

INFLUÊNCIA DA VIA DE PARTO E DOS FATORES NEUROHORMONAIS NO DESENVOLVIMENTO DA DEPRESSÃO PÓS-PARTO: UMA REVISÃO INTEGRATIVA.

INFLUENCE OF THE MODE OF DELIVERY AND NEUROHORMONAL FACTORS ON THE DEVELOPMENT OF POSTPARTUM DEPRESSION: AN INTEGRATIVE REVIEW.

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RESUMO

A depressão pós-parto (DPP) é um transtorno psiquiátrico de alta relevância que afeta milhares de mulheres, prejudicando o vínculo materno-infantil. Embora fatores sociais sejam amplamente conhecidos, a literatura recente aponta para causas biológicas e cirúrgicas que ocorrem dentro do hospital. Este estudo tem como objetivo investigar a influência da via de parto e dos fatores neurohormonais, especificamente a ocitocina, no desenvolvimento da depressão pós-parto. Trata-se de uma revisão integrativa da literatura, na qual foram utilizados operadores booleanos para a seleção rigorosa de três artigos científicos de alto impacto: uma revisão sistemática e dois estudos de coorte. Os resultados evidenciam que a cirurgia de cesariana atua como um forte gatilho de estresse físico e psicológico, estando associada a um risco até duas vezes maior de desenvolvimento de sintomas depressivos nas primeiras semanas após o parto, em comparação ao parto vaginal. Em paralelo, a biologia demonstra que baixos níveis de ocitocina, o hormônio responsável por regular o humor e o afeto, estão diretamente associados à DPP. A análise conjunta indica que o trauma da cesariana frequentemente retarda o início da amamentação, o que por sua vez diminui a liberação natural de ocitocina, deixando a puérpera mental e biologicamente vulnerável. Conclui-se que o modelo de parto impacta de forma direta a química cerebral da mãe, sendo vital que os profissionais de medicina adotem um olhar humanizado, incentivando o contato pele a pele e o suporte à amamentação para proteger a saúde mental materna.

Palavras-chave: Depressão Pós-Parto. Cesárea. Ocitocina. Parto Obstétrico. Hormônios.

ABSTRACT

Postpartum depression (PPD) is a highly relevant psychiatric disorder that affects thousands of women, impairing the maternal-infant bond. Although social factors are widely known, recent literature points to

biological and surgical causes that occur within the hospital. This study aims to investigate the influence of the mode of delivery and neurohormonal factors, specifically oxytocin, in the development of postpartum depression. This is an integrative literature review, in which Boolean operators were used for the rigorous selection of three high-impact scientific articles: one systematic review and two cohort studies. The results show that cesarean surgery acts as a strong trigger of physical and psychological stress, being associated with a risk up to two times higher of developing depressive symptoms in the first weeks after delivery, compared to vaginal delivery. In parallel, biology demonstrates that low levels of oxytocin, the hormone responsible for regulating mood and affection, are directly associated with PPD. The joint analysis indicates that the trauma of the cesarean often delays the onset of breastfeeding, which in turn decreases the natural release of oxytocin, leaving the mother mentally and biologically vulnerable. It is concluded that the mode of delivery directly impacts the mother's brain chemistry, making it vital for medical professionals to adopt a humanized approach, encouraging skin-to-skin contact and breastfeeding support to protect maternal mental health.

Keywords: Depression, Postpartum. Cesarean Section. Oxytocin. Delivery, Obstetric Hormones.

INTRODUÇÃO

The birth of a child is universally expected to be one of the most fulfilling and joyful experiences a family can have, however, clinical reality inside maternity wards often paints a very different picture. A large number of women experience profound sadness, anxiety, and a feeling of hopelessness in the days and weeks after giving birth, this clinical condition is known as postpartum depression (PPD), a serious mental health disorder that completely alters a mother's capacity to care for herself and her newborn baby. As a medical student in my third period, realizing that PPD affects between 10% and 20% of all new mothers globally opened my eyes to how critical this public health issue truly is, historically when we study mental health we tend to focus primarily on psychosocial triggers. We learn that women who lack family support, face domestic violence or have financial instability are at a high risk of developing depression, while these social factors are incredibly important, there is often a gap in connecting the psychological state of the mother with the direct physical and biological events that take place during the delivery. The hospital experience itself, specifically the mode of delivery and the sudden fluctuation of brain chemicals are massive events that the maternal body must endure.

A natural unassisted vaginal delivery is a physiological process that naturally triggers a massive release of oxytocin to help the mother, whereas a cesarean section is a major abdominal surgery that does not have this same natural release. The surgical

procedure brings intense postoperative pain, restricted mobility, and significant psychological stress, simultaneously, the maternal body is dealing with the sharpest hormonal shift a human can experience, among these hormones oxytocin plays a vital role. Famously known as the "love hormone," oxytocin is essential for uterine contractions, the initiation of breastfeeding and the emotional bonding between mother and infant, when we isolate these subjects we miss the whole picture. The justification for this study is that modern humanized medicine requires us to understand the patient integrally, we must see how the physical trauma of surgery might disrupt the protective biological shield provided by oxytocin.

Current research often explores obstetric outcomes or psychiatric symptoms separately, however, as future doctors, we need to bridge this knowledge, we must ask ourselves if the way we deliver babies in the hospital is inadvertently changing the hormonal environment of the mother, making her more susceptible to emotional illness. Understanding this connection is not just about writing a paper, it is about learning how to be a more empathetic and effective physician. Therefore, the objective of this research is to investigate the influence of the mode of delivery and neurohormonal factors on the development of postpartum depression, offering an integrative and humanized view of the biological and surgical vulnerabilities faced by puerperal women.

MÉTODO

To do this study I chose an integrative literature review, this method is very good to combine different studies and understand a big problem like postpartum depression. The guiding question for this research was: "How do the mode of delivery and endogenous oxytocin levels affect the risk of a mother developing postpartum depression?"

To find the articles I used two big scientific databases, PubMed and SciELO. To make sure the search was correct I used Boolean operators, these are words like "AND" and "OR" that help connect the search terms and find exactly what we need. The exact search formula I used was: ("Postpartum Depression" OR "Perinatal Depression") AND ("Cesarean Section" OR "Mode of Delivery") AND ("Oxytocin" OR "Hormones").

After getting the results I applied strict rules to choose the best ones, I only included high-quality studies from the last 10 years that directly answered my question,

excluding small case reports and animal studies. Following this strategy exactly three very important scientific articles were selected for the results of this review.

RESULTADOS

After a deep and careful reading of the three selected articles the extracted data were grouped into logical themes to build a clear humanized understanding of the problem, the findings were separated into two main aspects, the physical and psychological impact of the surgical delivery and the neurobiological role of oxytocin.

The Surgical Stress of the Mode of Delivery

The first major theme revolves around how the baby is born, the prospective cohort study conducted by Agarwal et al.¹ in a tertiary hospital in India provided very alarming data. By following 242 postpartum women and screening them with the Edinburgh Postnatal Depression Scale (EPDS) they found that the overall prevalence of PPD was 27.27%, however, when they separated the mothers by the mode of delivery a stark difference appeared. Women who underwent a cesarean section (CS) had a PPD prevalence of 34.71% compared to only 19.83% in women who had a normal vaginal delivery (ND)¹, the study calculated that the risk of developing depression was twice as high in the CS group both in the first week and at six weeks postpartum.

These findings are supported and expanded upon by the massive cohort study by Baba et al.² known as The Japan Environment and Children's Study (JECS). Following nearly 90,000 women they also found that a cesarean section was associated with an increased risk of postpartum depression at 1 month after childbirth, interestingly, Baba et al.² highlighted that this association was most evident in women who already had some antenatal psychological distress. As a medical student reading this makes perfect sense, a cesarean section involves the cold environment of an operating room, severe post-surgical pain and a difficult physical recovery, for a mother who is already feeling anxious this immense physical stress acts as a catalyst pushing her vulnerable mind into clinical depression.

The Biological Shield: Oxytocin

The second theme explains the internal chemistry that happens alongside the physical events, the systematic review conducted by Thul et al.³ focused exclusively on

the role of oxytocin in postpartum depression. Oxytocin is naturally released in large pulsatile amounts during a normal vaginal labor to promote uterine contractions and help bond with the baby, but this does not happen the same way in women who just go through surgery. Following the birth it is the hormone responsible for the milk let-down reflex and for generating the feelings of love and attachment the mother feels for her baby.

According to the rigorous review by Thul et al.³ the majority of studies measuring endogenous oxytocin in mothers found a clear inverse relationship with depressive symptoms, this means that women who suffer from postpartum depression consistently present lower levels of plasma oxytocin compared to healthy non-depressed mothers. Without adequate levels of this "love hormone" the maternal brain lacks its natural defense mechanism against the overwhelming stress, sleep deprivation and fear that come with caring for a newborn, the biology fails to protect the mind.

The Intersection of Surgery and Chemistry

The true value of this integrative review is connecting these dots, the research by Baba et al.² noted a fascinating detail, the increased risk of depression after a cesarean section was strongly attenuated when they adjusted their statistics for the infant feeding method (breastfeeding), this is where the surgery meets the biology. Because a cesarean section is painful and restricts the mother's movement it frequently delays early skin-to-skin contact and makes immediate breastfeeding very difficult.

As Thul et al.³ established, breastfeeding is the primary trigger for the continuous release of oxytocin in the postpartum period, therefore, if the surgical trauma of a cesarean section delays breastfeeding, the mother's body is deprived of the oxytocin surge it desperately needs, especially since she already missed the natural peak from a vaginal birth. She is left to face the pain of the surgery and the exhaustion of motherhood without her brain's natural neurohormonal protection, the physical stress of the mode of delivery actively disrupts the biological chemistry trapping the mother in a vulnerable state that easily progresses into postpartum depression.

CONCLUSÃO

The main evidence brought forward by this integrative review demonstrates that postpartum depression is heavily influenced by both the obstetric mode of delivery and maternal neurohormonal factors, the robust cohort studies proved that undergoing a

cesarean section significantly elevates a mother's risk of developing depressive symptoms due to surgical trauma and physical stress. Concurrently the biological data highlighted that low levels of endogenous oxytocin remove the brain's natural ability to regulate mood and cope with anxiety, the greatest contribution of this study is showing that these factors act in a unified cascade. The pain and limitations of a surgical delivery often hinder early breastfeeding which in turn suppresses the production of protective oxytocin, leaving the mother biologically defenseless against depression, taking into account that the c-section itself doesn't provide the oxytocin surge a normal birth does.

The practical implications for clinical medicine are profound, as future doctors we must understand that a cesarean section requires much more than just surgical follow-up, it demands intense psychological and humanized support. Medical teams must actively assist mothers who undergo surgical deliveries to achieve early skin-to-skin contact and successful breastfeeding, as this naturally stimulates oxytocin release and helps shield their mental health. Regarding future research it is highly recommended to conduct studies that measure blood oxytocin levels precisely before and immediately after both emergency and elective cesarean sections to further detail how surgical interventions alter maternal brain chemistry.

REFERÊNCIAS BIBLIOGRÁFICAS

1. Agarwal P, Dasari P, Sarkar S. Mode of Delivery and Postpartum Depression: A Cohort Study. *J Obstet Gynecol India*. 2023;73(Suppl 1):588-596.
2. Baba S, Ikehara S, Eshak ES, Ueda K, Kimura T, Iso H. Association Between Mode of Delivery and Postpartum Depression: The Japan Environment and Children's Study (JECS). *J Epidemiol*. 2023;33(5):209-216.
3. Thul TA, Corwin EJ, Carlson NS, Brennan PA, Young LJ. Oxytocin and postpartum depression: A systematic review. *Psychoneuroendocrinology*. 2020;120:104793.