



A Study on the Relation between Gestational Anemia & Development of Postpartum Depression

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Abstract

Background & Objectives: *Pregnancy and puerperium are labile phases in a women's life, making her at risk for the development of psychiatric issues. Postpartum depression is one of the most common psychopathology to arise. Whereas, anemia is one of the most common medical complication during pregnancy. The study and treatment of anemia during pregnancy and after pregnancy can be considered as an important preventive and therapeutic measure for postpartum depression as both share similar clinical features & limited studies show anemia as a physiologic factor leading to postpartum depression.*

The present study is aimed at determining the proportion of postpartum depression cases among postnatal mother who have had gestational anemia during their antepartum period & postpartum period

Methodology: *The study was conducted on 120 postnatal mothers delivered in SGMC, TVM meeting the inclusion & exclusion criteria & divided into 40 cases & 80 controls based on their EPDS score. Their Laboratory data on the maternal Hb levels which were collected at the time of their 2nd trimester, admission and on postpartum days 3 will be checked and. Then further evaluation of the study variables was done to assess for the objectives over a period of 2 years*

Results: *In current study, among cases, 17.5% of mothers had hemoglobin level of 10 to 11g/dl and 7.5% of mothers had hemoglobin level of 7 to 10g/dl during 2nd trimester. Among cases, 55% of mothers had hemoglobin level of 10 to 11g/dl 12.5% of mothers had hemoglobin level of 7 to 10g/dl during admission.*

Therefore, in the antenatal period, among cases, 32.5% of mothers had no anemia whereas 67.5% of mothers had anemia. Thereby it was understood that significantly higher incidence of post-partum depression present among mothers with antenatal maternal anemia In current study, among cases 12.5% of mothers had hemoglobin of more than 10g/dl whereas 87.5% of mothers had hemoglobin of less than 10g/dl. There was significantly higher incidence of post-partum depression among mothers with postnatal maternal anemia

Conclusion: *It was showed that maternal anemia is the major risk factor with significant incidence of development of post-partum depression among mothers. Thus anemia can be considered as a physiological variable leading to postpartum depression.*

Introduction

The birth of a baby can start a variety of powerful emotions, from excitement and joy to fear and anxiety. But it can also result in something you might not expect — depression.

Pregnancy is such a huge change in a woman's life that it brings about more psychological changes than any other life events^[1]

A woman suffering from postpartum depression may experience interference in maternal role attainment and interruption of maternal-infant bonding^[2]. Long-term effects on her infant may result, including behavioural, developmental and cognitive delay, and may last years beyond infancy^[3-9]. Other family members, including partners and older children, may also suffer^[3,10]

Majority of the mother's exhibit symptoms by 6 week postpartum and if not treated, many women continue to be depressed at the end of the first postpartum year. After one postpartum episode the risk of recurrence, defined as an episode of illness meeting criteria for DSM-IV major depression, is 25%^[11]. Prevalence estimates range from 13 to 19% in resource-rich settings and 11 to 42% in resource- limited settings^[12]

More recently, anemia as a biologic factor leading to depression has been taken into account^[14]. Anemia is considered as the most prevalent medical disorder in pregnancy period^[15]. Anemic women are more prone to birth complications compared to pregnant women with normal hemoglobin. It is estimated that 60 percent of women are anemic during pregnancy^[16]

Anemia can result in different complications in pregnancy like an increase in preterm birth number and inter-uterine development complication, anemia is defined as a Hb level <11.0 g/dL in pregnancy or <10.0 g/dL in the immediate postpartum period in accordance with the definition of ICMR^[17] which is further classified into grades of severity as: mild- 10-11, moderate-7-10, severe-4-7, very severe-<4g/dl.

Anemia is one of the most important public health issues worldwide, which has a great impact on the physical, mental ability of people at work, and is

the most common type of iron-deficiency anemia^[18]; about 80% of non-physiologic anemia during pregnancy occurs due to iron deficiency^[19]. Therefore, paying attention to the nutritional status of women during pregnancy is very important. The prevalence of anemia in pregnant women is affected by geographical region, lifestyle, and diet, and is reported to be between 14-80% in different societies^[20-22].

The classic symptoms associated with PPD are depressed mood, anxiety, anhedonia, appetite and sleep disturbances, physical agitation, fatigue, feelings of worthlessness and excessive guilt, decreased concentration and recurrent thoughts of death or suicidal ideation^[23]. Symptoms of PPD are common to those found in women with anemia. Whether a causal pathway relates PPD and anemia is unknown, however identifying a physiological link between these two conditions may help identify women at increased risk of PPD.^[24-26]

Therefore, the study and treatment of anemia during pregnancy and after pregnancy can be considered as an important preventive and therapeutic measure for postpartum depression as both share similar clinical features & studies show anemia as a physiologic variable leading to postpartum depression.

Rationale of the Study

There is a relative lack of information regarding the influence of maternal anaemia on postpartum depression. The aim of our study is to determine the relationship between anaemia during and after pregnancy and postpartum depression.

Primary Objective

To determine the relationship between gestational anemia during the antepartum period & postpartum period and the development of postpartum depression in postnatal mothers

Methodology

Study Design - Hospital based case control study

Study Setting - Dept of OBG, SGMC, TVM

Study Period – 2 years: from March 2021 to Jan 2023

Study Population- Women delivered in SGMC, TVM.

Cases- Postnatal mothers scoring 10 or more in EPDS questionnaire, n = 40

Controls - Postnatal mothers scoring less than 10 in EPDS questionnaire, n= 80

Cases- All consecutive subjects satisfying the case definition till sample size is achieved

Controls- Random sampling with similar age group to samples in study group

Inclusion Criteria

1. All women admitted in postnatal wards of Obstetrics unit of SGMC, TVM with Hb values checked in their antepartum period [in 2nd trimester & at the time of their admission]& in their postpartum period.
2. Subjects who consented to participate in the study.

Exclusion Criteria

1. H/o PPD in previous pregnancy
2. Women with severe cognitive impairment
3. H/o intake of antidepressants
4. History of hematological disorders.
5. Medical disorders like liver diseases, cardiovascular diseases, kidney disorders
6. History of antepartum/ postpartum hemorrhage.
7. History of previous blood transfusion
8. Those not willing to participate

Samples were assessed in terms of the age, educational status, social and economic status, number of pregnancies, mode of delivery, problem of breastfeeding, infant gender, social support and

marriage satisfaction as intervention factors if they were matched in the two groups.

The sample obtained based on the review as per the family planning OPD norms on their PND 7, 14 and 28 through phone or electronic communication through a pretested and validated Malayalam version of EPDS

Based on the EPDS score, they were categorized into cases [score >10] & controls

Their Laboratory data on the maternal Hb levels which were collected at the time of their 2nd trimester, admission and on postpartum days 3 was checked

Then further evaluation of the study variables was done to assess for the objectives

Ethical Considerations

Approval of the study was taken from Human Ethics Committee, SGMC & RF, Thiruvananthapuram. After getting institutional consent, the participants were approached for obtaining their willingness to participate in the study. During data collection prime consideration was given for privacy and autonomy of the participants. Confidentiality of the entire data obtained from each participant has been strictly maintained.

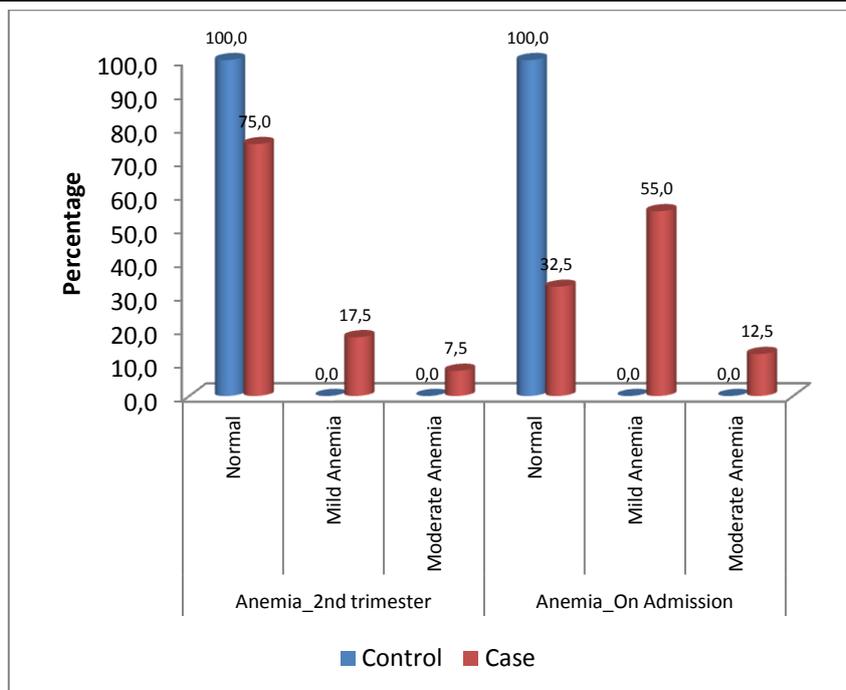
Results

In current study, among cases 17.5% of mothers had hemoglobin level of 10 to 11g/dl and 7.5% of mothers had hemoglobin level of 7 to 10g/dl during 2nd trimester

Among cases 55% of mothers had hemoglobin level of 10 to 11g/dl 12.5% of mothers had hemoglobin level of 7 to 10g/dl during admission

Table: Distribution of depression based on level of Anemia

Anemia		Control		Case	
		Count	Percent	Count	Percent
2nd trimester	Normal	80	100.0	30	75.0
	Mild Anemia	0	0.0	7	17.5
	Moderate Anemia	0	0.0	3	7.5
On Admission	Normal	80	100.0	13	32.5
	Mild Anemia	0	0.0	22	55.0
	Moderate Anemia	0	0.0	5	12.5

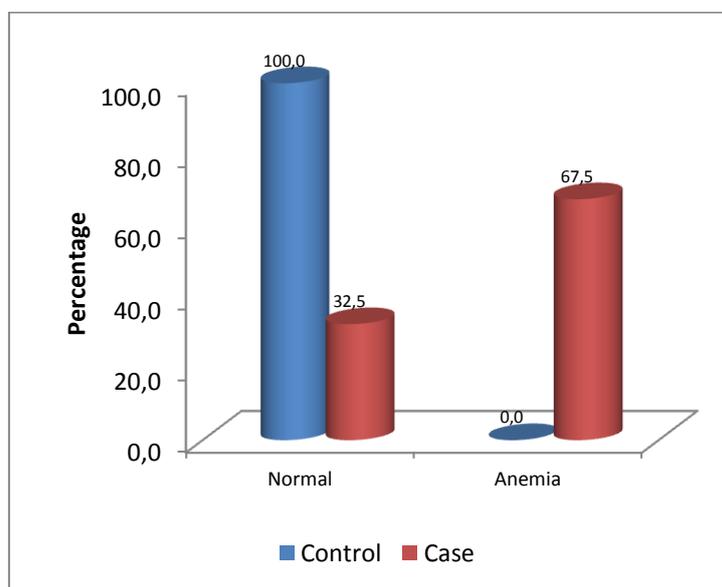


Therefore, in the antenatal period, among cases, 32.5% of mothers had no anemia whereas 67.5% of mothers had anemia.

Thereby it was understood that significantly higher incidence of post-partum depression present among mothers with antenatal maternal anemia

Table: Association of antenatal anemia with postpartum depression

Antenatal anemia	Control		Case		χ^2	p
	Count	Percent	Count	Percent		
Normal	80	100.0	13	32.5	69.68	p<0.01
Anemia	0	0.0	27	67.5		

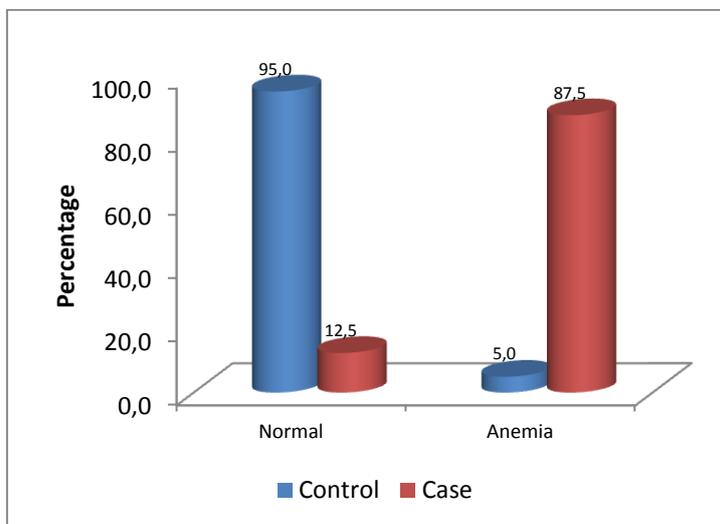


In current study, among cases 12.5% of mothers had hemoglobin of more than 10g/dl whereas 87.5% of mothers had hemoglobin of less than 10g/dl.

There was significantly higher incidence of post-partum depression among mothers with postnatal maternal anemia

Table: Association of post natal anemia with postpartum depression

Post natal anemia	Control		Case		χ^2	p	95% CI
	Count	Percent	Count	Percent			
Normal	76	95.0	5	12.5	82.74	p<0.01	1
Anemia	4	5.0	35	87.5			132 (33.64 – 525.41)



The results showed that there was no significant difference between age, educational status, social and economic status, number of pregnancies, mode of delivery, problem of breastfeeding, infant gender, social support and marriage satisfaction. Both groups were similar in this regard.

Discussion

This study does not allow us to determine whether the relationship between anemia and PPD is causative

However, given the results of several studies demonstrating a negative effect of anemia on self-reported quality of life, it is conceivable that anemia could contribute to depression in a new mother.^[27]

Anemia increases the symptoms of fatigue, irritability and poor concentration, this might influence how a new mother feels during the postpartum period and how she interacts with her infant.

A balanced diet plays an important role in the model of thinking and behaviour, and affects the cognition and memory capacity, and has direct & indirect effects on brain health, directly involved in the synthesis and metabolism of related neurotransmitters

During pregnancy and postpartum periods, mothers face continuous nutritional vulnerability, amounting to the burden of anemia.

Several studies suggest that anemia bring about changes in inflammatory cytokines may lead to depression and anemia during pregnancy is one of the risk factors for postpartum depression.

Therefore, the implications of a linkage between low Hb concentration and PPD are important.

All new mothers should be counseled by health care providers about the risks of anemia throughout their pregnancies and should be reminded to continue eating well even after delivery.

Conclusion

It was showed that gestational anemia is a major risk factor with significant incidence of development of post-partum depression among mothers.

Thus anemia can be considered as a physiological variable leading to postpartum depression.

It can be recommended that mothers with gestational anemia [both antenatal + postnatal] must have more attention regarding their postpartum status & to be evaluated for depression after delivery so that they can be treated if needed.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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