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Examining The Link Between Delivery Method, Sleep Quality, And Postpartum Depression: Insights from A Prospective Study

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Abstract:
This study investigates the prevalence of postpartum depression (PPD) among 200 women who delivered at Government Women's Hospital, Dharashiv, from October 2023 to March 2024. The findings reveal a half-year prevalence of PPD at 13% for vaginal deliveries and 26% for cesarean deliveries, resulting in a pooled prevalence of 22% in India. This figure is notably higher than the 12.9% reported in high-income countries and aligns with the 19.2% prevalence found in low- and middle-income nations. The study highlights the challenges faced by mothers in accessing adequate postpartum care, especially given the short hospital stays and low rates of follow-up visits, which contribute to undetected mental health issues. Urban mothers exhibited higher rates of PPD, potentially due to factors such as overcrowding and increased stress. The mean age of affected mothers was 28.05 years, with no significant associations found between PPD and socio-demographic variables like family type or maternal education. Notably, a prior history of depression was linked to higher prevalence rates. These findings underscore the urgent need for enhanced screening and intervention strategies for PPD in India, particularly for vulnerable populations, to improve maternal mental health outcomes and overall family well-being.

Keywords: Postpartum Depression, Postpartum Blues, Postpartum Psychosis, Maternal Mental Health, Low-Income Countries, India, Epidemiology, Treatment, Policy Integration, Stigma Reduction, Cognitive Behavioral Therapy (CBT), Serotonin Reuptake Inhibitors (SSRIs), Community Engagement, Research and Surveillance.

INTRODUCTION:

Researching the interaction between delivery methods and postpartum depression (PPD) is crucial for understanding how different childbirth experiences impact maternal mental health. The process of childbirth brings significant hormonal, physical, emotional, and psychological changes, alongside shifts in a mother's social and familial dynamics. Studies indicate that PPD affects approximately 10% to 15% of mothers, with a notable incidence of 22% reported in India. Postpartum blues, a common mild adjustment disorder, typically resolves within weeks with adequate support. However, without intervention, PPD symptoms can persist for months or even years; one study found that 25% of participants still experienced depression three years postpartum. Various factors, including the choice between vaginal

and cesarean delivery and pain management techniques, can influence the severity and onset of PPD. Understanding these dynamics is essential for healthcare professionals to tailor interventions and support systems to better address the needs of mothers at risk for PPD.

Postpartum depression (PPD) is a prevalent and debilitating mental health condition affecting many women worldwide, particularly during the transition to motherhood, which involves significant physical, psychological, and social changes. Unlike the temporary "baby blues," PPD is characterized by persistent feelings of sadness, disinterest, and diminished enjoyment that can severely impact a mother's ability to care for her child. It affects approximately 10% to 20% of mothers, posing a serious public health concern. The postpartum period is critical for both maternal and infant health; inadequate maternal care due to PPD can hinder bonding and lead to developmental delays in children. Infants of mothers with PPD may face cognitive, emotional, and social challenges, increasing their risk of future mental health issues. Understanding the complex effects of PPD is essential for developing targeted interventions and support systems to enhance the well-being of affected mothers and their children.

Background:

Postpartum psychiatric disorders include postpartum blues, postpartum psychosis, and postpartum depression (PPD), each with varying prevalence and severity. Postpartum blues affect 300–750 per 1000 mothers and typically resolve within a week with minimal intervention. In contrast, postpartum psychosis, which occurs in 0.89 to 2.6 per 1000 births, is a severe condition requiring hospitalization and usually manifests within four weeks of childbirth. PPD affects an estimated 100–150 per 1000 live births and can lead to chronic depression, negatively impacting maternal-infant bonding and child development. Children of depressed mothers are at higher risk for behavioral and cognitive issues, as well as underweight and stunting. Despite the significant prevalence of perinatal mental health disorders, particularly in low- and middle-income countries (LMICs) like India, these conditions are often underdiagnosed due to stigma and lack of resources. India's maternal mental health services are limited, with no standardized screening tools or comprehensive data collection on PPD prevalence. As maternal mortality rates decline, there is a pressing need to address maternal morbidity through improved mental health services. A multi-faceted approach that includes policy integration, stigma reduction, capacity building for healthcare providers, community engagement, and ongoing research is essential for effectively addressing the burden of perinatal mental disorders in India and improving the overall well-being of women and their children.

A comprehensive approach to addressing PMDs in India should encompass several keycomponents:

1. Policy Integration: Maternal mental health should be integrated into existing maternal andchild health policies and programs, ensuring that it receives adequate attention and resources.
2. Stigma Reduction: Efforts to reduce stigma surrounding mental health issues are crucial forincreasing help-seeking behaviors and access to services.
3. Capacity Building: Healthcare providers need training to effectively screen, diagnose, andmanage PMDs. This includes both clinical skills and knowledge about the socio-cultural factors influencing mental health.
4. Community Engagement: Engaging communities in destigmatizing discussions about PMDs and promoting mental health awareness can foster supportive environments for affected women.
5. Research and Surveillance: Continued research is needed to understand the epidemiology, risk factors, and outcomes of PMDs in India. Surveillance systems can help monitor trends and evaluate the

effectiveness of interventions.

By adopting a multi-faceted approach that addresses policy gaps, reduces stigma, enhances healthcare capacity, engages communities, and promotes research, India can make significantstrides in addressing the burden of PMDs and advancing maternal mental health. Such efforts not only align with the SDGs but also contribute to the overall well-being and empowerment of women and girls across the country. [5]

Objectives:

The objectives of this study focus on understanding the relationship between delivery methods (vaginal and cesarean) and sleep quality in relation to postpartum depression (PPD). Key aims include exploring the individual effects of these factors on PPD risk, anticipating the epidemiology of PPD among women at Government Women's Hospital, and determining its prevalence in a diverse postpartum population. The study also seeks to identify potential confounding factors such as socio-demographic characteristics, literacy, and family income that may influence PPD risk. Additionally, it aims to examine the interplay between delivery methods and sleep quality, identify subgroups of postpartum women at higher risk due to specific combinations of these factors, and assess how different delivery methods correlate with sleep quality and PPD susceptibility.

POSTPARTUMDEPRESSION: FOUNDATIONS AND PATHOGENESIS-

Definition: Postpartum depression (PPD) is a disorder that impairs the formation of the relationship between mother and child, and reduces the quality of life for affected women to afunctionally significant degree. [9]

Postpartum depression symptoms:

Postpartum depression may be mistaken for baby blues at first but the symptoms are more intense and last longer. These may eventually interfere with your ability to care for your babyand handle other daily tasks. Symptoms usually develop within the first few weeks after giving birth. But they may begin earlier during pregnancy or later up to a year after birth.

Postpartum depression symptoms may include: [7]

- Depressed mood or severe mood swings
- Crying too much
- Difficulty bonding with your baby
- Withdrawing from family and friends
- Loss of appetite or eating much more than usual
- Inability to sleep, called insomnia, or sleeping too muc
- Overwhelming tiredness or loss of energy
- Less interest and pleasure in activities you used to enjoy
- Intense irritability and anger
- Fear that you're not a good mother
- Hopelessness
- Feelings of worthlessness, shame, guilt or inadequacy
- Reduced ability to think clearly, concentrate or make decisions
- Restlessness
- Severe anxiety and panic attacks
- Thoughts of harming yourself or your baby

- Recurring thoughts of death or suicide

Risk Factors:

- **Physiological factors :**

The occurrence of mental health disorders such as depression during pregnancy is a strong reason for predicting postpartum depression. There is make clear in amplification these relationships signifying that women with a sure history of depression are also susceptible to hormonal changes. In hold of this finding, it has reported that a history of moderate to terriblepremenstrual syndrome (PMS) is a factor distressing the beginning of postpartum depression. [10]

- **Obstetric gamble factors:**

Mothers with the birth of an infant with a credence <1500 g are 4–18 epoch at danger for postpartum depression extra than others. A disparity between the expectations of nurse and pregnancy dealings is as factors that disturb the occurrence of depression. Women with well- built entreaty to hold native childbirth during the perinatal full stop whose supply are made by caesarean sector are new horizontal to menace for postpartum depression than others. However, restlessness during pregnancy container be in front to the menace of intermittent postpartum depression in women with a preceding history of the disease. [10]

- **Biological factors**

Young get older during pregnancy increases the peril of depression. The chief dead flat of depression has been reported in mothers aged 13–19 living little the buck assess has been seen in women with the time scale of 31–35-year-old. Serotonin and tryptophan levels in the blood are plus acknowledged factors operative on depression. The expenditure of foods ironicin protein reduces the amounts of tryptophan and serotonin in the intelligence whereas carbohydrate snack has transpose effects. In dietetic deficiencies, on sale reason tryptophan (afoundation of serotonin) up to 15% leads to amplified depression ascend assess of postpartumdepression. [10]

- **Social factors**

Group collaboration refers to emotional support, monetary support, brainpower support, and sympathy relations. Plummeting do cheer on is a large amount of notable environmental issuein the arrival of depression and apprehension disorders. In adding up to the women's affiliation with family members and community, behaviors such as smoking during prenatal period, is of community factors allied with greater than before incidence of postpartum depression as 1.7 times. An alternative shared issue is employment status, more than ever certified careers, which allow related to a condensed possibility of postpartum depression. However, culture and gentle takings relate to the stake of postpartum depression. [10]

- **Lifestyle**

Among the factors related to lifestyle, factors of food intake patterns, sleep status, exercise, and physical activities may affect postpartum depression. It was observed that sufficient consumption of vegetables, fruits, legumes, seafood, milk and dairy products, olive oil, and a variety of nutritious may reduce postpartum depression as 50%.[11]

In a study, the positive relation between the level of vitamin B2 absorption at week 21 of pregnancy and postpartum depression has been reported. Among the micronutrients, reduced intake of zinc and selenium is linked with the incidence of postpartum depression.

In addition to nutritional status, sleep status is among the factors influencing the risk of depression. Evidence shows that there is a relationship between less sleep and postpartum depression. Periods of severe sleep deprivation have been reported in depressed women after delivery. [11]

PATHOPHYSIOLOGY:

The exact mechanisms underlying postpartum depression (PPD) remain unclear, with various models attempting to explain its causes. The biological model attributes PPD to drastic hormonal changes, particularly the sudden decrease in pregnancy hormones like progesterone and cortisol. The withdrawal model highlights the stress and reproductive hormone fluctuations during pregnancy and childbirth that may disrupt the system, leading to PPD. However, these models do not fully account for depressive symptoms that can arise during pregnancy. The depression model focuses on dysregulation of stress hormones, particularly cortisol, and suggests that disruptions in the hypothalamic-pituitary axis and dopaminergic regulation may also contribute to PPD. Psychological models emphasize the stressors associated with pregnancy and new parenthood as significant triggers for PPD symptoms. Integrated models combine biological and psychological factors, suggesting that genetic and hormonal susceptibilities play a role in how stress affects women. Finally, evolutionary models propose that PPD may be a "disease of civilization," arising from cultural shifts that deviate from human evolutionary lifestyles, as suggested by the "mismatch hypothesis." [12]

Role of methyldopa in the induction of postpartum depression

Methyldopa, an alpha-2 adrenergic receptor agonist used primarily to treat hypertension in pregnancy, may induce postpartum depression (PPD) through several mechanisms. By preventing norepinephrine release, methyldopa alters neurotransmitter dynamics, particularly affecting dopamine and serotonin levels. It raises vascular endothelial growth factor (VEGF), which can disrupt neurogenesis and neurotransmitter balance, contributing to the neurotrophic model of depression. Additionally, methyldopa reduces cerebral blood flow and increases nitric oxide (NO) levels, which can be neurotoxic and lead to cognitive decline and depressive symptoms.The drug also lowers dopamine concentrations, leading to hyperprolactinemia, which impairs sexual behavior and disrupts the reward system, further contributing to depression. Given that methyldopa is a first-line treatment for pregnancy-related hypertension, its side effects may be more pronounced in postpartum women. Therefore, extensive studies are needed to evaluate the risk of depression associated with methyldopa treatment during and after pregnancy, as it may serve as a significant risk factor for postpartum depression. This process's pathomechanism is intricate and classified into following five categories:[12]

1. Neurotrophic alteration
2. Reduction of cerebral blood flow
3. Neurotoxicity induced by NO
4. High levels of prolactin
5. Reward system impairment

Management Strategies and Therapeutic Interventions: Psychotherapy and antidepressant drugs are the first-line treatments for peripartum depression. The first-line treatment for women with mild to severe peripartum depression is psychosocial and psychological psychotherapy, particularly if the mother plans to nurse the baby and is hesitant to take medication. For women who suffer from mild to severe depression, a combination of counseling and antidepressant medications is advised.

Cognitive behavioral therapies can impart new ways of thinking, adjusting, or interacting with people. They could consist of both supervised lay therapists and professional talk therapy. Talk therapy can take place online or in person. Psychological treatments can be obtained via websites, apps, and self-help

manuals.

Effective psychological treatments for depression include:

- Cognitive behavioural therapy
- Interpersonal psychotherapy
- Nondirective counseling
- Peer and partner support

1. Cognitive behavioral therapy (CBT)

Reduced negative parenting behavior scores and decreased rates of anxiety, stress, and depression are encouraging outcomes of internet-based cognitive behavioral treatment (CBT).Mothers who are unable to receive in-person CBT may find benefit via CBT. The long-term advantages, nevertheless, are still unknown. The application of cognitive behavioral therapyis among the most popular and effective types of treatment for PPD. To put it briefly, cognitive behavioral therapy is a psycho-social intervention that tries to lessen the symptoms of anxiety and depression in particular, as well as other mental health illnesses. Even though psychotherapy covers a wide range of topics, it is nevertheless very helpful in treating the specific emotional anguish that forms the basis of PPD. Consequently, CBT is able to further diminish or restrict the frequency and intensity of emotional outbursts in fathers or mothers.[16]

2. Interpersonal therapy (IPT)

The time-limited treatment known as interpersonal therapy (IPT) for major depression focuses on addressing the relationship between mood and interpersonal problems. IPT views depression as a physiological condition that manifests itself in a social setting. In IPT, the patient and the therapist decide on a treatment emphasis from among the four interpersonal problem areas (interpersonal deficits, role transition, role disagreement, and mourning). During the course of the therapy, which lasts between 12 and 20 weeks on average, tactics arefollowed to help patients improve their social supports networks and change problematic relationship attitudes. IPT has been modified to target postpartum depression-related issues such the mother-child and partner relationships as well as the return to work transition. IPT's time-limited and problem-focused design complements the needs of the postpartum woman.

3. Nondirective counseling

Psychosocial treatments, such as peer support and nondirective counseling, are unstructured and nonmanualized in contrast to IPT or CBT. An sympathetic and nonjudgmental approach to listening and providing support is the foundation of nondirective counseling, also referred to as "person-centered." [16]

4. Peer and social support

Inadequate social support has been repeatedly linked to the development of postpartum depression, according to epidemiologic data and some prospective studies. This suggests that therapies targeted at enhancing social supports may be an alternative for treating perinatal depression.

5. Non Pharmacologic Treatments

Many women with Post Partum Depression (PPD) and their health care professionals may look for supplements or alternatives to traditional psychological or pharmacologic treatments due to concerns about how medication may affect nursing, Accesses to care, stigma associated with mental illness treatment, limited efficacy, or personal beliefs. An overview ofseveral evidence-based nonpharmacologic therapies for postpartum depression is given below.[15]

6. Electroconvulsive therapy

Electroconvulsive therapy (ECT) is a treatment option for postpartum depression in individuals who do not react to antidepressant medication or who exhibit severe or psychotic symptoms, similar to treatment-

refractory major depression in the general population. ECT is used similarly for severe depression and postpartum depression, with the exception of anesthetic and breastfeeding issues. Anesthetic agents used in ECT are typically rapidly metabolized, and risk of transmission in breast milk can be minimized by timing breast feeding accordingly.[15]

7. Bright light therapy

Although bright light therapy was first used to treat seasonal affective disorder, studies have shown that it can also effectively treat nonseasonal depression. Given that there are no knownhazards to the fetus or breastfeeding child, light therapy is a compelling choice for the treatment of perinatal depression.

8. Pharmacologic Therapy:

Pharmaceutical treatment for postpartum depression (PPD) can be effectively combined with cognitive-based therapy, serving as an alternative for patients hesitant to seek mental health care or those who have benefited from previous pharmacologic interventions. Selective serotonin reuptake inhibitors (SSRIs) are safe to use during the postpartum period, demonstrating significant improvements in PPD symptoms with minimal side effects for breastfeeding infants. Sertraline and paroxetine have the lowest relative infant doses among SSRIs, making them preferable choices for nursing mothers. Patients should be informed that SSRIs require consistent daily intake and may take 2 to 6 weeks for symptom relief. If SSRIs do not yield sufficient improvement, healthcare providers may consider switching to serotonin-norepinephrine reuptake inhibitors (SNRIs), although these have higher relative infant doses, warranting further research on their safety in breastfeeding.Additionally, the rapid decline in endogenous allopregnanolone levels post-delivery may contribute to PPD, and brexanolone has shown effectiveness in treating this condition in postpartum mothers. It is crucial for healthcare providers and patients to collaboratively assess the risks and benefits of pharmacologic therapy while considering breastfeeding. Overall, while there is minimal risk to newborns from these treatments, careful evaluation is necessary to ensure maternal mental health is adequately addressed

Guidelines for treatment and further management with woman with postpartum depression:

The treatment of depressive disorders during the perinatal period presents significant challenges, requiring careful consideration of the risks associated with fetal exposure to medications, the negative effects of untreated depression, and the benefits of alleviating depressive symptoms. Untreated depression can lead to poor nutrition, inadequate prenatal care, increased substance abuse, and severe emotional distress in mothers, potentially resulting in suicidal thoughts or actions. Many pregnant women prefer psychological interventions over pharmacological ones due to fears about medication side effects on their babies and concerns about addiction.For mild to moderate depression, cognitive-behavioral therapy (CBT) and interpersonal therapy (IPT) are recommended as first-line treatments. Selective serotonin reuptake inhibitors (SSRIs), such as citalopram and sertraline, are suggested as second-line treatments due to their established efficacy and safety profiles, although paroxetine carries a higher risk category. Antidepressants may be associated with risks like spontaneous miscarriage, preterm birth, and withdrawal symptoms in newborns, but these symptoms typically resolve without specific treatment.In cases of severe depression, pharmacotherapy is often necessary and may be combined with psychotherapy; electroconvulsive therapy (ECT) is also considered a safe and effective option. Screening for postpartum depression is essential in primary care settings, with referrals to specialists recommended for severe cases or when suicidal ideation is present. Ultimately, a collaborative approach between healthcare providers

and patients is crucial for managing perinatal depression effectively while considering the health of both mother and child. Second-line recommendations include pharmacological treatment. SIGN, NICE, American Psychiatric Association (APA), and Beyond Blue recommend the following methods for mild to moderate postpartum depression:

- Computer programs based on behavioral and cognitive therapy (CBT),
- Physical exercise,
- Psychosocial interventions,
- Non-directive counseling (active listening),
- CBT therapy,
- Interpersonal therapy,
- Antidepressants

when the patient does not opt for psychotherapy, when psychotherapy is not available or has not worked, or when there have been episodes of severe depression in the past (NICE, APA). In the case of severe postpartum depression and moderate depression in women with a history of severe depression, it is recommended to consider the following treatmentoptions:

- CBT therapy or interpersonal therapy,
- Antidepressants(**Table.1.1)** [2]
  When the patient does not opt for psychotherapy, or when psychotherapy has not worked (NICE),
- Antidepressants combined with psychotherapy

If the response to pharmacological or psychotherapeutic treatment is insufficient. Pharmacological treatment of postpartum depression in a z who is not breastfeedingdoes not differ from the guidelines for the treatment of depression not related to pregnancy and postpartum period. Studies on different aspects of pharmacological treatment of postnatal depression in breastfeeding women are insufficient to draw firm recommendations.

Drug	Starting dosage	Usual treatment dosage	Maximal dosages	Adverse effects
Selective serotonin reuptake inhibitors				
Citalopram (Celexa)	10 mg	20 to 40 mg	60 mg	Headache, nausea, diarrhea, sedation, insomnia, tremor, nervousness, loss of libido, delayed orgasm
Escitalopram (Lexapro)	5 mg	10 to 20 mg	20 mg	
Fluoxetine (Prozac)	10 mg	20 to 40 mg	80 mg	
Paroxetine (Paxil)	10 mg	20 to 40mg	50 mg	
Sertraline (Zoloft)	25 mg	50 to 100 mg	200 mg	

Serotonin-norepinephrine reuptake inhibitors				
Desvenlafaxine, extended release (Pristiq)	50 mg	50mg	100 mg	Headache, nausea, diarrhea, sedation, insomnia, tremor, nervousness, loss of libido, delayed orgasm, sustained hypertension
Duloxetine (Cymbalta)	20 mg	30 to 60 mg	60mg	Same as selective serotonin reuptake inhibitors
Venlafaxine, extended release (Effexor XR)	37.5mg	75 to 300 mg	300mg	Same as desvenlafaxine
Other antidepressants				
Bupropion, extended release (Wellbutrin XL)	150 mg	150 to 300 mg	450 mg	Seizures (0.4 percent), agitation, dry mouth,sweating, nausea
Bupropion, sustained release	100 mg	200 to 300 mg (divided, twice per day)	450 mg	

Table.1.1: Antidepressant treatment for postpartum depression

Guidelines for the management with woman with suicidal thoughts or thoughts ofharming the baby:
Most available recommendations refer to the possibly most critical situation related to postpartum depression to assessing the risk of maternal suicide or assessing the risk to the child. Beyond Blue recommends asking the two simple questions to woman with postpartum depression:

- Do you think it is not worth living?
- Do you have thoughts of hurting your child?

If the answer is positive to at least one of the above question it is advisable to ask the woman about the frequency of such thoughts, possible suicide plans, and to assess the risks of implementing this plan. If a woman reports thoughts of suicide or harming her child or has scored more than 0 at point 10 on the EPDS scale (relating to thoughts of self-harm), she should undergo further thorough assessment of the mental state and be referred for psychiatric treatment. Postpartum psychosis is also associated with a particular risk of suicideor risk to the child. If this disorder is suspected, all relevant guidelines recommend an urgent referral to psychiatric care.[13]

METHODOLOGY: The technique becomes created the usage of references from a huge variety of databases, together with PubMed, Science Direct, the National Library, Scopus, Delnet, Medline, and Google Scholar.

The patient information form and essential data were gathered by examining numerous national and international research articles. To clarify successful outcomes, relevant variables were considered and included in the patient information form to address the socio- demographic situation of postpartum women.

Study Design – Prospective, single-center, and observational study.

A prospective cohort study was intended to gather the data via the use of the hospital's administrative database, a review of patient records, interviews, theacquisition of photographs, etc.

Study period – 6 months

The data was collected from October 2023 to March 2024.

Study area

The current study was conducted at the Government Women's Hospital, Dharashiv. The hospital is a multi-specialist government hospital with a 300-bed enrollment. We have a look atchanges performed over 6 months. 200 cases of postpartum or postnatal women were extensively monitored to get systemic data. For a specific timeframe, all cases of postnatal women were recorded tocollect patient data in the prepared case profile form. Before starting the study, the hospital authority approved a case study and a case profile form. All women whovisited the hospital to deliver the child were interviewed to get their socio-demographic information and same women were interviewed again after the time span of ±5+30 days for current prospective study using 3 questionnaires that included questions about their psychological status, sleep habits, contribution of family/society, etc.

Working hours

The current prospective study was performed during October 2023 and March 2024 in two shifts at the government women's hospital at dharashiv, Maharashtra, India; the morning shift was from 9:00 am to 12.30 pm, and the afternoon shift was from 2:00 pm to 6:00 pm.

Sample size

The 200 women who have delivered a child before ±5+30 days with either vaginal or cesarean delivery method and attended the Government Women's Hospital for regular checkups between October 2023 and March 2024 were included in the study. 100 women with vaginal delivery method and 100 women with cesarean delivery method were enrolledin the study. The hospital's governing bodies furnished the primary and medicalevidence. Thebest time to interact with the patient and gather information using the case profile form was chosen to take into account the patient's health. The patient provided verbal consent in frontof the assigned gynecologist and obstetrician.

Method of data collection

A detailed description of socio-demographic parameters such as age, delivery method, husband's name, place of residence, education, job status and income, etc. Information about mother such as height and weight at admission, date of admission, date of discharge, type of admission, age at marriage, job status, delivery method, pregnancy plan and experience of stillbirth. Child's date of birth and weight at birth as well as method for feeding the baby and gestational weeks. Further data is collected by scales, Edinburgh Postnatal Depression Scale (EPDS), Pittsburgh Sleep Quality Index (PSQI) and Maternity Social Support Scale (MSSS).

Inclusion criteria

a. Women who are aged 18 years or older.
b. Women in the postpartum period of ±5+30 days.
c. Women willing to provide informed consent for participation in the study.
d. Women able to communicate effectively and complete the study assessments (women cannot read and understand can take the help of either their spouse, relatives, or Research scholar).

Exclusion criteria

1. Women with a history of diagnosed major depressive disorder, bipolar disorder, or any other psychiatric disorder prior to pregnancy.

2. Women with a history of sleep disorders or chronic insomnia prior to pregnancy.
3. Women with a history of chronic medical conditions or co-morbidities known to significantly affect sleep quality or postpartum depression, such as sleep apnea or Autoimmune disorders.
4. Women with a history of substance abuse or alcohol use disorder.
5. Women with cognitive impairments or severe mental health symptoms that would impairtheir ability to provide informed consent or participate in study assessments.
6. Women who have experienced a stillbirth or neonatal death during the study period, as this could significantly confound the relationship between delivery method, sleep quality and postpartum depression.

ANNEXURE I

CASE REPORT FORM

Registration No. 537243

Patient's Name	Bushra		
Husband's name	Yejay Bhaghwan		
Address with village Name	Nilanga, Tal.Latur, Dist.Latur		
Contact No. &	**1.** 7744000653	**2.**	
Date of Birth of Baby	10/11/**20**23	**Birth Weight of Baby(Kg):** 2.75	
Date of Admission	9/11/**20**23	**Age on Admission:**21	**Wt. on Admission(Kg):** 65
Date of Discharge	11/11/**20**23	**Height of Mother(Cm):** 145	
Type of Admission	**Inborn:** Yes **Out born (Health facility referred):Out born(Community Referred):**		
Place of Birth	Civil Hospital, Dharashiv		

Mother's Education:	**Below SSC:** Yes	**SSC:**	**HSC:**	**Diploma:**	**Under Graduate:**	**Post Graduate:**	**Ph.D:**
Age at Marriage:	18						
Job status:	**Working or Job Any:**				**House Wife :** Yes		
Family Income:	30,000/-						
Delivery Method:	**Vaginal delivery:** Yes		**Assisted V. Delivery:**		**Caesarean Delivery:**		
Pregnancy Planned:	**Planned :**		**Unplanned:** Yes				

Whether Experienced stillbirth or Neonatal death in last 12 Months:	**Yes/NO :** No	**Previous Experience of Pregnancy: Yes/ NoIf Yes, Number of Child:**	
Baby Feeding	**Breast Feeding:** Yes	**Mixed Feeding:**	**Formula Feeding:**
Gestationalweeks	36 Weeks		
EPDS Score: 7	**PSQI Score:** 2	**MSSS Score:** 30	

RESULT

Prevalence of delivery methods in women

In the past 6 months, 200 women that have delivered child documented at the Government Women's Hospital, Dharashiv. There were 200 women, among those 50% (N 100) of the women delivered child with vaginal delivery and 50% (N 100) of the women delivered child with cesarean delivery.

Delivery method	No. of patient	Percentage
Vaginal delivery	100	50
Caesarean delivery	100	50

Table 6.1: No. of patients involved in different delivery method

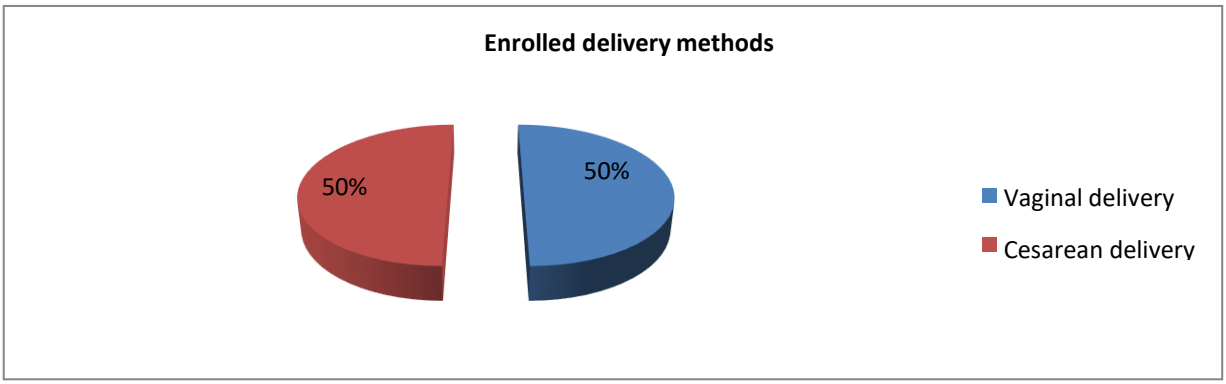

Fig.6.1: No. of patients involved in different delivery method.

Age distribution in the population

The age group of 35 to 40 years had the fewest patients 1% (N 2), while the age group of 18 to 23 years had the most 79.5% (N 159), followed by the age group of 24 to 29 years 17.5% (N 35).

Age of patients	No. of patient	Percentage
18-23	67	33.5
24-29	53	26.5
30-35	47	23.5
35-40	33	16.5

Table 6.2: Age distribution in population.

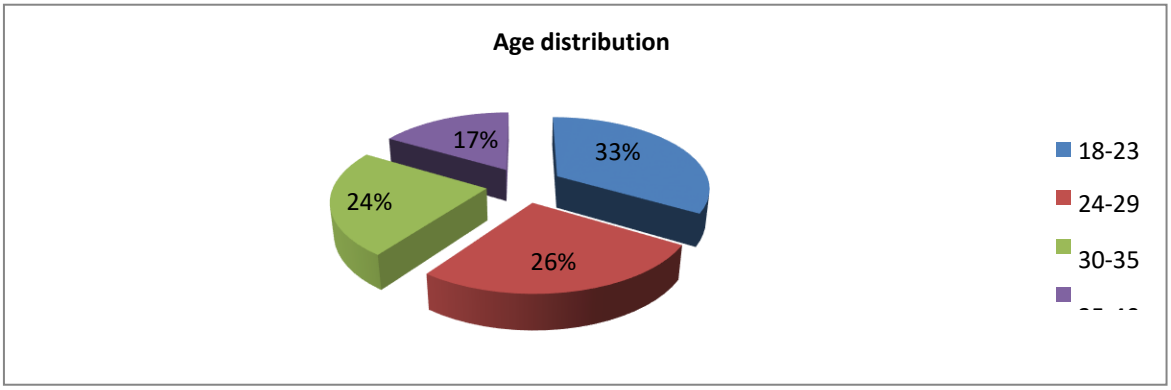

Fig.6.2: Age distribution in population.

Education in patients

In the study, primary education has the higher patients 53% (N 107), while higher education has lowest patients 11.5% (N 23). The secondary education has the patients 16% (N 31) and no education has the patients 20% (N 39).

Education	No. of patient	Percentage
Primary	107	54
Secondary	31	16
Higher Education	23	11.5
None	39	20

Table 6.3: Education of women

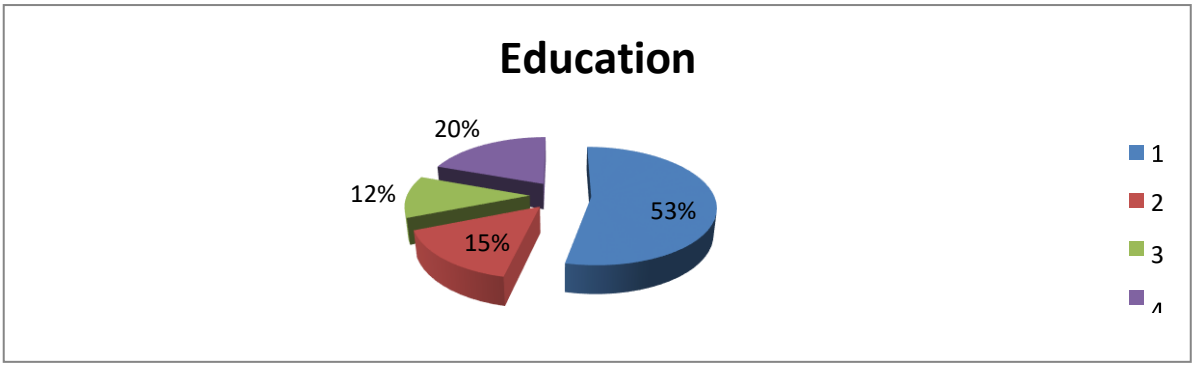

Fig.6.3: Education of women

Number of previous child

The women experienced their first child birth with a child has 43% (N 86) , second child has 48% (N 96) and third or more than third has 9% (N 18).

No. of child	No. of patient	Percentage
1	86	43
2	96	48
3 or >3	18	9

Table 6.4: No. of children

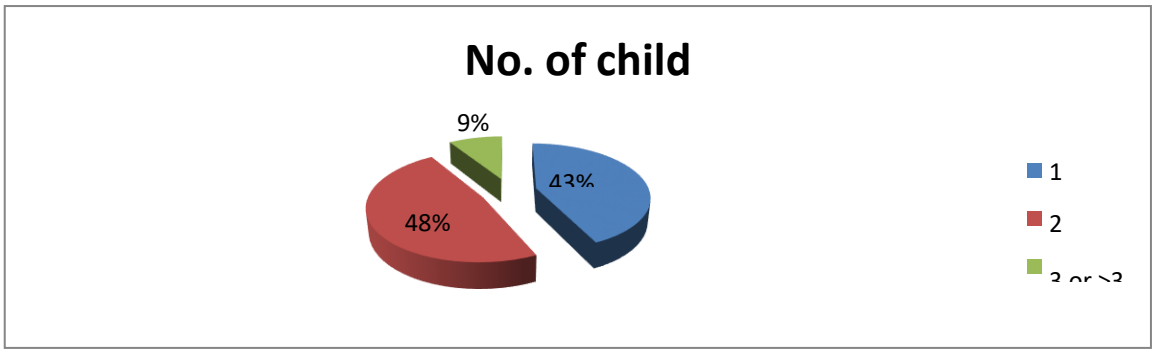

Fig.6.4: No. of children

Presence of still birth

Still birth or miscarriage is sudden loss of pregnancy before the 20 weeks. The patients who have experienced still birth 19.5% (N 39), while women who have never experienced the stillbirth 80.5% (N 161).

Still birth	No. of patient	Percentage
Yes	39	19.5
No	161	80.5

Table 6.5: Presence of still birth

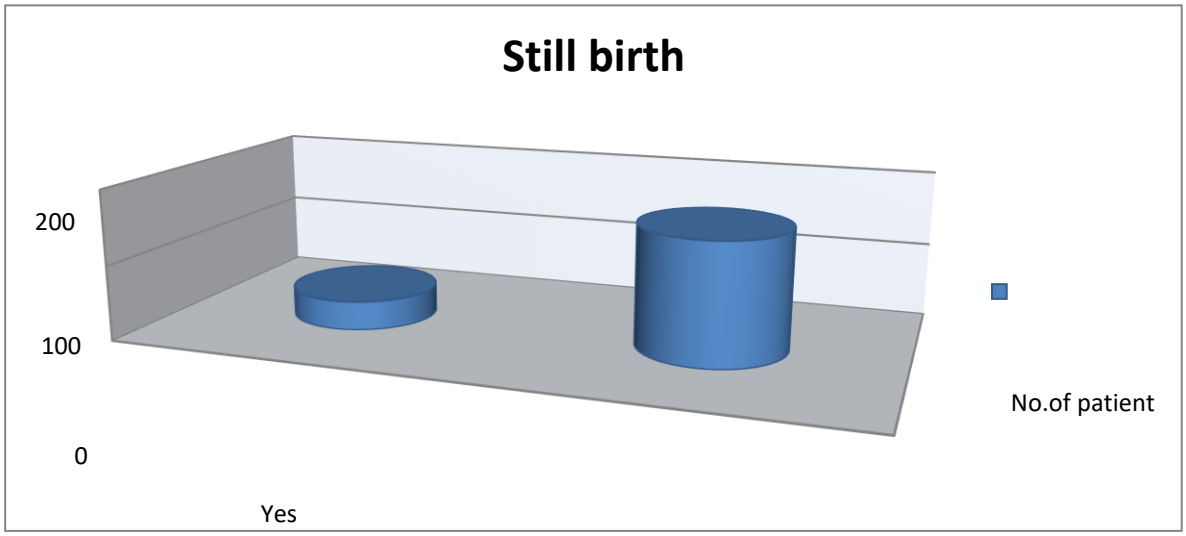

Fig.6.5: Presence of still birth

Planning of the pregnancy

Patients who have planned their pregnancies 74% (N 148) and patients who have not plannedtheir pregnancies 26% (N 52).

Pregnancy plan	No. of patient	Percentage
Planned	148	74
Unplanned	52	26

Table 6.6: Planning of the pregnancy

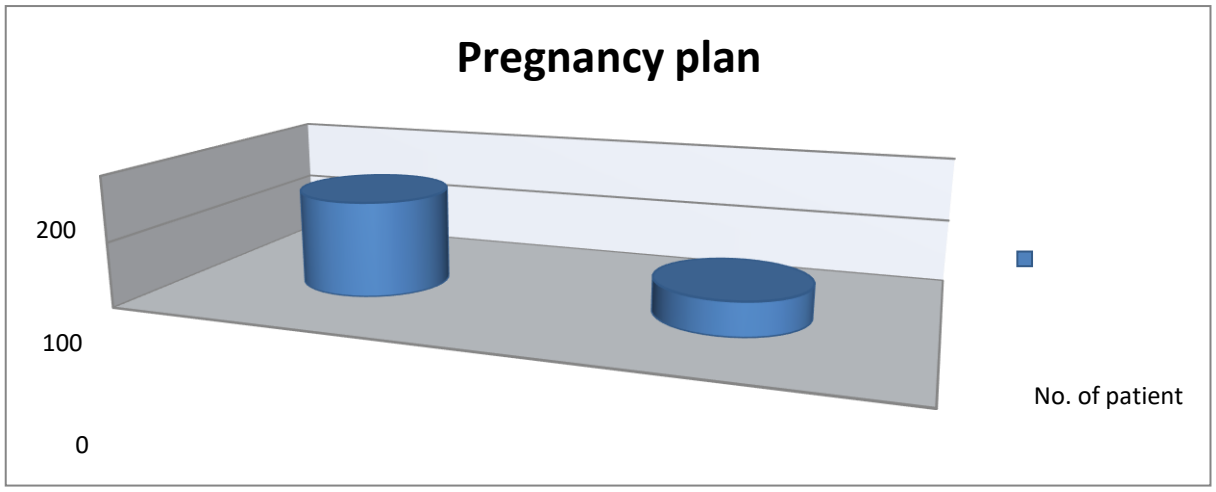

Fig.6.6: Planning of the pregnancy

Quality of sleep in the patient

The quality of sleep in patient was measured by Pittsburgh Sleep Quality Index scale. Each item is scored from 0 to 3, and the total scores of the seven components are referred to as the global PSQI score, which ranges from 0 to 21. A global PSQI score over 5 indicates poor sleep relative to clinical and laboratory measures, and higher scores indicate poorer sleep quality. The patients satisfied with their sleep quality 30.5% (N 61), while patients not satisfied with their sleep quality 26.5% (N 53).

Sleep quality	No. of patient	Percentage
Good	61	30.5
Normal	86	43
Bad	53	26.5

Table 6.7: Quality of sleep

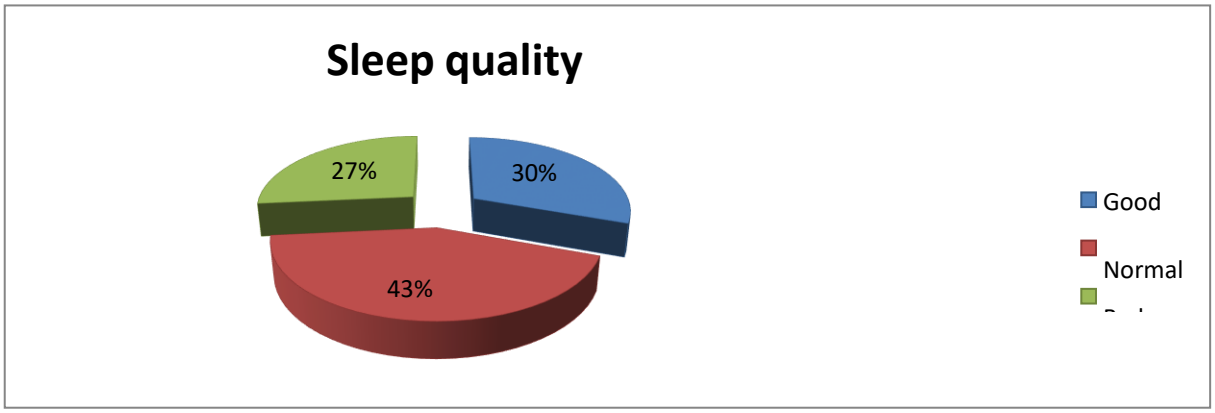

Fig.6.7: Quality of sleep

Maternal social support in patients

The Maternal Social Support Index (MSSI) is a questionnaire designed to quickly assess qualitative and quantitative aspects of a mother's social support. Patients with higher score 81.5% (N 163) and patients with lower score 18.5% (N 37).

Social support	No. of patient	Percentage
Yes	163	81.5
No	37	18.5

Table 6.8: Maternal social support

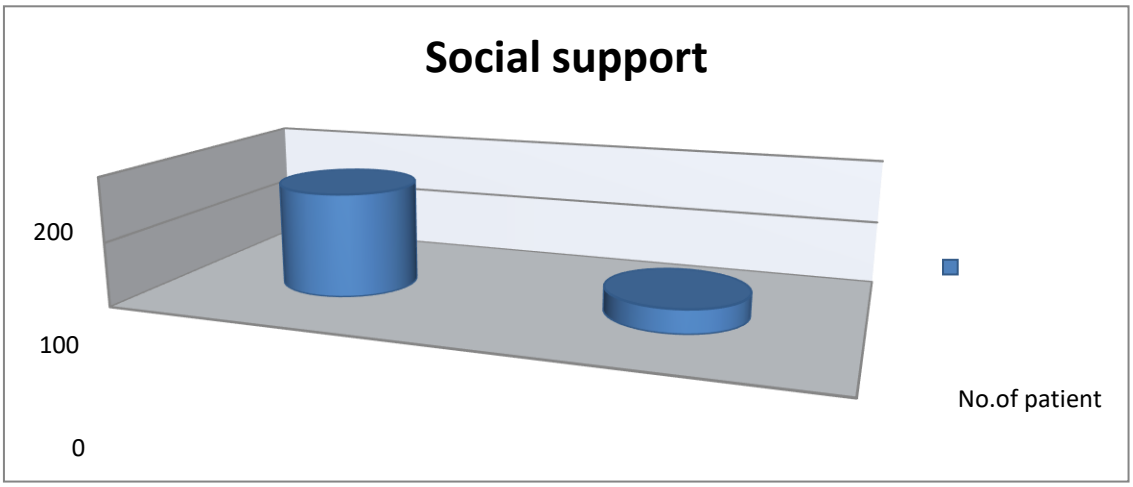

Fig.6.8: Maternal social support

Prevalence of postpartum depression in patients

The Edinburgh Postpartum Depression Scale is used to assess depression in mothers. Mothersscoring above 12 or 13 are likely to be suffering from depression. The women who has PPD 20.5% (N 41), while the remaining population 79.5% (N 159) is free from PPD.

Postpartum depression	No. of patient	Percentage
Yes	41	20.5
No	159	79.5

Table 6.9: Postpartum depression in patients

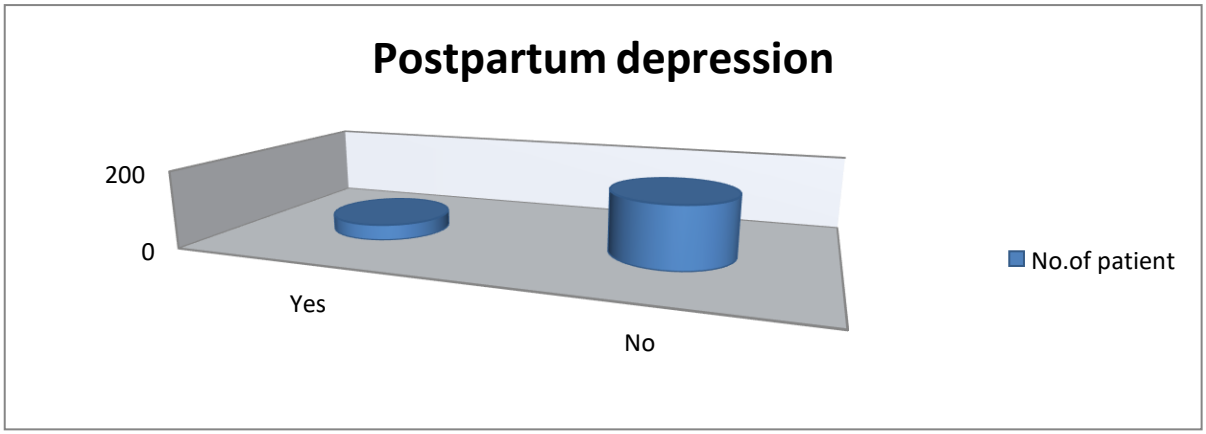

Fig.6.9: Postpartum depression in patients

Prevalence of PPD in both delivery methods

As the sample size taken was 100 for each group, the presence of PPD in patients with vaginal delivery

13 and patient with cesarean delivery 28. The incidence of PPD in cesarean delivery is higher.

Delivery method	Vaginal Delivery	Cesarean Delivery
Total no. of patients	100	100
Patients with PPD	13	28

Table 6.10: Prevalence of PPD in both delivery methods

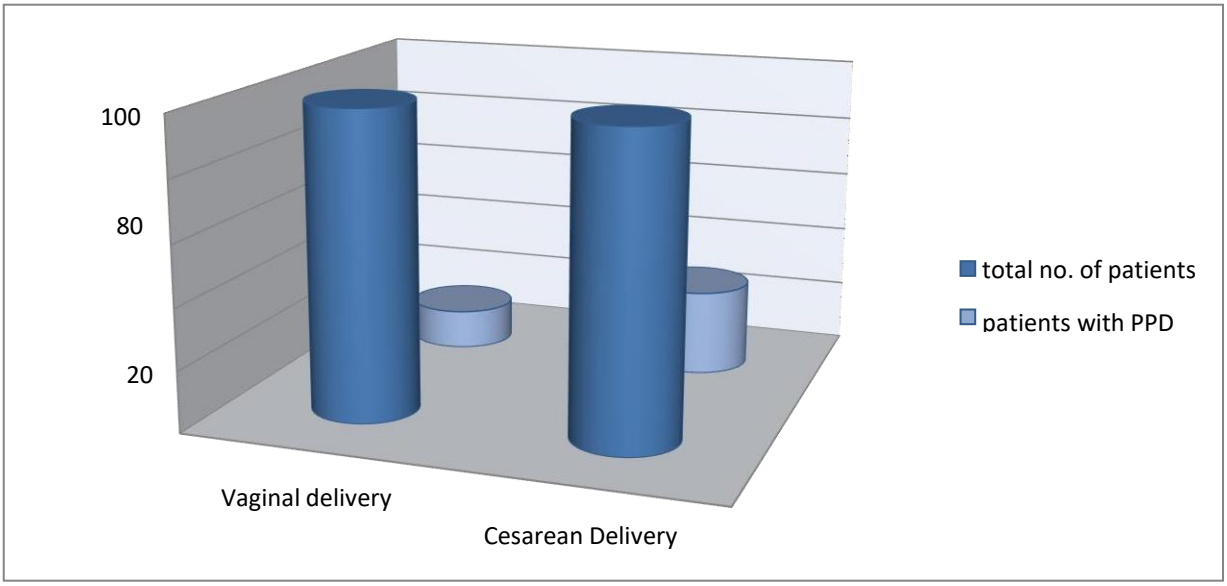

Fig.6.10: Prevalence of PPD in both delivery methods

CONCLUSION

In a study conducted at Government Women's Hospital, Dharashiv, between October 2023 and March 2024, data was collected from 200 women aged 18 and older who had recently delivered. The prevalence of postpartum depression (PPD) was found to be 13% among vaginal delivery patients and 26% among those who underwent cesarean sections, resulting in a pooled prevalence of 22% in India. This finding is higher than the 12.9% prevalence reported in high-income countries and aligns with a 19.2% prevalence in low- and middle-income countries.The study highlighted that many women in India receive limited postpartum care, often staying less than 48 hours after delivery, which hampers the opportunity for healthcare personnel to provide essential counseling on PPD. Urban mothers exhibited higher rates of PPD due to factors like overcrowding and increased stress, while the self-report inventory used excluded illiterate women, potentially underrepresenting the true prevalence.The average age of depressed mothers was 28.05 years, contradicting some studies that report younger ages for PPD onset. The study found no significant associations between socio-demographic variables and PPD, although prior history of depression was linked to higher prevalence rates. Interestingly, the gender of the baby did not significantly influence depression rates, possibly due to cultural factors in the region.Overall, this study underscores the need for improved screening and treatment strategies for PPD in India, particularly for women who may be at higher risk due to various socio-economic factors.

REFERENCES

1. Saharoy R, Potdukhe A, Wanjari M, Taksande AB. Postpartum Depression and Maternal Care:

Exploring the Complex Effects on Mothers and Infants. Cureus. 2023 Jul 4;15(7):e41381. doi: 10.7759/cureus.41381. PMID: 37546054; PMCID: PMC10400812.
2. Hirst KP, Moutier CY. Postpartum major depression. Am Fam Physician. 2010 Oct 15;82(8):926-33. PMID: 20949886.
3. Upadhyay RP, Chowdhury R, Aslyeh Salehi, Sarkar K, Singh SK, Sinha B, Pawar A,Rajalakshmi AK, Kumar A. Postpartum depression in India: a systematic review and meta-analysis. Bull World Health Organ. 2017 Oct 1;95(10):706-717C. doi: 10.2471/BLT.17.192237. Epub 2017 Sep 5. PMID: 29147043; PMCID: PMC5689195.
4. Mughal S, Azhar Y, Siddiqui W. Postpartum Depression. [Updated 2022 Oct 7]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2024 Jan-. Available from: https://www.ncbi.nlm.nih.gov/books/NBK519070/
5. https://www.sciencedirect.com/science/article/pii/S1876201823003933#ab0015
6. Ganjekar S, Thekkethayyil AV, Chandra PS. Perinatal mental health around the world: priorities for research and service development in India. BJPsych Int. 2020 Feb;17(1):2-5. doi: 10.1192/bji.2019.26. PMID: 34287425; PMCID: PMC8277535.
7. https://www.mayoclinic.org/diseases-conditions/postpartum-depression/symptoms-causes/syc-20376617
8. https://www.sciencedirect.com/science/article/abs/pii/S1876201820304652?via%3Dihub
9. https://www.mdpi.com/2077-0383/12/20/6519
10. Javaid I, Majeed Z, Ahmad A, Komal M, Khan H. Postpartum Depression: A Comprehensive Review. Int Clin Img and Med Rew. 2022;2(3):1071.
11. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5561681/
12. Suryawanshi IV O, Pajai S. A comprehensive review on postpartum depression. Cureus. 2022Dec 20;14(12).
13. Dominiak M, Antosik-Wojcinska AZ, Baron M, Mierzejewski P, Swiecicki L. Recommendations for the prevention and treatment of postpartum depression. Ginekol Pol. 2021;92(2):153-164. doi: 10.5603/GP.a2020.0141. Epub 2021 Jan 15. PMID: 33448014.
14. Gavin NI, Gaynes BN, Lohr KN, Meltzer-Brody S, Gartlehner G, Swinson T. Perinatal depression: a systematic review of prevalence and incidence. Obstet Gynecol. 2005 Nov;106(5 Pt 1):1071–83. doi: http://dx.doi. org/10.1097/01.AOG.0000183597.31630.db PMID: 16260528
15. Wang, Yang MDa,b, Li, Hui MD, PhDc, Peng, Wei MDd, Chen, YalinMDa, Qiu, Mimi MDa, Wang, Jun MDa, Hao, QinghongMDa, Tu, Yang MDa, Liu, YunluMSe.f., Zhu, Tianmin MD, PhDa, Non-pharmacological interventions for postpartum depression: A protocol for systematic review and network meta-analysis. Medicine 99(31) p e21496, July 31, 2020. | DOI: 10.1097/MD 0000000000021496
16. Fitelson E, Kim S, Baker AS, Leight K. Treatment of postpartum depression: clinical, psychological and pharmacological options. Int J Womens Health. 2010 Dec 30:3:1-14. doi: 10.2147/IJWH.S6938. PMID: 21339932; PMCID: PMC3039003
17. Gelaye B, Rondon MB, Araya R, Williams MA. Epidemiology of maternal depression, risk factors, and child outcomes in low-income and middleincome countries. Lancet Psychiatry. 2016 Oct;3(10):973–82. doi: http:// dx.doi.org/10.1016/S2215-0366(16)30284-X PMID:27650773
18. Zauderer C. Postpartum depression: How child birth educators can help break the silence. J perinat Educ. 2009 Spring;18(2):23-31. Doi: PMID: 20190853

19. Joseph G, da Silva IC, Wehrmeister FC, Barros AJ, Victora CG. Inequalities in the coverage of place of delivery and skilled birth attendance: analyses of cross-sectional surveys in 80 low andmiddle-income countries. Reprod Health. 2016 06 17;13(1):77. Doi http://dx.doi.org/10.1186/s12978-016-0192-2 PMID: 27316970
20. Yonkers KA, Ramins, Rush AJ, Navarrete CA, Car mody T, March D, Heartwell SF, Levenon KJ: onset and persistence of postpartum depression in an inner city maternal health clinic system. Am J Psychiatry 3001; 158:1856-1863
21. Watson JP, Elliott SA, Rugg JA, etal. Psychiatric disorder in pregnancy and the first postnatal year. Br J Psychiatry 1984;144:453-462
22. Chaudron LH, Kitzman HJ. Peifer KL, Morrow S, Perez LM, Newman MC. Prevalence of Maternal Depressive Symptoms in Low-Income Hispanic Women. J ClinPsychiatry 2005 May;66:418-423
23. Chandram M, Tharyan P, Mulijil J, Abraham S, Postpartum depression in a cohort of women from a rural area of Tamil Nadu, India. British J Psychiatry, 2002: 181:499-50
24. Danker R, Goldberg RP, Fisch RZ, Crum RM; Cultural elements of Postpartum depression, a study of 327 Jewish Jerusalem Women. J Repord. Med 2000; 45:97-104
25. Copper PJ. Murray L. Course and recurrence of postnatal depression. Evidence for the specificity of the diagnostic concept. Br J Psychiatry, 1995; 166: 191-195