Review Article

Perinatal Care: Integrative Healthcare Services: A Comprehensive Review

Abstract

Postpartum bleeding (PPB) and its clinical management (i.e., skin-to-skin contact and breastfeeding) are the essential parameters in which healthcare services are mandatory to promote maternal and fetal well-being. The researcher aims to investigate the broader perspectives regarding immediate skin-to-skin initial contact between baby and mother. Besides, breastfeeding significance would encourage the development of clinical outcomes' well-being. Across various institutions and globally, several integrative practices are established to promote and preserve maternal and fetal mortality and morbidity. Hence, comprehensive literature aimed to probe the cause-and-effect relationship association. The literature search was adopted using appropriate keywords and followed a standard system for searching the scientific data. The search included PubMed and Google Scholar databases. All publications associated with immediate newborn care and bonding with mothers were the highlights of this paper. The results indicate that newborn close bonding through skin-to-skin contact and breastfeeding are the cost-effective paradigm to prevent bleeding after delivery. It was also explored that the critical stages of the PPH are the transitional and fourth stages of labor.

Keywords: Bleeding after delivery, breastfeeding, skin-to-skin contact, transitional stage.

1. Introduction

In 2017, there were 295,000 maternal deaths globally, with a global MMR of two hundred and eleven deaths per one lakh births. World health organization's fifth Sustainable Development strategy is to reduce the maternal death rate by three quarters [1]. Bleeding during pregnancy and after delivery accounts for one-quarter of the mortality rate globally. Bleeding after delivery (PPH) exclusively accounts for three fourth of the obstetric mortality rate. Appropriately managing the third stage of labor (AMTSL), especially the transitional phase, is a preventative measure for bleeding consisting of oxytocin (Pitocin) injection, controlled cord traction, and immediate clamping of the cord [2]. However, mounting evidence of the harmful effects of exogenous oxytocin on regular maternal physiological changes during postpartum, as well as a higher risk of bleeding after delivery among mothers who have received larger doses of medication for induction.

2. Intensified Intervention during the transitional phase

The researcher focuses on the transitional phase of labor, which has a specific intense degree among all stages. Numerous studies have explored the impact and benefits of initial bonding between mother and baby. In addition, several researchers investigated the benefits of initial SSC and breastfeeding immediately after birth. This review focuses on two specific vital points: the management during the transitional phase and the babies put on the mothers' chests for SSC [3].

Different institutions have varying definitions of postpartum bleeding. The World Health Organization (WHO) defines PPH as bleeding of five hundred mL or more within 24 hours after delivery. In contrast, severe PPH is defined as bleeding of 1L or more within the initial 24 hours. Postpartum bleeding may be moderate (500– 1 L) or severe (above 1L). The earlier definition was PPB as bleeding greater than 500 mL for vaginal delivery and above for operative delivery. In contrast, the updated description is "a collective bleeding of greater or equivalent to 1L or blood loss with a clinical manifestation of low blood volume within 24 h after delivery [4]."

3. Definition: Postpartum bleeding

The definition of PPB was separated into medical and physiological by Saxton et al. The medical report of PPB is "bleeding above 500 mL," however, the clinical definition is "bleeding of any volume that produces shock or low hemoglobin; this quantity varies among women." The primary cause of postpartum hemorrhage is uterine atony, which is the inability of the uterus to contract effectively following placenta delivery. PPH typically lasts 24 hours, referred to as immediate PPB; however, there are instances of bleeding lasting up to six weeks following delivery, which is referred to as delayed PPB [5,6].

Maternal bleeding is associated with severe adverse outcomes, such as low hemoglobin, shock due to low blood volume, disseminated intravascular disorders, acute respiratory illnesses, renal disorders, decreased breastfeeding, and the aggravation of existing conditions undermines the physical and mental health of mothers [7].

3.1. Scientific evidence-based causes of PPB

Uterine atony is the most predominant cause of pulmonary hypertension. Four Ts can be used to describe the causes of PPH, as indicated in Table 1: trauma (laceration-related injuries), tone (uterine atony), thrombin (bleeding problems), and tissue (retained tissues) [8]

3.2. Most Common Causes

The most prevalent reason contributing to the rising incidence of PPB is uterine atony, also known as atonic PPH. 75% to 80% of PPHs are caused by uterine atony. This syndrome occurs when the uterine muscles lose their tone. Multiple pregnancies, oxytocin induction, uterine enlargement, chorioamnionitis, labor-prolonged, multiparity, macrosomia, polyhydramnios, precipitous labor, and exposure to magnesium sulfate regimens and halogenated anesthetics predispose women to uterine atony [9].

Even though risk variables are known, proof of certain determining factors has not yet been recorded, and several results are merely hypotheses. However, it is accepted that PPB is caused by any factor that alters uterine contraction. Predicting cases that will result in atonic PPB is difficult due to the prevalent occurrence of postpartum hemorrhage. In addition, atonic PPB can develop without complications, and statistics indicate that it happens more commonly in mothers without risk factors. As a result, all mothers are susceptible to PPB; therefore, preventative modes should be incorporated into every delivery procedure [10].

3.3. Risk factors: Postpartum bleeding

Despite evidence that PPB occurs independently of risk factors, the most prevalent method for forecasting the probability of bleeding remains the knowledge of risk variables. PPH is a brief and unexpected maternal illness characterized by a lack of primary symptoms. Documented studies indicate that 60% of women do not exhibit any indication of an elevated risk of heavy bleeding. As a result, PPH remains an idiopathic illness, as its cause remains unknown. In certain instances, a PPH sufferer may exhibit more than one established risk factor. In other circumstances, PPH results from a healthcare provider's neglect during the third stage of labor. In inadequate service delivery, women may receive substandard maternal care, putting them at risk for problems. Primigravid moms are at the most significant risk since they have a greater incidence of PPH with an unclear cause [11].

The newborn weight (> 4.0 kg); placenta previa; excessive amniotic fluid; boggy muscle following a long duration of labor; incomplete placental separation; retention of urine; multiple pregnancies; weakened inner uterine muscles, which fails to contract; administration of an induction hormone (Pitocin). One of the unfavorable consequences of exogenous oxytocin during normal labor is a decrease in endogenous oxytocin synthesis. Pregnancy-associated anemia raises the risk of PPH. The impaired coagulation mechanism makes it difficult to stop bleeding and manage PPH, which can result in death [12].

3.4. Prevention of PPH

Active and expectant management is employed to properly deal with the third stage of labor to prevent PPB. Active treatment entails quick (early) cord clamped and controlled cord traction to facilitate placenta delivery. All of these procedures aim to lower the risk of hemorrhaging. Oxytocin decreases the risk of PPB, followed by cesarean and vaginal deliveries. During management after the delivery of a newborn, the placenta is expected to be expelled itself or with only minimal mother pushing (hands-off) [13].

Numerous papers have evaluated a couple of approaches to deal third stage of labor (active versus expectant), with the majority favoring active treatment for the prevention of severe PPH (>1000 mL of blood loss). In a study comparing active and expectant management, a research study found that expectant management was linked with a threefold increased risk of PPH compared to active surveillance. Numerous types of research have contrasted the two approaches [14]. A study was conducted with randomly assigned participants who had active or expectant management; active management was associated with less than a ten percent reduction in the incidence of PPH. In the most current systematic review, which included nearly 9000 women across seven randomized control and quasi-randomized studies, the incidence of PPH in low-risk women was not significantly different. There was substantial high maternal diastolic blood pressure, after-birth vomiting, after-birth pains, usage of analgesics until labor ward discharge, and the number of women returning to the hospital with bleeding in the active management group. A decrease in birth weight was also associated with operational management, suggesting the reduced blood volume caused by placental transfusion interference [15].

Consequently, it can be concluded that the appropriate management of PPH remains unknown. Some researchers have proposed that physiological management may be the best strategy to assist mothers in

releasing oxytocin, which facilitates the rapid separation of the placenta without introducing potential difficulties via medical interventions, particularly in low-risk women. Due to the rising frequency of PPH in industrialized nations, such as the United States, there has been a recent push to reduce non-essential treatments for healthy women in standard delivery. Therefore, initiating (SSC) and early breastfeeding (BF) to prevent PPB are considered creative and essential means of optimally managing PPH [16].

4. Significance of the review

It is essential to seek a preventative treatment for PPH, as current therapies' prevalence rate has remained stable. The prevalence of atonic PPH is higher in low-income, third-world people that lack access to anti-bleeding medications. In affluent nations such as the United States, where PPH has doubled over the past decade, atonic PPH is a developing concern. Endogenous oxytocin lacks the harmful effects of exogenous oxytocin, and there is a tremendous need for a conveniently available, inexpensive treatment. Physiological therapies, such as SSC and BF, can increase oxytocin production, leading to a decrease in or the prevention of PPH.

4.1. Oxytocin and its pathophysiology

Oxytocin is a naturally occurring peptide hormone that affects mothers' central and associated systems during and after labor. It is generated from the hypothalamus's supraoptic nucleus (SON) and paraventricular nucleus (PVN). In response to several stimuli, the hormones are released into the blood circulation from the posterior pituitary gland, such as the sucking reflex, labor, and different non-noxious impulses. Oxytocin also functions as a neurotransmitter [17]. A positive feedback loop regulates oxytocin. Oxytocin's most significant function is to bind with receptors in the uterus, stimulating muscle contractions to remove products from the uterus and closing vascularity at the placental location to stop bleeding. Estrogen increases the quantity and sensitivity of oxytocin receptors in preparation for labor. Oxytocin also plays a crucial role in postpartum breastfeeding, as it causes the mammary glands to contract and expels milk.

Consequently, the body is inherently accustomed to oxytocin's effects during labor and delivery. In addition, it can be viewed as the energy that effectively enables the uterus to undergo contraction and increases its tone throughout childbirth. Suggested early therapies are SSC and BF. Numerous studies have analyzed the maximal rise of oxytocin during and after birth. It has been determined that the most sensitive time is within the first 60 minutes after birth when a woman's oxytocin level peaks. Researchers have attempted to optimize this increase in oxytocin and examined oxytocin levels during this vulnerable period concerning mother–infant SSC. They discovered that oxytocin levels were much higher than usual every 15 minutes after birth in women with SSC [18].

Numerous psycho-physiological effects have been linked to induction, including calmness and connection between mothers and newborns during breastfeeding for maternal and newborn adaptation, anxiolytic effects, low blood pressure, a high threshold of pain, a reduction in vascular cortisol, and anti-depressant impacts.

Previous research focused on the level of oxytocin in saliva and plasma in the parent, and another author, who evaluated OXT levels in fathers and mothers when caressing their baby, discovered a direct correlation between SSC and oxytocin levels. Other researchers have investigated the association between BF and oxytocin levels: Studies conducted an extensive study on the relationships between oxytocin and BF and oxytocin and SSC. The study indicated SSC and BF significantly enhance mother oxytocin levels [19].

4.2. Physiological Management

PPB can be controlled with nonpharmacological therapies. Among these methods is the application of nipple stimulation during labor. Since the 1800s, this idea has been reported in the literature; it entails massaging the breasts. The inspiration of the nasopharynx causes the pituitary gland to release oxytocin, a hormone related to initiating labor. This Intervention is performed within 15 minutes of birth and aims to induce a brief surge of oxytocin. An increase in uterine contractions is caused by the rise in the hormone's concentration. Increased uterine contractions result in the ejection of the placenta and all associated components, including blood clots, hence preventing PPB [20].

One of the most significant research evaluating the effects of BF on uterine tone was among eleven participants. It was a two-group actual experimental design. In group A, the baby was on the breast for feeding immediately, while in group B, another measure, manual nipple stimulation, was the treatment. In the third and fourth phases of labor, prophylactic oxytocin was not administered, and a transducer-tipped catheter recorded postpartum uterine activity. It was explored that breastfeeding and nipple stimulation increased uterine activity. All mothers have shown enhanced uterine activity, with the most significant results occurring among mothers who had fed babies compared to those who manually underwent nipple stimulation. Henceforth, natural approaches have significance in preventing PPB and may prevent the needless use of high-alert drugs, such as Pitocin, during the regular delivery stages.

SSC, a multimodal approach, is an additional physiological factor positively affecting oxytocin levels. SSC promotes the release of oxytocin by the pituitary gland. Elevated blood hormone levels, with the uterus as the target organ, resulting in more significant contractions, preventing PPH. This Intervention is relatively new, and scholars have yet to investigate it extensively [21].

4.3. Skin-to-skin contact

SSC maintains skin-to-skin contact while holding a diapered infant upright on the mother's chest. The newborn must be covered to keep an ideal temperature and prevent respiratory disorders.

The newborn baby is put on the mother's bare abdomen or chest (depending on the length of the umbilical cord) immediately after birth. In this posture, the infant can instantly access the mother's nip and hear her heartbeat. The mother and infant should be wrapped with a heated blanket and left alone for at least one hour. Following birth, the mother and infant are carefully and unobtrusively followed to ensure their optimal adaption.

Due to the Intervention's favorable results, this method should be utilized with well-developed children and premature infants who are medically stable. The approach has a better outcome, including improved

bonding, high milk production, increased breastfeeding practices, enhanced parental and psychological well-being, decreased clinical depression, decreased duration of placental delivery, support with uterine involution, decreased maternal anxiety, increased maternal well-being, reduced pain during the episiotomy, increased hematocrit levels, appropriate lochia, and shorter molar intervals. SSC benefits maternal physiology and psychology in numerous ways [22].

4.4. Skin-to-skin physiology

SSC is a multimodal technique that stimulates pituitary glands and boosts endogenous oxytocin synthesis. The social hormone oxytocin is affected by holding, touching, smelling, and viewing a newborn and hearing infant sounds. This principle applies to all types of SSC, but in kangaroo mother care, oxytocin aids in uterine contractility promotion. SSC is, therefore, one of the therapies that induce the release of oxytocin, helping uterine contractility and thereby preventing uterine atony, the primary cause of PPH [23].

5. Literature of uterine atony

According to Moore et al., SCC decreases the likelihood of uterine atony. In their analysis, the researchers condemned the Western tendency of separating mother and child. Instead, they promoted early SSC, including laying infants on the mothers' bare chests. They asserted that SSC had demonstrated neurobiological benefits related to producing neurobehaviors and ensuring the biological needs of the mother are met.

Consequently, the researchers found that SCC reduces cortisol and adreno-corticotropic hormone blood levels. This alteration increased oxytocin levels in the body. In addition, it was negatively associated with the amounts of a couple of the hormones. The researchers found a substantial positive link between SSC and endogenous oxytocin levels and a significant negative correlation between SSC and cortisol levels; a longer SSC duration decreased cortisol levels. In addition, this study shows that exogenous oxytocin negatively influences the amount of endogenous oxytocin and that the cortisol level increased in the group administered with exogenous oxytocin [24].

The data concerning SSC demonstrated that the SSC group reported fewer cases of severe uterine involution, less postpartum anemia as determined by hemoglobin values and the number of erythrocytes, less use of sanitary napkins, and a shorter hospital stay.

5.1. Effect of newborn hand massage and breastfeeding on maternal oxytocin

Every infant movement was videotaped from birth until the initial BF, and maternal blood samples were gathered every fifteen minutes for radioimmunoassay analysis of oxytocin levels. Even newborn hand massaging enhances maternal oxytocin, which considerably affects uterine contraction and milk ejection, according to the findings [25].

6. Breastfeeding: WHO

Breastfeeding is the act of a mother feeding her newborn breast milk directly from her breast. According to the World Health Organization, this method should be the only means of providing the dietary needs of newborns during the initial six months of life; after that, supplementary foods can be initiated [26]. The

feeding should begin within one hour of the baby's birth, as this not only allows the infant to suckle the nutrient-rich colostrum but also increases oxytocin, which helps to alleviate the mother's stress throughout the birthing process. Another definition is "any attempt by the newborn within 30 minutes after delivery to suckle the breast". Thus, commencing BF soon is crucial, and it should be underlined that investigators discovered early bonding to achieve the initial and exclusive BF objective.

Moore and Anderson undertook a randomized controlled study to determine the effects of early SSC on BF. Researchers employed the infant breastfeeding assessment test (IBAT) and the index of breastfeeding status (IBS) to measure the impacts on 21 women who satisfied the study's inclusion criteria. The SSC group had a greater rate of sucking efficiency during the initial breastfeeding ($p< 0.05$) and could breastfeed more efficiently earlier ($p <0.05$). Therefore, early SSC improves nursing success in the first two hours after birth [27].

6.1. Breastfeeding physiology

Like nipple stimulation, breastfeeding contributes to a rise in blood oxytocin levels. The increase in oxytocin causes the myometrium to contract more, which aids in the expulsion of all pregnancy products. Additionally, the contractions prevent excessive bleeding by closing blood arteries.

6.2. Studies: Breastfeeding

According to previous research, BF is part of the managerial strategies promoted throughout the fourth stage of labor. This stage begins when the placenta is delivered and lasts for four hours. The importance of BF in forming apparent–child attachments and preventing PPH cannot be overstated. Geller et al. advocated BF as one of the strategies to be implemented in developing countries [28]. Despite the efforts of international organizations, they argued in their analysis that the global maternal death rate has remained steady over the past decade. They highlighted the efficacy of newly emerging pharmacological and surgical interventions. However, in disadvantaged areas where PPB is prevalent due to home delivery, they determined that these methods are neither viable nor practicable. They offered inexpensive nonpharmaceutical therapies, such as BF, that are effective and simple to implement in any setting.

6.3. Literature on the effect of breastfeeding

The most significant risk during the postpartum period is postpartum hemorrhage, which increasing oxytocin levels can minimize via physiological means, such as BF and SSC.

The retrospective cohort study on the effects of bonding and breastfeeding at birth on the occurrence of PPB sought to discover whether immediate SSC and BF altered the incidence of PPB. Ten thousand women from the database were evaluated for PPB occurrences. Mothers of breastfeed or have SSC are statistically less likely to develop PPH [26].

Bingham discovered that the use of Pitocin persisted in PPB. Consequently, she advocated the adoption of nonpharmacological therapies, which she said are not only practical but also beneficial to the health of mothers. She discovered that using Pitocin decreases a woman's HCT and HGB by 24.0 and 8.5, respectively, after birth, with a further fall to 22.3 and 7.7, respectively, 48 hours later. Consistent with

Campbell-Yeo et al. findings, these findings indicated that the pharmaceutical strategy should be opposed and replaced with SCC and BF as therapies to prevent PPB. A retrospective cohort study involving 154 cases of atonic PPB determined that women with atonic PPB who had SSC and BF bled less than women with PPB who did not have SSC and BF during the first hour after delivery.

Concerning SSC, a quasi-experimental study including 108 women that examined the effects of SSC on the duration of the third stage of labor revealed that the SSC group experienced a shorter period of the third stage of work. A researcher with six studies conducted a recent literature search. It indicated that the SSC group had a shorter duration of the third stage of labor than the control group, with a mean difference of 1.33 minutes ($P<.05$). The effects of BF on uterine consistency and postpartum blood loss were examined in a quasi-experimental study involving 100 women. The BF group suffered considerably less blood loss (mean: 194 mL) than the control group. SSC and BF increase the quantity of blood loss and the duration of the third labor stage.

7. Conclusions

Abnormal tonicity of the uterus is the leading cause of PPB, accounting for seventy percent of all cases. Nonetheless, the disease responds well to physiological treatment strategies, such as BF and SSC. SSC and BF influence the induction of oxytocin and diminish the synthesis of unfavorable hormones in women, which interferes with the function of oxytocin which induces uterine contraction and inhibits PPB due to atonicity effectively. In addition, SSC and BF have apparent effects on the duration of 3rd stage of labor and postpartum blood loss. This review demonstrates that SSC and Breastfeeding strategies are cost-effective approaches that might be included in PPB prevention practices for optimal maternity care and managing PPB because SSC and BF are significant conditions of the psychological and physiological process during the initial one hour after birth.

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