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Perinatal predictors of postpartum depression

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Abstract

Pregnancy is not only a period of immense pleasure for a woman; it is also a time of tremendous stress for her, both psychologically and physically. Even in healthy women, pregnancy can elicit a great deal of anxiety because of the uncertainty that arises with it. Obstetric complications related to pregnancy and deliveries affect the mother physically and mentally and are one of the prediction variables for postpartum depression. Obstetric factors include pregnancy related complications like hyperemesis, preeclampsia, eclampsia, hypothyroidism, hyperthyroidism, early labour and contractions, oligohydramnios, polyhydramnios, placental abnormalities, anemia, gestational diabetes mellitus, and delivery-related complications, such as challenging and painful labor, caesarean section, instrumental delivery, premature delivery, and complicated postpartum-like excessive bleeding, have been researched as potential risk factors for PPD. For mothers, infant-related issues are often extremely stressful situations. PPD is more likely to occur among mothers of premature infants, mothers of infants with illnesses, disabilities, or distress, challenging temperaments, and mothers who may face stress in childcare and lack childcare competence.

Keywords: Pregnancy, obstetric complications, postpartum depression.

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Introduction

Pregnancy

The period during which one or more children grow inside a woman's uterus (womb) is termed as pregnancy. Generally, pregnancy lasts for 40 weeks [1].

Trimesters

Pregnancy is typically divided into three trimesters of approximately 3 months each:

1st Trimester

1st trimester generally, lasts from about 1st week to the 13th week of the pregnancy period. It's a stereotype, which is when the sperm fertilizes the female ovum. During this trimester there are chances of miscarriage of the embryo.

2nd Trimester

The 2nd trimester naturally prevails for 14 weeks to 26 weeks of the gestation period. During this trimester we can encounter a bunch of manifestations like back pain, abdominal pain, leg cramps, constipation, and heart burns.

3rd Trimester

3rd trimester endures for 27 weeks to 40 weeks. The anticipatory woman typically encounters biological appraisals like shortness of breath, haemorrhoids, urinary incontinence, varicose veins, and napping crises. Manifestations arise from the enlargement in the size of the uterus, which augments approximately 2 pounds to 2.5 pounds during the span of childbearing [2].

Child birth

Childbirth is also referred to as labour or delivery. The termination of gestation occurs when one or more babies leaves the mother interior domain via vaginal delivery or caesarean section [3].

Stages of Labour

Labour happens in 4 stages.

First Stage

(Dilation of the cervix)

The cervix tends to open during the first stage of labour due to hormones produced during the normal delivery for the passage of a baby.

The first stage is divided into three phases:

1. Initial phase
2. The active phase
3. Transitional phase

A birth canal will have formed by the end of the transitional phase [4].

Second Stage

Descent birth of baby

The second stage usually lasts for nearly the last three or more hours it will be different for many women. Pushing usually senses promising for the most women [5].The second phase usually depends upon the position of the mother and baby, any medication used and other variables [6]. The contractions usually become unfocused after about 4 minutes. The phase concludes with the baby's birth [7].

Third Stage

When the baby is born, the third stage of delivery begins. During this stage, the placenta and membranes that help your baby in the uterus exit through your vagina. The umbilical cord which connects the baby to the placenta is tightened and cut [8].

Fourth Stage

Recovery

The 4th stage of labour takes place for 2 or 3 hours after the birth of the baby when your uterus persists in deporting any remaining birthing materials and goes back to its size. Breast feeding the baby helps to contract the uterus and reduces the amount of bleeding. Breastfeeding also enhances the production of the hormone oxytocin [9].

Postpartum

Postpartum is also known as postnatal period. It is usually initiated after the child is born and is expected to last for 6 weeks [10].

Postpartum Depression

Postpartum depression (PPD), is a type of mood disorder characterised by complex mix of emotional, physical, and behavioural changes associated with childbirth [11].

PPD is an under diagnosed and undertreated condition that a mother experiences within 6 weeks after childbirth [12].

In the postpartum period, there is an abrupt decline in the levels of circulating oestrogen and progesterone. These hormonal instabilities contribute to the development of depressive episodes during the postpartum period [13].

Epidemiology

Postpartum depression is affecting about one in seven women [14]. With a global prevalence of PPD ranging from 3% to 38%, it impacts a significant number of mothers [15].

Perinatal Risk Factors

Perinatal risk factors include the risk factors in both antenatal and postnatal period. Numerous socio-demographic, psychological, biological, medical, and personal factors are included in this.

1. **Socioeconomic and Demographic Factors**
   Maternal age (younger and older) increases the risk of postnatal depressive symptoms. Poor socio-economic status and lower education levels both tend to increase the risk of PPD.
2. **Mental Health and Psychological Issues:**
   Family and personal history of depression and anxiety are consistently reported risk factors for PPD. Psychological and personality factors like neuroticism, introversion, perfectionism, dysfunctional cognitive style, high interpersonal sensitivity, attributional style, low self-esteem, and traumatic events like abuse have all been associated to postnatal depression.
3. **Stressful Life Experiences**
   Significant predictors include negative life events, stressful pregnancy and child birth related events, and two or more stressful life events in the year before conception.
4. **Social Support**
   Lack of social support is a substantial risk factor for both prenatal and postnatal outcomes. Support from a spouse, the availability of family and friends throughout pregnancy and the first few months after giving birth are important.
5. **Biological and Obstetrical Factors**
   Postnatal depression is linked to past miscarriage and pregnancy termination. Various obstetric risk factors leading to PPD includes as follows [16].

Obstetric Factors

Anxiety

Anxiety is defined as a state of nervousness, worry, or concern. Anxiety disorder is a mental health condition that occurs when anxiety interferes with daily life. The anxiety is either intense or lasts a long time [17].

Management of Anxiety

Non-pharmacologic treatments can include stress-reduction techniques, evidence-based HVPs, and CBT approaches that address maladaptive behaviours and cognition.

Antidepressants and benzodiazepines are two types of medications that are frequently considered. Selective serotonin reuptake inhibitors (SSRIs) have been shown to alleviate some types of pregnancy anxiety. Furthermore, some women who take SSRIs during pregnancy experience hypertension and a shorter gestation [18].

Pre-Eclampsia

Preeclampsia is one of the major complications of gravid women. Preeclampsia is characterised by elevated blood pressure and proteinuria (excess protein in the urine).It typically develops after 20 weeks of pregnancy in women whose pre-pregnancy blood pressure was within normal limits [19].

Management of Pre-Eclampsia

Low-dose aspirin can minimise the risk of preeclampsia. Antihypertensive therapy does not eliminate disease progression, but it can help to avoid severe hypertension and its complications (such as stroke and placental abruption).Magnesium sulphate can prevent seizures [20].

Eclampsia

Eclampsia is characterized by the unique onset of generalized tonic clonic seizures in pregnant women with preeclampsia. Eclamptic convulsions could even occur during pregnancy (intrapartum), 20 weeks after delivery (postpartum) [21].

Management of Eclampsia

Initiate magnesium sulphate regimen to treat eclampsia [22].

Gestational Diabetes Mellitus

In gestational diabetes mellitus hormones secreted by the placenta prevent the body from utilizing insulin effectively. Gestation diabetes is not caused due to lack of insulin, as type 1 diabetes but by other hormones which make insulin less efficacious during gestation, a condition guided to as insulin resistance. It usually commences in 20 to 24 weeks of pregnancy [23].

Management of Gestational Diabetes Mellitus

GDM management focuses on keeping a non diabetic state and prevent excessive weight gain in order to reduce maternal and fetal complications. Nutritional therapy and exercise are two examples of lifestyle changes.

- Insulin has long been the first-line treatment for gestational diabetes [24].

Hypothyroidism

Hypothyroidism is a condition characterised by an underactive thyroid gland that can be diagnosed during gestation. Many hypothyroidism symptoms are similar to pregnancy symptoms. Fatigue, weight gain, and irregular menstruation are all symptoms shared by both. Low thyroid hormone levels may potentially make it difficult to conceive or result in miscarriage [25].

Management of Hypothyroidism

Oral LT4 administration is used to treat maternal hypothyroidism [26].

Hyperthyroidism

Gestational hyperthyroidism is uncommon, occurring in only 0.05-3.0% of pregnancies. Because symptoms and signs of nervousness, sweating, and dyspnoea; tachycardia and cardiac systolic murmur are exhibited in the majority of normal pregnancies, clinical diagnosis of hyperthyroidism in pregnant women is complicated. To confirm the diagnosis of hyperthyroidism, circulating free thyroxine (FT4) and TSH levels should always be measured.

Management of Hyperthyroidism

Antithyroid medication and propranolol should be started right away.

Neonates with hyperthyroidism should be given

- methimazole 0.5-1 mg/kg
- Propyl thio uracil 5-10 mg/kg daily.
- Propranolol 2 mg/kg daily can help slow down the pulse rate and reduce hyperactivity in neonates.

Antithyroid medications are the preferred treatment to reduce the raised hormone levels in gestation. Although adrenergic blockers can be used to treat hypermetabolic symptoms; they are not recommended [27].

Anemia

Anemia is a complication which develops during pregnancy. It is defined as a decrease in haemoglobin (Hb), haematocrit (HCT), or red blood cell count. It is a manifestation of an underlying medical issue that can be classified as macrocytic, microcytic, or normocytic [28].

Management of Anemia

Oral iron therapy is the initial line of treatment for iron deficiency anemia. For patients who cannot tolerate oral iron therapy, have side effects, have very low Hb concentrations, and require immediate treatment for severe anemia; parenteral (IV) iron therapy may be an alternative. Red blood cell transfusion, in addition to iron, is an option for treating anemia during pregnancy [29].

Oligohydramnios

Oligohydramnios is a pregnancy complication which occurs when amniotic fluid level is less than normal for gestational age of the baby. A water-like substance called amniotic fluid envelops the unborn child in the uterus. A baby may experience health issues if there is insufficient amniotic fluid. These conditions can impair the growth of your child or complicate labour and delivery [30].

Management of Oligohydramnios

The treatment of oligohydramnios is heavily influenced by the underlying cause. The two most common causes are membrane rupture and placental insufficiency. Steroids should be administered to aid fetal lung development, as well as antibiotics to reduce the risk of ascending infection [31].

Polyhydramnios

Polyhydramnios is an excess build-up of amniotic fluid, which surrounds the baby in the uterus during pregnancy. Polyhydramnios affects 1 to 2% of all pregnancies. Increased amniotic fluid production or decreased amniotic fluid evacuation led to polyhydramnios. It is typically seen after 20 weeks, frequently in the third trimester [32].

Management of Polyhydramnios

Pharmacological treatment, amnioreduction. Sulindac is a nonsteroidal anti-inflammatory drug that can cause a decrease in amniotic fluid volume [33].

Hyperemesis

Morning sickness (nausea) is quite common during pregnancy. This condition is usually not dangerous. While morning sickness can be excruciating, it usually passes within 12 weeks. A severe case of morning sickness during pregnancy is known as hyperemesis gravidarum (HG) that causes severe nausea and vomiting. It frequently necessitates hospitalization [34].

Management of Hyperemesis

Thiamine supplementation at 1.5mg/d is recommended for hyperemesis patients.Promethazine - 25 mg TID metoclopramide -10 mg TID [35].

Placenta Previa

Placenta previa refers to the placenta completely or partially covering the cervix's internal os. It increases the risk of postpartum haemorrhage, which leads to illness and mortality in both the mother and neonate.[36]

Management of Placental Previa

Caesarean delivery at 36 weeks/0 days to 37 weeks/6 days if the woman is stable [37].

Placental Abruption

The entire or partial separation of a typically implanted placenta before delivery is known as placental abruption. It is the prime contributor of maternal morbidity and death [38].

Management of Placenta Abruption

- Intravenous (IV) therapy.
- Oxygen inhalation. This would prevent fetal anoxia if delivered through a face mask.
- Determination of fibrinogen. This test would be performed several times prior to birth in order to detect DIC caesarean delivery. If the baby is due soon, it is best to have a caesarean section [39].

Preterm Pre labour Rupture of Membrane (PPROM)

Before week 37 of pregnancy, the sac (amniotic membrane) that surrounds your baby ruptures. This condition is termed as preterm pre labour rupture of membranes (PPROM) [40].

Management of PPROM

Antibiotics used as preventative measures for P-PROM. Erythromycin 250 mg qds for 10 days [41].

Prelabor Rupture of Membrenes (PROM)

Membrane rupture preceding the onset of labour is referred to as pre labour rupture of membranes (PROM). It is caused by physiologic weakening of the membranes in conjunction with the torque produced by uterine contractions [42].

Scartenderness

In a normal pregnancy, the embryo implants into the uterine wall and begins to grow. The embryo implants in or on the scar from a previous caesarean delivery in a caesarean scar pregnancy [43].

Scar tissue may hinder the embryo from implanting and maturing and might result in placental issues that complicate the pregnancy [44].

Management of Scartenderness

Injections of corticosteroids help to reduce pain and inflammation. Steroid injections are most effective for keloid or hypertrophic scarring on the skin's surface.

Botulinum toxin (Botox) injections are another option. These relieve pain and discomfort by relaxing muscles in the affected area of the body [45].

Post Partum Hemorrhage

PPH is a type of severe postpartum bleeding. It's a dangerous and possibly fatal condition. PPH is most common during the first 24 hours following the child birth, but it can occur up to 12 weeks later. PPH occurs when the overall bleeding after delivery exceeds 32 fl oz, whether the delivery was vaginal or caesarean [46].

Management of PPH

The most crucial and useful aspect of this procedure is the use of oxytocin following anterior shoulder delivery [47].

RH factor Pregnancy

When the mother's blood lacks the Rh factor but the baby's blood does, pregnancy-related issues can occur [48].

Baby Breech

When a baby is breech, it is positioned in the uterus feet or bottom first. During a vaginal birth, a baby should be positioned so that the head comes out first. By 36 weeks, the majority of breech babies will have turned to a head-first position [49].

Cephalopelvic Disproportion

When your baby's head does not clear the entrance of your pelvis during childbirth, this condition occurs [50].

Meconium Staining Liqour

The first stool that a baby passes is meconium. It is composed of substances ingested throughout the pregnancy and delivery process, such as intestinal epithelial cells, amniotic fluid, lanugo, bile, water, and mucus [51].

Meconium is the first substance found in the developing foetus's intestines and constitutes the new-born's first bowel movement. Green, brown, or yellow meconium is possible [52].

Fetal Distress

Historically, fetal distress has been used to describe when a foetus does not receive enough oxygen during pregnancy or labour. It is frequently detected by an abnormal fetal heart rate. While the term "fetal distress" is widely used, it is not well defined. This makes making an accurate diagnosis and providing appropriate treatment more difficult. Because of the ambiguity of the term, its use has the potential to result in incorrect treatment [53].

Neonatal Intensive Care Unit (NICU) Admission

Neonatal intensive care unit admissions are common for newborn babies who require intensive medical care. There may be areas in NICUs for infants whose condition is not critical but require specialised nursing services [54].

Preterm Birth

Babies delivered alive prior to 37 weeks of pregnancy are considered as preterm [55].

Still Birth

When a baby dies before or during delivery, this is referred to as a stillbirth. Both miscarriage and stillbirth are terms often used to describe pregnancy loss, but they differ in terms of when the loss occurs. The loss of a baby at or after the 20-week of gestation is termed as still birth [56].

Abortion

Abortion is the termination of a gestation in order to prevent the birth of a child. It is also referred to as pregnancy termination [57].

Role of Pharmacist

- All puerperae must be screened for anxiety and depressive disorders, and they should be educated about the possible consequences of an undiagnosed ailment.
- Monitor for drugs that may induce teratogenicity and optimise the risk profile of medications.
- Evaluate the potential risks of pregnancy based on maternal age, maternal and paternal health, obstetric history, and family history.
- To counteract neural tube birth defects, all gravid women need to be directed to follow healthy balanced diet rich in folate.
- Women of childbearing age should be reviewed for current, recent past, or childhood physical, sexual, or emotional interpersonal violence.
- Inform women about the significance of family planning.
- Identify and assess the social history, lifestyle, and behavioural issues that may have an impact on gestation.
- All the expectant women must always be properly assessed for alcohol intake, tobacco products usage, and drug use.
- Assess sexually transmitted infections risk in all pregnant women and their partners, and provide appropriate counselling to prevent the transmission of STIs.
- Body mass index should be calculated in pregnant women to assess the possible risks in near future [58].
- Pregnant women should be provided with vitamin D supplementation to prevent the negative health outcomes like preeclampsia,

gestational diabetes, postpartum depression, low birth weight.

- During a potential pregnancy, the risks and advantages of continuing pharmacological therapy, including dietary supplements and herbal supplements, should be reviewed, and the pharmacist can provide recommendations for suitable substitutes.
- Pharmacists are uniquely placed to help pregnant patients with their questions and concerns. Pregnant women frequently overestimate the teratogenic risks of medications, which can exacerbate underlying medical conditions, or misinterpret the risk, that may lead to potential hazard to the developing foetus [59].

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