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Review Article

Postpartum Depression: A Comprehensive Review

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Abstract

Postpartum depression is a debilitating mental disorder with a high prevalence. The aim of this study was review of the related studies. In this narrative review, we report studies that investigated risk factors of postpartum depression by searching the database, google scholar, PubMed, ScienceDirect, UpToDate, Proquest in the period 2015-2019 published articles about the factors associated with postpartum depression were assessed in English. The search strategy included a combination of keywords include postpartum depression and risk factors or obstetrical history, social factors, or biological factors. Literature review showed that risk factors for postpartum depression in the area of economic and social factors, obstetrical history, and biological factors, lifestyle and history of mental illness detected. Data from this study can use for designing a screening tool for high-risk pregnant women and for designing a prevention program.

Keywords: Postpartum depression, risk factors, pregnancy, child birth

INTRODUCTION

Postpartum depression is a form of depression, a mental illness, discovered to be common lately in birth mothers affecting roughly 15% to a minimum of 10%. Such a period is very critical due to its nature and effect on Mother-baby bonding and Child's long-term Development. However, following depressions are found to be very inadequately diagnosed and nursed. According to the survey carried out in this regard revealed that halves of such conditions are unidentified by concerned Practitioners or medical Professionals in-charge and revealed that most of the diagnosed mothers, do not follow recommended treatment accordingly. Result of these studies critically emphasized the importance of identifying mothers at risk, application effective precautionary measures to prevent such condition and the dire need for efficient and adequate screening and prompt treatment of Postpartum depression. [2]

Postpartum depression is a severe mental illness. The severity of fatigue and anxiety in suffering mothers is so extreme that some of them term life as death swamp whereas mothers with no such depressions see their child's birth as a most ecstatic moment of their life. Mothers suffering from this disease suffer from difficulty in bonding with baby, intense irritability, mood swings, Panic attacks, withdrawn from family members, excessive crying, changes in appetite, Harming and suicidal thoughts. Extreme feelings of inability and hopelessness are life threatening and can lead to suicide [3]. The immense impact of postpartum depression can spread into families, which may rise the problems in breastfeeding and lead to lack of intimacy that result in great social distancing. Children born to mothers with untreated postpartum depression are at extreme risk of hindered development or long-term physical, behavioral, mental, and emotional issues [1]

The treatment of Postpartum depression involves, as when needed, coordination of gynecologists and psychologists. The treatment depends upon the score of the scale, such as psychotherapy, antidepressant treatment or both in combination. Psychotherapy is widely accepted as the most effective treatment for PPD. In truth the effectiveness of antidepressants is not evident in postpartum depression, the safety is questioned in the case of breastfeeding because they become the part of Breast milk and are passed into the baby's serum and its effects on developing brain are not substantially known. [2]

RISK FACTORS FOR PPD

PHYSIOLOGICAL FACTORS

The occurrence of mental health disorders such as depression during pregnancy is a strong reason in predicting postpartum depression. There is make clear in amplification these relationships signifying that woman with a sure history of depression are other susceptible to hormonal changes. In hold of this finding, it has reported that a history of moderate to terrible premenstrual syndrome (PMS) is a factor distressing the beginning of postpartum depression.[3]

OBSTERIC 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

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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. The inverse suggestion between breastfeeding and postpartum depression shows that breastfeeding is connected with a drop in the scale of postpartum depression. A association has been practical between run down hemoglobin concentration at day 7 after manner of speaking (<120 g/L) and postpartum depressive symptoms at day 28 after childbirth.[3]

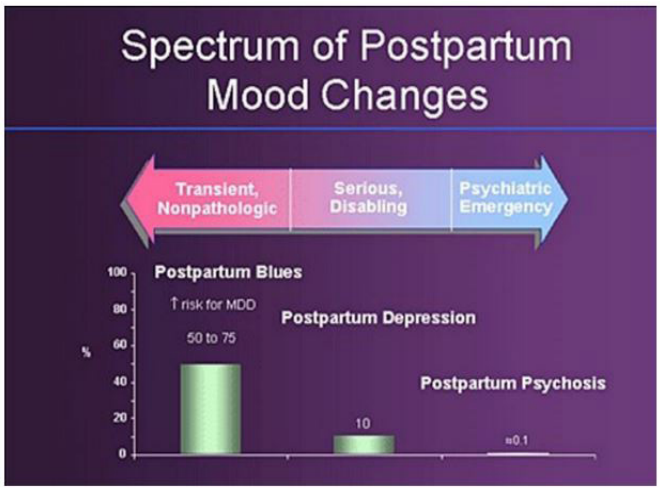


Figure 1: *Mood change spectrum describe extent of PPD*

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 ironic in protein reduces the amounts of tryptophan and serotonin in the intelligence whereas a carbohydrate snack has transpose effects. In dietetic deficiencies, on sale reason tryptophan (a foundation of serotonin) up to 15% leads to amplified depression ascend assess of postpartum depression.[3]

Oxytocin in addition show business a means responsibility in amendable emotions, do interactions, and emotional responses. Superior levels of oxytocin in mid-pregnancy comprise been predictors of postpartum depression contained by minus than the in the beginning 2 weeks after delivery. The part of estrogen has been besides evaluated in the incidence of postpartum depression. Studies on innate models be inflicted with exposed that steroid and estrogen hormones are modulators of dictation from uneasy neurotransmitter. It has been practical that the fluctuations in this hormone or its lack is linked with depression [3]. Oxytocin and glucocorticoids may interrelate during pregnancy and the postpartum to escalate openness to depressive mood and that unceasing stress during pregnancy may foil roughly of the neurobiological adaptations in the oxytocin system looked-for in the pleasing aspects of motherhood.[4]

The function of corticotropin-releasing hormone in the law of steroid hormones and depression has been considered as well. In additive to hypothalamus, this hormone is in addition bent during pregnancy in placenta, uterus, and ovaries and regulates the pituitary-hypothalamus-adrenal axis for invention of steroid hormones. Stress and the HPA axis are fully associated to the etiology of depression Depressed patients, plus folks with PPD, program abnormal HPA axis go such as hypersecretion of cortisol and abnormal diurnal emission of cortisol [4] After transfer and kicking out of the placenta, dramatic dump of this hormone leads to on sale construction of steroid hormones such as estrogen and leads to bigger leaning to depression in the formerly 12 weeks after childbirth.[3] In women, prominent estradiol levels go on with to increase in intensity during the third trimester but dive dramatically after parturition, primary to the hypothesis that an "estradiolwithdrawal state" during the essential hardly any weeks after parturition contributes to PPD[2]. Corticosterone required globulin (CBG) levels are down throughout the postpartum in rats, which suggests that free CORT levels are advanced during postpartum compared to controls, as CBG binds with CORT. [4]

Estrogen and progesterone levels fluctuate dramatically during the perinatal period, increasing tenfold during pregnancy and returning to pre-pregnancy levels within 72 hours of delivery. This rapid hormonal decline is thought to contribute to PPD in vulnerable women, although a consistent link between hormone levels and PPD has yet to be demonstrated. [20] Steroid hormones play a significant role in depression including PPD. During pregnancy and postpartum, levels of steroid and peptide hormones fluctuate dramatically which could contribute to the etiology of PPD These changes in hormone levels, such as estradiol, corticosterone, corticotropic releasing hormone (CRH) and oxytocin, occur in humans with different profiles and gestational periods (see Fig. 2). Briefly, in women, progesterone levels are approximately 20× higher during gestation and remain elevated throughout pregnancy, while estradiol levels are very high (200–300× higher) by week 20 of gestation and remain high throughout the rest of pregnancy in women and both these steroid hormones drop with the expulsion of the placenta. (4) High-dose estrogen, may be one promising direction, but only one RCT has evaluated hormone administration as a prevention for PPD. [20]

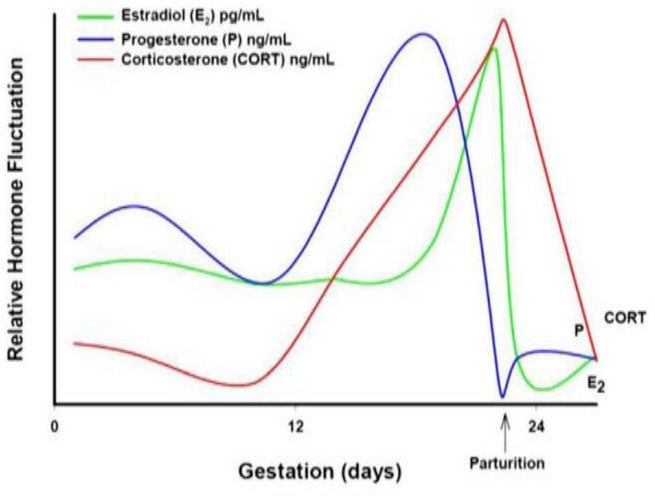


Figure 2: *Hormonal changes during pregnancy and the postpartum. The relative hormone levels of progesterone (ng/mL), corticosterone (ng/mL) and estradiol (pg/mL) over the course of pregnancy and parturition.*

SOCIAL FACTORS

Group collaboration refers to emotional support, monetary support, brainpower support, and sympathy relations. Plummeting do cheer on is a large amount notable environmental issue in 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. [3]

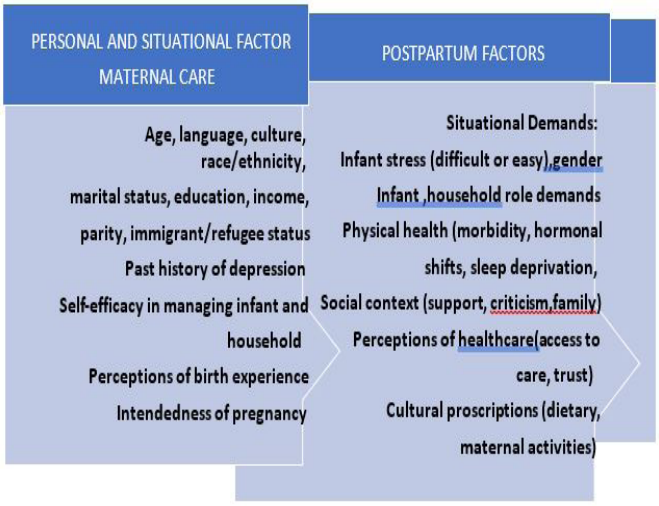
LIFE STYLE

Factors associated to lifestyle, factors of fodder intake patterns, nap status, exercise, and brute behavior may impinge on postpartum depression. It was experiential that ample ingestion of vegetables, fruits, legumes, seafood, milk and dairy products, sea green oil, and a category of nourishing may lower postpartum depression as 50%. Vitamin B6 is real in the fabrication of serotonin from tryptophan as a cofactor. Therefore, the decline of this vitamin may be mixed up in the sort out of postpartum depression. It was reported in a look at carefully that zinc applies its antidepressant by influencing the serotonin reuptake. Selenium deficiency is probable to assume the postpartum depression by increasing thyroid dysfunction. Zinc is set up in ruby meat, grains, meat, and fish. Periods of rigorous slumber lack partake of been reported in depressed women after giving out. Chronic be asleep denial affects glucose metabolism, inciting processes, group communications, mental health, and the superiority of life. In addition, acute episodes of doze deficiency touch the immune system and boost seditious markers such as interleukin-6 and cancer necrosis factor. Moderate objective action in the third trimester of pregnancy has lowered the postpartum depression shin up at 6 weeks after the delivery. piece of work moreover increases self-confidence and will eliminate disapproving self-assessments caused by depression. In addition, put into effect will relieve women focusing on the environment around and solving their problems.[3] The extort causes of PPD in Pakistan produce not been well-understood; however, innumerable factors such as poverty, unasked for pregnancy, domestic abuse, juvenile period and nadir balanced of learning are important predictors of PPD, five or additional children, female youngest child, and need of party support.[5]

SYMPTOMS

Symptoms of postpartum depression or PPD usually begins two to four weeks after the birth of the child and may last up to a year. Psychological distress. Not being able to take care of yourself or your baby. Trouble feeling close to your baby, or bonding. Agitation. Depressed mood. Sleep disorders. Lack of interest in daily tasks. Thoughts of harming your baby. Thoughts of suicide, or suicide attempts. There are many things that may cause you to have postpartum depression. If you've ever had depression before, or have had it with other pregnancies, you're more likely to get it again. Stress, problems with drugs or alcohol, low self-esteem, or trouble with your pregnancy can make postpartum depression more likely. So can having a baby with special needs. Disappointment.[6]

Table 1: *Showing differents outcomes and factors*



Postpartum Psychosis

In rare cases, women can have postpartum psychosis, a severe mental illness. It is an emergency and needs immediate medical help. If you have these symptoms, call your doctor. You can't sleep.

You can't think clearly. You've been hallucinating or having delusions, meaning you sense or believe things that aren't real. You have obsessive and fearful thoughts about your baby. You're paranoid -- deeply suspicious of other people, and no one can talk you out of it. You refuse to eat. You've thought of harming yourself or your baby.

STATISTICS OF POSTPARTUM DEPRESSION

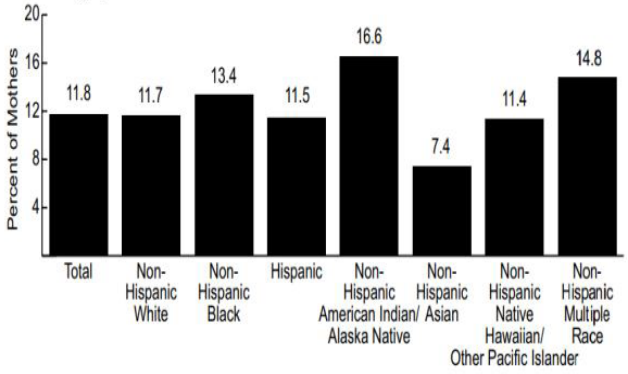
As there is no exact knowledge about postpartum depression however an estimated result shown that from about 1000 birth, 100 to 150 birth must have seen with postpartum depression start soon after child birth and is result in continuation with postnatal depression. [7]

An important point to note regarding the postpartum depression affect all the races nationality cultural, religion and educational background. It is also noted that postpartum depression is least common among mothers with 16 years of education and is about 8.1 percent as compared to the mothers of all the other educational background. Observations shows that postpartum depression also varied with different races and ethnicity. The proportion of mothers reporting this issue also varied with significantly among different social, racial, and ethnic groups. This can be well understood by the following data collection as given: Non-Hispanic American Indian /Alaska native mothers were more likely to have postpartum depression after child birth as compared to the Non-Hispanic /Hawaiian other pacific islander mothers almost 16.6% to 11.4% according to respective groups. Factors that may increase the risk of postpartum depression include previous depressive episodes, stressful life events, financial instability and limited social support.

Pakistan is the second largest Muslim state located in south Asian region with the population of about 175 million. Almost 33% of Pakistanis are living below the national level poverty line. As Pakistan is a developing country it has a very high rate of maternal mortality, neonatal mortality, and fertility. Having very low or no health budget assign for the health expenses as compared to the other well-developed countries. The international statistical classification of disease and re-

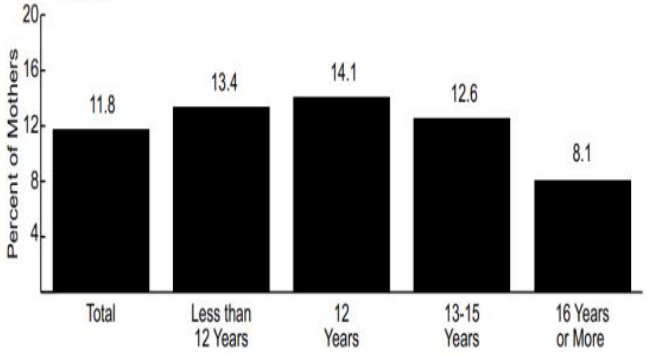
Postpartum Depressive Symptoms* Among Mothers with a Recent Live Birth, by Race/Ethnicity, 2009-2010**

Source (I.3): Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System



Postpartum Depressive Symptoms* Among Mothers with a Recent Live Birth, by Maternal Education, 2009-2010**

Source (I.3): Centers for Disease Control and Prevention, Pregnancy Risk Assessment Monitoring System



lated health problems explains PPD as a mild mental and behavioural disorder starting from six weeks of delivery (WHO 2007). Accurate data of prevalence of PPD in Pakistan are not much easy to obtain because of cultural norms that may result women under reporting PPD and a lack of reliable screening source that may lead to underdiagnosis of this condition. However, PPD appears to be the major issue in Pakistan with the prevalence rate of 28 percent to 63.3 percent which is the highest among Asian countries.in Pakistan three studies were conducted (Husain et al., 2006; Rahman & Creed, 2007; Rahman, Iqbal, & Harrington, 2003) shows that PPD range from 28.8% to 94% at the time period of 3 months after delivery. And other studies (Ali, Ali, &Azam, 2009; Kalar et al., 2012; Kalyani, Saeed, Rehm-an, & Mubashir, 2001; Khooharo et al., 2010) related to the time period of 2 to 8 weeks reported that it ranges from 5.2% to 63.3%. [9]. Postpartum depression is one of the most common issues nowadays regarding accouchement. Almost 10% to 15% of adult mothers seen involved in this depression. And mostly adolescents and mothers that give birth to premature infants got PPD. The disorder last about seven months after delivery in 25% to 50% of mothers. At the same time is also seen that it is in linked with postpartum blues as 10% to 15% of women have seen the consistent mood disturbance.[10]. The prevalence of PPD ranges from 28% to 63.3% in Asian countries.[11]. Estimated prevalence for PPD have ranged widely because of varying criteria for PPD, period under consideration, and populations. An early meta-analysis based on 59 studies with a combined total of 12,810 subjects reported an overall prevalence of PPD of 13%.[12] By subgroup analysis it is found that there is higher level risk of developing postpartum depression in mothers with age greater than 25 than in mothers whose age is less than 25. Almost

4 out of 28 studies shows that high maternal age results are leading cause of PPD because they lack peer mentoring, obstetric complications and by multiple births. Postpartum depression can start soon after childbirth or as a continuation of antenatal depression and needs to be treated. A meta-analysis in developing countries showed that the children of mothers with postpartum depression are at greater risk of being underweight and stunted. Moreover, mothers who are depressed are more likely not to breastfeed their babies and not seek health care appropriately. A longitudinal study in a low- and middle-income country documented that maternal postpartum depression is associated with adverse psychological outcomes in children up to 10 years later. While postpartum depression is a considerable health issue for many women, the disorder often remains undiagnosed and hence untreated. The current literature suggests that the burden of perinatal mental health disorders, including postpartum depression, is high in low- and lowermiddle-income countries. A systematic review of 47 studies in 18 countries reported a prevalence of 18.6% (95% confidence interval, CI: 18.0–19.2). Postpartum depression affects 12.5% women on average and is one of the most common complications of pregnancy.[7]

DETECTION

The basic method of case finding and identification of PPD is sensitive clinical inquiry about mood during follow-up visits with obstetrical or primary care providers in the postpartum period. The optimal timing of this enquiry varies across guidelines from shortly after giving birth to 6–12 months later. Some authorities recommend various forms of screening for PPD [13] However, the potential effectiveness of screening for PPD is related to the availability of systems to adequately treat and follow-up women with positive results, so there is some controversy about whether routine screening should be done. The United Kingdom's National Institute for Health and Care Excellence [13] suggests two-stage screening with the use of a sensitive two-question screening tool for depression. A positive result or clinical concern should lead to further, more definitive assessment. Formal measures such as the Patient Health Questionnaire–or the 10-item Edinburgh Postnatal Depression Scale (EPDS)may also be helpful, and a positive result on either should lead to a comprehensive clinical assessment to ascertain diagnosis. The American College of Obstetricians and Gynecologists [14] American Academy of Pediatrics [15], and US Preventive Services Task Force [16] recommend routine postpartum screening using the EPDS. A clinical evaluation is the gold standard for determining a diagnosis.

DIFFERENTIAL DIAGNOSIS

As with any other mental disorder, depressive symptoms that are related to untreated medical conditions or that are the direct effects of alcohol or other substance use must be ruled out. Medical conditions that can result in symptoms of depression and anxiety, and that are common in postpartum women, include thyroid dysfunction and

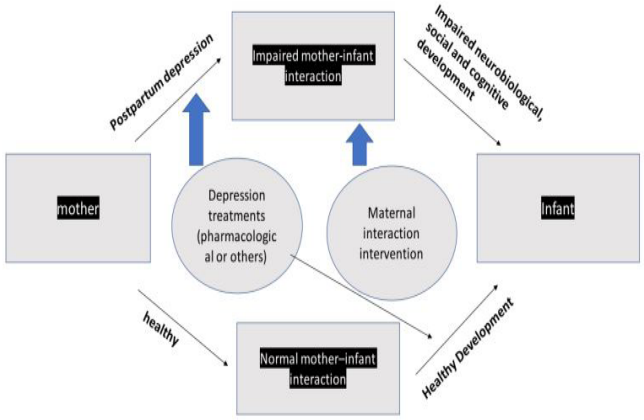
anemia [17]. Shortly after childbirth, more than 50% of women experience a mild and transient syndrome of low mood, tearfulness, and mild irritability, often called the "postpartum blues." Postpartum blues tend to last less than two weeks, but some cases may continue and develop into PP. Postpartum blues can be distinguished from a depressive episode by the severity and persistence of the latter. For example, severe obsessional preoccupations and suicidality are not usually present with the blues.

OUTCOMES OF PPD:

The studies have consistently demonstrated the deleterious effects of postpartum depression (PPD) on cognitive and emotional development during infancy and later childhood [18] the mother who is a victim of PPD is not able to raise a child due to her mental disturbance and child has to suffer from many social problems.

TREATMENT OF POST PARTUM DEPRESSION

In Pakistan most of the time people consider postpartum depression as a general outcome of pregnancy and they don't go for the diagnosis and treatment of PPD but this need to be addressed as is a depression that is not only problem some for mother but also for the child. There is a need to raise awareness among people to take it in a serious way. Postpartum depression is significantly undertreated. Many women



Relationship between postpartum depression , maternal-infant and child development outcomes. Mother suffering from postpartum depression can have impaired relation with child and may lead to weaken neurobiological development of child. Improving the depressive symptoms can lead to better development of child.

feel that depression at what "ought" to be a joyful time is shameful, and others are influenced by society's general stigma concerning mental health care. In addition, those women who do seek treatment often hesitate to take psychotropic medications when breastfeeding, despite substantial evidence of their relative safety. Moreover, Women who felt uncomfortable reporting PPD symptoms were much more likely to show symptoms of perinatal depression and anxiety [19]. Postpartum depression very is common and affects the woman, infant, and family and its Treatment depends on the severity of symptoms and the level of functional impairment and can include social support, psychological therapy, and pharmacotherapy

Biological Interventions

To date, there have been very few RCTs on the prevention of PPD using biological interventions. Existing studies include treatment with antidepressants, hormones, omega-3 fatty acids, dietary calcium, thyroxine, and selenium, and have met with mixed success include social support, psychological therapy, and pharmacotherapy, interpersonal therapy

Interpersonal therapy

IPT is a short-term psychotherapy focusing on the present and emphasizing the interpersonal context in which depressive symptoms occur. IPT originally was developed to treat Major Depressive Disorder in a general adult population, but has been adapted to treat women during the perinatal period. Maternal attachment, sensitivity and parenting style are essential for a healthy maturation of an infant's social, cognitive, and behavioral skills and depressed mothers often display less attachment, sensitivity and more harsh or disrupted parenting behaviors, which may contribute to reports of adverse child outcomes in children of depressed mothers.

Mental health care:

Mothers with PPD compared to those without symptoms had lower economic status, were more likely to be single, to be first-time mothers, have an unemployed partner. Mothers with PPD preferred private mental health practice and community treatment centers by mental healthcare professionals.[21] They also preferred group interventions and personal psychotherapy rather than technology-based interventions.

Psychosocial support:

The severity of ppd among patients ranged from minimal depression to severe depression. Psychosocial support proved to be the most effective intervention that has been used by the healthcare workers to reduce depressive symptoms [22]. Psychosocial support has been the most effective intervention in its management. Postpartum depression may affect socialization behaviors in children and the mother, and it may lead to thoughts of failure leading to deeper depression. Frequent screening exercises for postpartum depression should be organized by authorities of the hospitals in conjunction with the Ministry of Health.

Quality of infant-parent relationship

The quality of the parent–infant interaction is essential for the infant's development and for relieving of ppd and is most objectively measured by observation. The existing observational tools for assessing parent–infant interaction was identified and described, and their psychometric soundness was evaluated [23]

Genetics

Genetic factors have also been implicated in the pathophysiology of PPD [24] Exciting evidence of genetic contribution has emerged from family and twin studies suggesting that PPD clusters in families. Candidate gene studies of PPD have identified several of the same polymorphisms found in no perinatal depression, such as Val66Met polymorphism of brain-derived neurotrophic factor. Genome-wide linkage of women patient has found genetic variations on chromosome 1q21.3– q32.1 and 9p24.3–p22.3 and in Hemicentin-1 (HMCN1), which contains several estrogen-binding sites. All appear to increase susceptibility to PPD. Estrogen-induced epigenetic DNA methylation changes have also been implicated in PPD [24].

Immune Function

The immune axis is regulated by estradiol, which fluctuates during the perinatal period. Antiinflammatory cytokines responsible for immunosuppression are elevated in pregnancy to protect the fetus. However, following delivery, the immune system rapidly becomes proinflammatory and remains so for several weeks. Women with PPD, compared

with those who are not depressed, appear to have different gene expression that is functionally related to immunity. Studies of several prenatal immune markers of PPD have reported contradictory findings, so the role of immune function in PPD remains unclear [25]

MANAGEMENT

The effective management of PPD requires a comprehensive and often multidisciplinary approach (Figure 6).

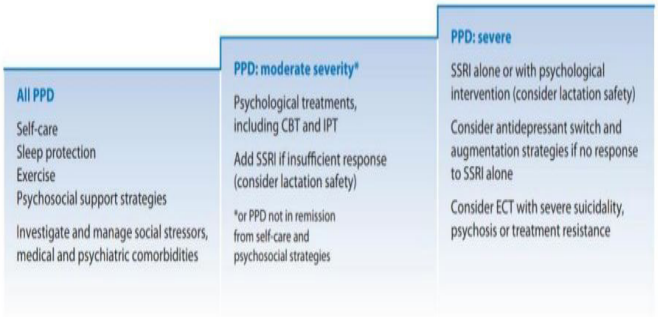


Figure 6: *Stepped care management of postpartum depression (PPD). Safety of mother and infant should be continually reassessed at each level of care such that emergency services can be initiated if required. Abbreviations: CBT, cognitive behavior therapy; ECT, electroconvulsive therapy; IPT, interpersonal therapy; SSRI, selective serotonin reuptake inhibitor.*

Once a diagnosis of PPD is made and comorbid medical and psychiatric problems are addressed, psychosocial strategies to increase self-care, enhance practical and emotional social supports, and reduce the occurrence and/or impact of negative life events or stressors are warranted for all women. Specifically, some evidence supports a small reduction in PPD symptoms from aerobic exercise [26,27]. Infant behavioral sleep interventions that lead to a greater amount of maternal sleep can also improve maternal mood [28]. When considering an infant sleep intervention, it is often helpful to ask if the woman can sleep when the baby sleeps to separate insomnia from normal lack of sleep resulting from infant care. For women with mild symptoms, psychosocial strategies such as peer support or nondirective counseling from a professional may be helpful on their own. Women with symptoms of at least moderate severity often require additional treatment strategies to achieve remission. In such cases, treatment options should be explained and maternal treatment preferences should be sought, including desire for nonpharmacological versus pharmacological strategies and group versus individual interventions. This is an important time in the management plan to consider potential barriers in access to or uptake of treatment. These may include shame or stigma around diagnosis and treatment, as well as practical challenges to uptake of care such as lack of transportation, unpredictable child schedules, competing childcare responsibilities, limited mobility after caesarean section, or limited access to specialized services in certain regions. Innovative models of care, including colocation of mental health within obstetrical care services, are showing promise in increasing affected women's engagement in care [29]. Emerging evidence suggests electronic health (e-health) interventions that target some of these barriers by allowing private and secure psychological and psychiatric virtual care are highly acceptable to women [30,31]. It is important to note that treatment of maternal depression may not by itself improve maternal–child interactions and child outcomes. A recent systematic review found that both psychological interventions [cognitive behavior therapy (CBT) and interpersonal therapy (IPT)] and antidepressant medication have a positive effect on parental adjustment, attention to the infant, and child behavior. It is less clear whether these interventions improve parental stress and/or maternal–child attachment, necessitating attention to this issue in future trials [32].

Somatic Therapies

Most women with PPD prefer psychological to pharmacological treatments, and a desire to avoid medication, particularly in lactation, is thought to be a barrier to adequate treatment for women with moderate to severe symptoms of PP. Electroconvulsive therapy (ECT) is a somatic therapy that is one of the most effective treatments in psychiatry. It may be used to treat severe PPD, especially in the setting of intractable suicidality or psychotic symptoms [33]. Since ECT requires a general anesthetic and can have side effects such as memory impairment, it is not an ideal option for most women. Evidence is mounting for the efficacy and safety of focal brain stimulation therapies such as repetitive transcranial magnetic stimulation and transcranial direct current stimulation [34]. These therapies may have a role to play in PPD treatment in women for whom psychotherapy or pharmacotherapy do not induce remission or those who are reluctant to use antidepressant medication while breastfeeding [35]. Trials to evaluate the safety and efficacy of neurostimulation treatments for PPD are required.

Psychosocial and Psychological Interventions

There is evidence to support the use of psychosocial strategies such as peer support and nondirective counseling from a professional for women with mild PPD. Peer support is distinct from other psychosocial support strategies in that the provider has experiential knowledge of the condition. It has been evaluated in clinical trials delivered in-person (including in-home) and virtually (e.g., by telephone, and more recently using e-health technology). Women find peer support highly acceptable, and it may reduce PPD symptoms on its own [36]. Nondirective counseling by professionals or paraprofessionals may reduce symptoms but not to the extent of psychological or pharmacological interventions. Various psychological interventions have been evaluated for efficacy in PPD treatment. CBT and IPT are both time-limited interventions that have been specifically adapted for PPD and well-studied in this area. Their efficacy profiles tend to be like each other compared to usual care or control interventions (25). Gains are demonstrated immediately post-treatment, as well as in longer-term follow-up (six months after the conclusion of treatment). Other types of psychological interventions, including dynamic therapy, may also be effective [37]

Pharmacological Interventions:

When PPD is severe or not sufficiently responsive to psychological treatment, antidepressant medication may be required, either on its own or in addition to nondrug therapy. The first-line antidepressant medications for PPD treatment are the selective serotonin reuptake inhibitors (SSRIs). Other antidepressants may be used when a mother has achieved remission on them antenatally, or when first-line antidepressant medications are ineffective or poorly tolerated. Antidepressants for PPD have been evaluated in randomized controlled trials and shown to result in higher remission rates compared to placebo, although whether any specific antidepressant is more effective than

another for PPD is not clear. Infant exposure through lactation must be considered when recommending pharmacological treatment. Most antidepressants are not contraindicated during breastfeeding. The SSRI sertraline appears to have the most minimal passage into breastmilk and so is preferred when a woman is newly starting therapy, but switching from another SSRI for safety purposes is not usually recommended, since a medication switch could increase risk for relapse [17]. All SSRIs pass minimally into breastmilk at a level considered compatible with breastfeeding; rarely has a serious adverse event been reported in an exposed healthy full-term infant. As such, the clear benefits of breastfeeding in most cases outweigh concerns about SSRI exposure. The risks of breastfeeding in premature or medically ill infants should be individually determined in consultation with the pediatrician. When difficulties with breastfeeding are precipitating and/or perpetuating factors of the depression itself, then formula feeding can be considered a healthy and preferred alternative. The latter may be a more reasonable alternative in developed countries, where contamination of formula related to lack of access to clean water is not a problem. When SSRI medications are ineffective, women may be switched to other antidepressants, on which less information exists about lactation exposure. In general, serotonin norepinephrine reuptake inhibitors (SNRIs) and mirtazapine appear to have minimal passage into breastmilk [38– 40], whereas bupropion is avoided if possible due to some case reports of infant seizure [41]. Tricyclic antidepressants have greater passage into breastmilk than SSRIs and so are avoided when possible, but if tricyclics are used, nortriptyline is considered to have the best safety profile; doxepin is considered contraindicated given case reports of adverse events in exposed infants .Adjunctive psychotropic medications to treat insomnia and comorbid anxiety (e.g., hypnotics, benzodiazepines) or to augment antidepressant medication response (e.g., antipsychotics or other augmentation agents) may also be used in the setting of PPD. The potential for these medications' passage into breastmilk and resultant safety effects—both on their own and in combination with the antidepressant—should be considered. Drawing on some of the emerging evidence on the pathophysiology of PPD, some novel interventions are being developed and are under evaluation.

Recommendations:

The study findings support the formulation of mother-sensitive health policies based on understanding mothers' preferences, and thus, help prepare treatment alternatives that will suit different groups of mothers with PPD, for the benefit of mothers, newborns, and families. Disseminating the results of this study among professionals as part of professional training, can promote appropriate treatment facilities and modes of care for mothers with PPD.

CONCLUSIONS

PPD is one of the most common complications of childbirth. When untreated, it has the potential for a profound negative impact on mothers, children, and families. Case identification and accurate diagnosis are important. Psychosocial, psychological, pharmacological, and somatic interventions are each effective treatment options for PPD, depending on the severity of the clinical presentation. Uptake of effective treatments is a problem, so innovative treatments and models of care are being developed to combat barriers to treatment acceptability and access. It is hoped that emerging knowledge about the pathophysiology of the disorder and new somatic treatments will lead to the development of promising new treatments for PPD.

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