal depression which is higher than previous studies [9-13]. A study done by Bavle et al. in a tertiary care hospital reported the prevalence of possible antenatal depression to be 12.3% [13]. The observed variations may be attributed to difference in study setting and the study population. Another study done in pregnant women of Peru reported antenatal depression to be 10.3% [14]. The difference in the prevalence of possible depression may be due to use of different scale to diagnose possible depression and different study population. This study included women in their third trimester only whereas our study included all the pregnant women irrespective of their gestational period. As in the first trimester, nausea, vomiting, and hormonal changes make the women anxious and irritated, this could lead to increase in the prevalence of self-reported depression in female. Many studies have also proved that pregnancy and postnatal period also increases the chances of relapse of mental illness.

### Table 2: Sociodemographic features in prenatal depression ($n=200$)

| Variable          | Possible depression ($n=42$) | No depression ($n=158$) | $\chi^2$ | $P$  |
|-------------------|------------------------------|-------------------------|----------|------|
| Age (years)       |                              |                         |          |      |
| ≤30               | 41 (97.62)                   | 142 (89.87)             | 2.56     | 0.11 |
| >30               | 1 (2.38)                     | 16 (10.13)              |          |      |
| Occupation        |                              |                         |          |      |
| Working           | 4 (9.52)                     | 8 (5.06)                | 1.17     | 0.29 |
| Homemaker         | 38 (90.48)                   | 150 (94.94)             |          |      |
| Education         |                              |                         |          |      |
| Illiterate        | 13 (30.95)                   | 16 (10.13)              | 11.61    | 0.001|
| Literate          | 29 (69.05)                   | 142 (89.87)             |          |      |
| Religion          |                              |                         |          |      |
| Hindu             | 39 (92.86)                   | 145 (91.77)             |          | 1.00*|
| Muslim            | 3 (7.14)                     | 12 (7.59)               |          |      |
| Christian         | 0 (0.0)                      | 1 (0.63)                |          |      |
| Family income (USD)* |                   |                         |          |      |
| ≤13.51            | 0 (0.0)                      | 6 (3.79)                |          | 0.13*|
| 13.52-26.75       | 1 (2.38)                     | 0 (0.0)                 |          |      |
| 26.76-45.03       | 2 (4.76)                     | 2 (1.27)                |          |      |
| 45.04-90.07       | 3 (7.14)                     | 9 (5.70)                |          |      |
| ≥90.08            | 35 (83.33)                   | 129 (81.65)             |          |      |
| Didn’t know       | 1 (2.38)                     | 12 (7.59)               |          |      |
| Family type       |                              |                         |          |      |
| Joint             | 26 (61.90)                   | 118 (74.68)             | 2.68     | 0.076|
| Nuclear           | 16 (38.10)                   | 40 (25.32)              |          |      |
| Overcrowding      |                              |                         |          |      |
| Present           | 20 (47.62)                   | 57 (36.08)              | 1.87     | 0.17 |
| Absent            | 22 (52.38)                   | 101 (63.92)             |          |      |
| House             |                              |                         |          |      |
| Owned             | 20 (47.62)                   | 100 (63.29)             | 3.39     | 0.05 |
| Rented            | 22 (52.38)                   | 58 (36.71)              |          |      |

*Fisher’s exact test, *1 USD=Rs. 69.42
Whereas few other studies conducted in Saudi Arabia reported much higher prevalence of possible antenatal depression as compared to the present study [15,16]. This difference may be due to different study settings, education, and awareness level as well as difference in the screening tool compared to the present study. The present study reported higher prevalence of possible antenatal depression in literate women, female with age of marriage more than 18 years, and women who wanted the present pregnancy. This may be due to awareness of the possible changes and outcomes of the pregnancy and added responsibility. The current study showed higher chances of possible antenatal depression in women who had history of alcoholism in spouse.

Some of the challenges we faced in providing this service were that additional workforce was required to apply

### Table 3: Obstetric factors and gender issues in prenatal depression (n=200)

| Variables                        | Possible depression (n=42) | No depression (n=158) | $\chi^2$ | $P$  |
|----------------------------------|---------------------------|-----------------------|---------|-----|
| Age at marriage (years)          |                           |                       |         |     |
| ≤18                              | 16 (38.1)                 | 32 (20.25)            | 5.79    | 0.016 |
| >18                              | 26 (61.9)                 | 126 (79.74)           |         |     |
| Gravida                          |                           |                       |         |     |
| 1                                | 16 (38.1)                 | 57 (36.08)            | 0.06    | 0.058 |
| >1                               | 26 (61.9)                 | 101 (63.92)           |         |     |
| Trimester                        |                           |                       |         |     |
| First trimester                  | 9 (21.43)                 | 20 (12.66)            | 2.28    | 0.32 |
| Second trimester                 | 19 (45.24)                | 73 (46.20)            |         |     |
| Third trimester                  | 14 (33.33)                | 65 (41.14)            |         |     |
| History of abortion              |                           |                       |         |     |
| Yes                              | 13 (30.95)                | 28 (17.72)            | 3.56    | 0.06 |
| No                               | 29 (69.05)                | 130 (82.28)           |         |     |
| Pregnancy planned or not         |                           |                       |         |     |
| Planned                          | 27 (64.29)                | 104 (65.82)           | 0.035   | 0.85 |
| Unplanned                        | 15 (35.71)                | 54 (34.18)            |         |     |
| Present pregnancy                |                           |                       |         |     |
| Wanted                           | 37 (88.10)                | 153 (96.84)           | 0.036*  |     |
| Unwanted                         | 5 (11.90)                 | 5 (3.16)              |         |     |
| Pressure for male child          |                           |                       |         |     |
| Yes                              | 7 (16.67)                 | 13 (8.23)             | 0.144*  |     |
| No                               | 35 (83.33)                | 145 (91.77)           |         |     |

*Fisher’s exact test

### Table 4: Life events, previous psychiatric history, and family relationships in prenatal depression (n=200)

| Variable                          | Possible depression (n=42) | No depression (n=158) | $\chi^2$ | $P$  |
|-----------------------------------|---------------------------|-----------------------|---------|-----|
| History of personal psychiatric illness |                           |                       |         |     |
| Yes                               | 1 (2.38)                  | 1 (0.63)              | 21.80   | 0.377|
| No                                | 41 (97.62)                | 157 (99.37)           |         |     |
| Family history of psychiatric illness |                           |                       |         |     |
| Yes                               | 2 (4.76)                  | 2 (1.27)              | 0.195*  |     |
| No                                | 40 (95.24)                | 156 (98.73)           |         |     |
| Support from parents              |                           |                       |         |     |
| Yes                               | 41 (97.62)                | 156 (98.73)           | 1.00*   |     |
| No                                | 1 (2.38)                  | 2 (1.27)              |         |     |
| Support from spouse               |                           |                       |         |     |
| Yes                               | 41 (97.62)                | 157 (99.37)           | 0.377*  |     |
| No                                | 1 (2.38)                  | 1 (0.63)              |         |     |
| Support from in-laws              |                           |                       |         |     |
| Yes                               | 40 (95.24)                | 155 (98.10)           | 0.586*  |     |
| No                                | 2 (4.76)                  | 3 (1.90)              |         |     |
| History of alcoholism in spouse   |                           |                       |         |     |
| Yes                               | 23 (54.76)                | 30 (1.99)             | 0.00    |     |
| No                                | 19 (45.24)                | 128 (81.01)           |         |     |
| History of violence/abuse in family |                           |                       |         |     |
| Yes                               | 2 (4.76)                  | 6 (3.80)              | 1.00*   |     |
| No                                | 40 (95.24)                | 152 (96.20)           |         |     |

*Fisher’s exact test
Edinburgh depression scale in all these pregnant females. Time devoted per person increased as the additional history was required to assess all the dimensions which could be related to possible depression. In resource-limited setting like primary health care, it was difficult to give sufficient time to each female for mental health screening apart from other services provided. The females who were found to be suffering from possible antenatal depression according to the Edinburgh depression scale and were referred to higher centers could not be followed up whether they had consulted higher center or not. For smooth functioning of these services, there should be referral linkage with higher centers and referred cases should be given priority in these higher centers.

There is lack of research in the area of finding association of antenatal depression with socioeconomic, obstetric and gender issues, life events, previous psychiatric history, and family relationships. There were some limitations as the center caters the population of resettlement colony and slum raising question on the generalization of findings in other settings.

Recommendations

This study demonstrates that the universal screening of depression during antenatal and postnatal period is feasible. More studies are required to study challenges and impact of treatment as the prevalence of possible depression in pregnant females was found to be quite high. Hence, screening possible depression should be made a part of the routine screening services given to all pregnant females.

Conclusion

This study demonstrates high prevalence of antenatal depression in developing countries and universal screening of depression during antenatal and postnatal period is feasible along with other antenatal and postnatal services provided to them.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

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