EFFECT OF MATERNAL DEPRESSION DURING PREGNANCY ON BIRTH WEIGHT OF BABIES

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ABSTRACT

Objective: To determine the frequency of low birth weight (LBW) babies amongst women who suffer from prenatal depression during 3rd trimester of pregnancy by comparing with control in a military care setup.

Study Design: Prospective cohort study.

Place and Duration of Study: Study was conducted in Armed Forces Institute of Mental Health (AFIMH) in collaboration with the Department of Gynecology, Military Hospital (MH) Rawalpindi and completed in six months from Mar 2012 to Sep 2012.

Material and Methods: Consecutive non-probability sampling was done. Sample size of 172 cases was calculated by World Health Organization (WHO) calculator. Level of significance was 5%, confidence interval 95%, relative risk 2.2 and power of test was 80%.

Results: Total 172 cases were enrolled predominantly between 26-30 years i.e. 45.35% (n=39) in cases and 47.67% (n=41) in controls, confidence level was 95% and relative risk was 2.2, mean and SD calculated was 28.32 ± 3.43 in cases and 27.87 ± 3.16 years in controls, mean birth score (in grams) of the neonates was 2192.302 ± 114.22 in cases and 2629.744 ± 75.33 in controls, comparison of frequency of low birth weight revealed 39.53% (n=34) in cases and 17.44% (n=15) in controls had low birth weight while 60.47% (n=52) in cases and 82.56% (n=71) in control subjects had normal birth weight, Relative risk of outcome variable was 2.23. A *p*-value of 0.001 showed a significant difference between the two groups.

Conclusion: Frequency of LBW babies amongst women who suffer from depression during 3rd trimester by comparing with control is found to be higher.

Keywords: Prenatal depression, Third trimester of pregnancy, Low birth weight.

INTRODUCTION

Depression is a substantial public health problem among pregnant women. A local study indicates that 9 to 25% of women have antenatal depression[1]. During the third trimester of pregnancy, depressive symptoms occur in up to 25% of mothers. Low birth weight (LBW) is also a major public health problem in developing countries. The two issues are related as maternal depression during pregnancy is reported to predict LBW. In South Asia level of LBW (25%) is more than four times the level in industrialized countries (7%), that is 25% mothers who had maternal depression during 3rd trimester gave birth to babies weighing less than 2500 gm[2]. This suggests that depression puts pregnant women at risk of delivering prematurely and of giving birth to below normal weight infants. Being born too soon and weighing too little can jeopardize the immediate survival and long term health of babies[3]. In South Asia women are exposed to various socioeconomic, social and family stressors which contribute to maternal depression[4]. Maternal stress results in raised serum cortisol so exposure to this hormone may cause intrauterine growth retardation[5]. Depressive disorder during pregnancy is common in both developed and under developed countries[6]. Despite the fact that childbirth is a time of joy the occurrence of perinatal depression is very common. It is therefore essential to identify and treat pregnant women with depression[7].

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Literature review revealed significant difference between infants of depressed mothers who were lighter (33.79%, LBW) as compared with infants of non-depressed mothers (17.93 LBW)[2] but there is paucity of studies investigating the spectrum of LBW babies in mothers having maternal depression in Pakistan and need to revisit this objective to assess the change in the last five years. Diagnosis and treatment of depression during pregnancy could not only reduce the burden on mothers, but could be a preventive action for both physical and mental health of the off-spring[8], Depression is associated with high numbers of somatic symptoms and patients with sub threshold depressive disorder experience considerable impairment[9]. Similar outcomes are likely to be associated with depression experienced during gestation.

Maternal depression is a target of improved awareness, clinical research, and public health efforts, yet it remains a serious health concern for pregnant and postpartum women alike. These consequences are often compounded by poor prenatal care including specific nutrients[10] increased social stressors,[11] and a degree of hopelessness that can rob both mother and child of health and well-being. Prevalence of maternal depression ranks as the fourth leading cause of disability worldwide, and the World Health Organization (WHO) estimates that it will rise to second place by the year 2020[12]. Women of childbearing age are at particular risk, with numbers rising at menarche and continuing to be elevated until the completion of menopause[13].

Studies consistently suggest that the prevalence of depression during pregnancy and the postpartum is 10%[11]. Depression and anxiety during pregnancy is a major public health problem because of their high prevalence[14]. Some women may experience their first depressive episode during pregnancy, whereas others with a history of depression are at increased risk for its recurrence[15]. Depression is also associated with adverse child outcomes including premature births, low birth weight, and poor infant growth[16].Adequate care is required for psychological and neuroendocrine profile of preterm birth risk[17]. Untreated depression during pregnancy has long term effects in offsprings[18]. Our study aimed to highlight the significance of early detection and treatment of prenatal depression.

MATERIAL AND METHODS

The study design is prospective cohort study. It was conducted at Armed Forces Institute of Mental Health (AFIMH) in collaboration with the Department of Gynecology and Obstetrics, Military Hospital (MH) Rawalpindi. Depression is measured by using the psychological tool, Edinburgh Postnatal Depressive Scale (EPDS) as well as clinical assessment by using ICD-10 Diagnostic criteria[5].

The study was completed in a period of six months (Mar 2012 to Sep 2012).

Sample size was calculated by WHO calculator. Confidence interval was 95%, relative risk was 2.2, level of significance was 5%, power of test was 80%, *p*-value was 0.001, anticipated population proportion-1 was 34.26%2, anticipated population proportion-2 was 17.68%2, sample size (n) was 172, depressed mothers were 186, and control group was 86.

Patients 18-35 years female, during 3rd trimester, belonging to family income 10,000–25,000 scoring >10 on EPDS from 30 week onward and control group including non depressed mothers (score <10) from 30th weeks onwards, were included in the study.

Patients having any previous psychiatric disorder, grief/bereavement in last year, on psychotropic medication, use of illicit drugs during pregnancy, chronic illnesses including high blood pressure, diabetes and mothers having twins or more were excluded from the study.

Study protocol was approved by the ethical committee of Armed Forces Post Graduate Medicla Institute (AFPGMI). The patients

fulfilling the criteria were approached and written informed consent was taken.

Keeping in mind the confounding variables and confidentiality 172 women (86 of maternal depression and 86 of control) during 3rd trimester were identified. Birth weight of the babies of depressed and non-depressed (controls) mothers was measured and documented by the researcher.

Data were entered and analyzed by Statistical Package for Social Sciences (SPSS) version 13. Confidence interval was 95% and relative risk was 2.2. Descriptive statistics like mean ± SD for age and birth weight was calculated. Frequency and % age for LBW was measured. Relative risk and confidence interval were calculated. Chi-square was used to compare LBW in two groups while a *p*-value less than 0.05 was considered as significant.

RESULTS

A total of 172 cases fulfilling the inclusion/exclusion criteria were enrolled to determine the frequency of LBW babies amongst women who suffered from depression during 3rd trimester by comparing with control in a military care setup. Majority of patients were between 26-30 years i.e. 45.35% (n=39) in cases and 47.67% (n=41) in controls, 36.05% (n=31) in cases and 32.56% (n=28) in controls between 18-25 years and 18.60%(n=16) in cases and 19.77% (n=17) in controls between 31-35 years of age, confidence interval-95% and relative risk-2.2, mean and SD was calculated was 28.32 ± 3.43 in cases and 27.87 ± 3.16 years in controls (table-I).

Mean birth score (in grams) of the neonates was recorded in table-II, it was 2192.302 ± 114.22 in cases and 2629.744 ± 75.33 in controls. A *p*-value was <0.001.

Comparison of frequency of LBW revealed 39.53% (n=34) in cases and 17.44% (n=15) in controls had LBW while 60.47% (n=52) in cases and 82.56% (n=71) in control had no LBW. Relative risk for outcome variable was 2.23 *p*-value was 0.001 which shows a significant difference between the two groups (table-III).

Table-I:Age distribution (n=172).

Age (in years)	Cases (n=86)		Controls (n=86)	
	No. of patients	%	No. of patients	%
18-25	31	36.05	28	32.56
26-30	39	45.35	41	47.67
31-35	16	18.60	17	19.77
Total	86	100	86	100
Mean ± SD	28.32 ± 3.43		27.87 ± 3.16	

p-value 0.001

Table-II: Mean birth score of the neonates (n=172).

Birth score (in grams)	Cases (n=86)	Controls (n=86)
	2192.302 ± 114.22	2629.744 ± 75.33

*p*value - <0.001

Table-III:Comparison of frequency of low birth weight (n=172).

Low Birth weight	Cases (n=86)		Controls (n=86)	
	No. of patients	%	No. of patients	%
Yes	34	39.53	15	17.44
No	52	60.47	71	82.56
Total	**86**	**100**	**86**	**100**

p-value=0.001

DISCUSSION

LBW (<2500 g) remains a major problem in low-income countries affecting over 22 million

newborns in 2013 (of the world's total infants)[19]. There is some evidence supporting the direct effects of depression during pregnancy on poor neonatal outcome, especially birth weight and post natal cognitive complications[20]. Impaired mental health has been associated with reduced attendance for antenatal care and lower weight gain in pregnancy, which in turn has led to an increased likelihood of LBW. Despite these vulnerabilities, the evidence linking maternal depressive and anxiety symptoms with infant LBW is conflicting[21] but strong correlation between anxiety and depression suggests those should be examined concurrently and need to identify its influence on maternal and infant bonding and their interaction[22]. In other countries of South Asia, one of them being Bangladesh, where the prevalence of maternal depression is as high as 33% and Low birth weight is 36%. Premature delivery, decrease in breast feeding initiation[23], shorter for gestation and LBW are significantly associated with maternal depression[24]. There is significant association between maternal depression and child outcome in South Asian Countries[25].

CONCLUSION

We concluded that the frequency of LBW babies amongst women who suffer from prenatal depression during 3rd trimester of pregnancy by comparing with control in a military care setup is higher.

So, it is recommended that every patient who presents with depression during third trimester, should be sorted out for low birth weight and every 3rd trimester pregnant woman be screened for depression.

CONFLICT OF INTEREST

This study has no conflict of interest to declare by any author.

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