Spring 2020

Postnatal Bonding and Barriers: a Literature Review on Helping Secure Mother-Infant Attachment

Ivory C. Butler
Sarah Lawrence College, ibutler@gm.slc.edu

Postnatal Bonding and Barriers: a Literature Review on Helping Secure Mother-Infant Attachment

Ivory C. Butler

Sarah Lawrence College

PSYC 3110 R 1 - Bonding to Wellbeing: EarlyAttachment Bonds Shape Well-being

Meghan Jablonski

4/28/2020

Abstract

The purpose of this literature review is to explore obstacles that interfere with mother-infant attachment, and what can be done to overcome these barriers. Poor mother-infant attachment can lead to strained relationships in adulthood, the worsening of pre-existing mental health issues in mothers, and a myriad of negative side effects in children, impaired social and emotional health among them. This paper examines peer-reviewed articles on obstacles to mother-infant bonding and proposes potential solutions. Methods that were found to enhance attachment include maximizing skin to skin contact, treating postpartum pathology, and reducing emotional distress in pregnancy and labor.

Introduction

Mothers may struggle to bond with their infants. Women with postnatal pathology or who lack adequate time to connect with their babies are especially at risk of impaired bonding. This literature review looks at the benefits of single-family units for preterm infants, birth trauma prevention, the necessity and effectiveness of bonding interventions in mothers with postpartum psychopathology, and the possible value of prenatal enrichment exercises.

Single-Family Units vs. Open Bay Units

Tandberg, Flacking, Grundt et. Moen, 2019, focused on 132 parents and 77 preterm infants (infants born between 28-32 weeks of pregnancy) who had just been born in Norwegian hospitals. The parents and their infants were divided into two groups: one in which parents were present for 21 hours a day in a single-family room, and one in which infants were kept in the hospital's open bay unit and only interacted with their babies for 7 hours a day. Parents filled out questionnaires during this time period to assess their mental health and stress levels. The Edinburgh Postnatal Depression Scale (EPDS), The State-Trait-Anxiety Inventory Short Form Y (STAI), the Parental Stressor Scale: NICU (PSS: NICU), Parenting Stress Index (PSI), and the Maternal Postnatal Assessment Scale (MPAS) were all used to evaluate their answers. The study's purpose was to examine how single-family rooms impact parents' mental health.

Both mothers and fathers in the single-family units reported experiencing significantly less stress. Parents in the single-family rooms had a decreased risk of depression and anxiety. Mothers in this condition were more likely to breastfeed and breastfeed their children more often, and interacted with their babies much more in general.

Mother-Baby Connections

An estimated 15-20% of women will experience antepartum and/or postpartum mental health problems at some point in their lifetime (Geller, Posmontier, Andrews Horowitz, Bonacquisti, & Chiarello, 2018) but only between a fifth and a quarter of them will receive adequate treatment. These rates are especially high among African American women, women experiencing preterm birth, and women from lower socioeconomic backgrounds (Gaynes et al., 2005; Segre et.al, 2007, as cited in 2018). While inpatient programs for women with postpartum mental illnesses may be effective, they frequently minimize contact between mothers and their children. Geller et. al examined the effectiveness of Mother Baby Connections (MBC), an initiative launched by Drexel University that focuses on treating postnatal pathology in mothers in Philadelphia as well as helping them bond with their babies. It is an outpatient program and mothers are encouraged to bring their infants with them to engage in mother-baby interaction therapy. The 47 women in this study were to participate in MBC for twenty months, although 19 of these women did not complete the program, due to life circumstances such as returning to work or being unable to keep up with the commute, with four women being unable to continue due to severe medical or mental health issues or domestic abuse. Of the remaining women who completed the program, six did not fill out their exit surveys. The results gathered in this study are primarily from minority women.

The methods MBC used include cognitive behavioral therapy, art therapy, dance movement therapy, yoga, emotionally focused couples therapy, infant massage, mother-baby interaction therapy, interpersonal psychotherapy,

medication management, and a wellness group where guest speakers would discuss topics, such as maternal nutrition, the importance of sleep, mindfulness, and other areas of the women's health. Dialectical behavior therapy, acceptance and commitment therapy, and eye movement desensitization and reprocessing (a program intended to relieve posttraumatic stress symptoms) were practiced as well. In mother-baby interaction therapy, mothers were coached to recognize and respond to their infants' cues accordingly and to play with their babies and foster more responsive interactions between them. The baby's stage of development was taken into consideration, so mothers were guided to respond to the specific needs and age of the child. In this way, programming was highly personalized. MBC also paid for transportation and provided on-site childcare to reduce barriers for lower-income patients. MBC also utilized what they called a Patient Navigator, a university student who would communicate with patients and assess their needs between sessions. The Patient Navigator was also trained to recognize potential suicidal symptoms and report them to the MBC clinical directors to ensure the mothers' safety.

Mothers who completed the exit survey were assessed with the Edinburgh Postnatal Depression Scale (EPDS), the Barkin Index of Maternal Functioning (BIMF), the Perceived Stress Scale (PSS), Difficulties in Emotional Regulation Scale (DERS), Dyadic Adjustment Scale—Revised (DAS—R), the City Birth Trauma Scale (CBTS), and a Client Satisfaction Questionnaire (CSQ). Survey data was also collected at the start of the program and at four-week intervals throughout. Overall, depressive symptoms decreased considerably, as

did parental stress and perceived stress. Maternal functioning, dyadic adjustment, and emotional regulation scores all rose significantly. Birth trauma scores decreased by about 40%. The mean client satisfaction score was 30/32.

The results of the MBC initiative suggests that similar outpatient programs that focus on the same areas as MBC may be highly beneficial to mothers struggling with postnatal mental health issues. In addition to offering several different forms of therapy, mother-baby interactions were a constant focus, as was the general health and well-being of the mother. The structure of it being an outpatient day program that covered childcare and transportation appears to have played no small part in its accessibility to patients and their children.

Whether or not particular aspects of the therapies provided were more effective than others was unclear, although the mother-baby interaction therapy played an obviously significant role. In particular, it was not clear if there were any striking differences between the effectiveness of cognitive behavioral therapy and dialectical behavioral therapy, interpersonal psychotherapy and acceptance and commitment therapy, art therapy and dance movement therapy. This may be relevant to consider in future research, given that therapy is not one size fits all, and there may be a pattern between mothers who benefit more greatly from some types than others. The extent to which physical health and mindfulness may help alleviate maternal postpathology and by extent possibly aid in improving bonding may also be relevant. Not all mothers with postpartum mental illness can access therapy for

it, but all of them have the capacity to practice mindfulness in their day to day lives and most mothers are physically capable of practicing exercises like yoga once they have fully recovered from labor. Additionally, some techniques from the therapies the women in MBC received may be practiced by mothers at home if these techniques are published with open access. While none of this would be as effective as going to MBC in person, it may provide a helpful alternative for women who are unable to access MBC or a similar program.

Childhood Abuse, Postpartum Psychopathology, and Bonding

Brockington, I. F., Fraser, C., & Wilson, D (2006) interviewed 125 mother-infant dyads and then distributed a questionnaire for the mothers to complete regarding their relationship with their children. The authors' objective was to identify disorders of the mother-infant bond. Using the 5th Edition of the Birmingham Interview for Maternal Mental Health, they were able to diagnose attachment disorders and recognize signs of mothers at risk of inflicting abuse on their children. If attachment disorders and warning signs are identified in parents, they may be able to be treated early on and prevent further problems as the child matures. Thus, caregivers should pay attention for warning signs of attachment disorders in their patients, in order for mother-infant dyads with disorder to seek treatment and reduce the likelihood of future child abuse or neglect.

Mothers who endured childhood abuse and parental neglect are more likely to suffer from postpartum psychopathology (Muzik, London Bockneck, Broderick, Richardson, Rosenblum, thelen, & Seng, 2012). Muzik et. al

intended to study bonding impairment in mothers who were abused or neglected as children and currently suffer from postnatal mental illness as adults. A control group of women without abusive or neglectful childhoods was used as a baseline comparison. (Some of these women experienced postnatal psychopathology while others did not.)

The sample size was 150 mother-infant dyads. Mothers answered questions on the Childhood Trauma Questionnaire (CTQ) over a telephone interview. Those who had experienced abuse or neglect before age 16 were placed in the Child Abuse group. The study was approved by the IRB board of a nearby university. Mothers completed telephone interviews at 6 weeks, 4 months, 12 months, and 18 months after birth. Researchers visited them at home six months postnatal to observe them play with their infants, and in a playroom with their child 15 months postpartum. Mothers also completed the National Women's Study -PTSD module telephone interview (NWS-PTSD) and participated in the Postpartum Depression Screening Scale (PPDS). At four months and six months into the experiment, they completed the Postpartum Bonding Questionnaire (PBQ).

Mothers in the Child Abuse group reported significantly more bonding impairments than mothers in the control group. Most of the mothers in both groups reported improved bonding as time went on. However, mothers with abusive childhoods, postpartum pathology, or both, were less likely to improve and more likely to further struggle.

Postnatal Depression and Bonding

Another study focusing on mother-infant bonding impairment with women struggling with perinatal mental illness is O'Higgins & Roberts, 2013. O'Higgins & Roberts looked at mothers with postpartum depression within the first year of birth and assessed them for bonding (or bonding impairment) based on the Mother Infant Bonding Scale (MIBC) at 1-4 weeks, 9 weeks, and one year after birth. 50 of the mothers who participated were depressed while the control group consisted of 29 non-depressed mothers. Depressive symptoms were assessed with the Edinburgh Postnatal Depression Scale (EPDS).

There was a positive correlation between bonding in the earlier weeks and bonding at later points in time. Mothers who bonded with their children initially—regardless of which group they were in—bonded better with their children later than mothers who did not. However, women with postpartum depression experienced greater risk of impaired bonding than mothers without depression.

Environmental Influences During Pregnancy

Pregnant mothers in Bangkok were divided in this study (Panthuraamphorn, Dookchitra, & Sanmaneechai, 1998) into two groups: women who experienced prenatal communication and interaction exercises meant to promote bonding and reduce stress, and women who did not participate in this enrichment program. Of the women who did, exercises

included relaxation techniques, visualization techniques, stress and anxiety relief practices, breathing exercises, massage, positive self-talk/affirmations, and mother-father interaction exercises designed to stimulate the release of endorphins. Mothers were also instructed to talk with, listen to music with, and otherwise engage with their unborn children.

Infants from the mothers in the enrichment group were found to have greater brain growth, gross and fine motor skills, language acquisition, and social development. The implication being that children from the enrichment group may have had an easier time attaching to their mothers, due to their advanced social development.

Traumatic childbirths often interfere with the development of mother-infant attachment (Hollander, M.H., van Hastenberg, E., van Dillen, J. et al, 2017). Reducing birth trauma, therefore, should help facilitate mother-infant bonding. In order for trauma to be reduced, the source must be identified. Hollander et. al surveyed women with traumatic birthing experiences to help identify possible trauma sources.

Participants were women in the Netherlands aged 18 or over, fluent in Dutch, and experienced traumatic birth in or after 2005. They filled out a questionnaire on their birthing experiences over Survey Monkey. Their answers were reviewed by members of the CAPTURE group (Childbirth and Psychotrauma Research Group), the Committee for Patient Communication of the Dutch Association of Obstetrics & Gynecology, and a committee designing a Dutch national guideline on postpartum PTSD.

54.6% of participants cited lack of control as a key contributing factor to their trauma. 47.4% cited intense pain or physical discomfort as having contributed to their trauma, while 49.9% of participants cited fear for their child's health or life as a major trauma factor. Poor communication from care providers came in at 43.7%. First time mothers were slightly more likely to cite birth expectations that differed from their actual birthing experience, intense pain, loss of control, and poor communication as contributing to their trauma. However, first time mothers were over 25% more likely to report extended duration of labor as traumatic. Meanwhile, mothers who had given birth previously were more likely to cite fear for their safety or the baby's safety, not being taken seriously, and bad outcomes (such as infant death) as sources of trauma.

Participants indicated factors that may have prevented their traumatic outcome. Suggestions from participants included more respect and attention from caregivers, being listened to, demanding certain actions or interventions (such as pain relief), being given the option to refuse certain actions or interventions (such as C-sections), having more realistic expectations, and choosing different caregivers. Participants who saw a different caregiver for a postnatal checkup than the one who attended their birth were nearly 15% more likely to consider filing a complaint against their previous caretaker. This suggests that if women had traumatic birthing experiences at least in part caused by their caregiver's treatment, then they should be encouraged to seek out different practitioners for their follow up appointments, due to the fact that

medical maltreatment is less likely to persist with future patients when past patients openly address it.

A number of patients who cited unrealistic expectations leading them to be ill-prepared for the reality of birth as a factor in their trauma also noted that they took hypnobirthing classes as preparation for labor. Many of these participants stated that they felt these classes in particular lead them to have an inaccurate idea of what to expect during birth. Although this does not definitively mean that hypnobirthing is inherently linked to birth trauma, it does suggest that pregnant women who take these classes should be taught that their actual births may be very different from the idealized births presented to them in this model.

Bonding at Birth

Crenshaw's (2014) extensive literature review of time spent between mother and baby immediately after birth significantly predicted attachment. Mothers who are left with their children for the first hour after birth experience greater feelings of wellbeing, reduced stress, and increased feelings of attachment with their child (World Health Organization & United Nations Children's Fund, 2009, as cited in Crenshaw, 2014). When mothers and infants are not given this "golden hour" to bond, difficulties with bonding may emerge (2014). The most common reason for the phenomenon of mothers and infants not being granted this crucial hour has to do with medical staff not recognizing the necessity of it and interfering with mother-baby skin to skin contact. Mothers who do not have this shared time with their babies immediately after birth show less affective responses to their children's cues

and have a harder time breastfeeding (Dumas et al., 2013, as cited in 2014). Skin to skin contact releases oxytocin, which allows mothers to bond with their children (Buckley, 2014, as cited in Crenshaw, 2014). When mothers struggle to breastfeed, oxytocin production in mother and baby cannot flourish, and struggles with breastfeeding can interfere with attachment as a result.

When possible, mothers who wish to quickly bond with their babies may want to consider breastfeeding (Uauy & de Andraca,1995, as cited in Liu, Leung, & Yang, 2013). Breastfed infants experience more secure attachment with their mothers on average than children who were not breastfed. Likewise, breastfeeding may reduce the odds of maternal depression (Chung et. al, 2007, as cited in 2013). While reducing the odds of maternal depression is important for maternal health, as discussed previously in this paper, maternal depression can interfere with the formation of secure attachments, meaning that reducing the odds of maternal depression increases the odds of more secure bonding, as well as being beneficial for women's mental health.

Even when mothers form strong bonds with their children without having experienced this golden hour, mothers and infants who did still are more bonded at three months later (Chateau & Wiberg, 1977). The golden hour is necessary for secure attachment between mothers and their infants, and unless there is an emergency, mothers and infants should be permitted at least an hour of immediate skin to skin contact after birth in order to maximize bonding. In situations where medical assistance is urgent for the mother or infant, if there is any way to allow the mother and baby to still experience some

skin to skin contact during this time, this could mitigate the effects of the interference.

Discussion

Tandberg et. al (2019) concluded that mothers in single-family rooms may have an easier time forming secure attachments with their child, as skin to skin contact and bonding are crucial for mother-infant attachment, and mothers and infants in single-family rooms have more opportunities to bond and have skin to skin contact. However, Tandberg et. al found no difference in attachment scores between the two groups after a four-month follow up with them. The authors speculate that parents in the single-family rooms felt more in control of their surroundings and that this sense of control may have decreased their stress levels, however, this was not officially confirmed. Nonetheless, it warrants further research.

Skin to skin contact between mothers and their infants is essential to bonding (Crenshaw, 2014). Allowing mothers and infants at least an hour of uninterrupted bonding time helps facilitate attachment both in the first hour after birth as well as over the following months (Chateau & Wiberg, 1977). Breastfeeding in particular can boost mother-infant bonding, and when mothers and their babies are given time to do so shortly after birth, breastfeeding comes more easily than if they wait—or have to wait— until later (Liu et. al, 2013, Crenshaw, 2014). As such, hospitals and other birthing locations should allow mothers and infants an hour or more of uninterrupted bonding, barring any medical intervention that is immediately necessary.

The results of the MBC initiative suggest that similar outpatient programs that focus on the same areas as MBC may be highly beneficial to mothers struggling with postnatal mental health issues. In addition to offering several different forms of therapy, mother-baby interactions were a constant focus, as was the general health and well-being of the mother. The structure of it being an outpatient day program that covered childcare and transportation appears to have played no small part in its accessibility to patients and their children.

Muzik et. al, 2012, speculate that postnatal pathology is a greater predictor of bonding impairment than abusive or neglectful childhoods, but that women with these traumatic experiences are more likely to suffer from postpartum mental illness. Therefore, a focus on treating and preventing perinatal mental health problems is necessary to reduce the rate of bonding impairment. Identifying attachment disorders in advance is also crucial, as untreated attachment disorders not only prevent mother-infant bonding, but increase the likelihood of future child abuse (Brockington, I. F., Fraser, C., & Wilson, D, 2006).

Muzik et. al found that mothers with childhood abuse or neglect were more likely to suffer from postnatal depression or PTSD, which in turn increased impaired bonding risk. However, it is worth noting that the mothers in the Child Abuse group were significantly more prone to perinatal pathology than women in the control group. Additionally, the degree of impaired bonding was not significantly greater in mothers with abusive childhoods and postpartum mental illness than it was in mothers without abusive childhoods

who suffered from perinatal pathology. There is also the question of how trauma manifests itself in mothers who experienced abuse or neglect from a loved one at age 16 or older, as the CTQ has a cutoff point after 15.

O'Higgins & Roberts infer that postnatally depressed mothers may require bonding interventions early on in order to continue to bond with their children. Likewise, mothers without postpartum mental health issues who struggle to initially bond may benefit from these interventions as well.

Panthuraamphorn et. al suggest that enrichment programs focusing on reducing stress during pregnancy, releasing endorphins, and mothers interacting with their unborn children may have several developmental benefits for the children once they are born. Although Panthuraamphorn et. al. do not explicitly state that children of mothers in these enrichment programs had more secure attachments with their mothers, they are stated to have greater social development, indicating that bonding may come more naturally for mothers and children in this group than those in the control group. Further research would help confirm these findings. If these findings hold true, then the creation of more enrichment programs for expecting mothers may prove to boost mother-infant bonding.

Hollander et. al (2017) found that the biggest factor determining maternal birthing trauma was a sense of a lack of control. Therefore, ensuring that mothers feel empowered instead of powerless during this stressful time is key to their mental health and by extent possibly their bonding with their babies. Discrepancies between expectations and reality was another key source of trauma among those surveyed, many of whom had taken hypnobirthing

classes, which suggests that these classes should be clearer about what pregnant women should expect from their births so they can better prepare for them.

It is my opinion, after reading and analyzing all of the research presented in this paper, that efforts to improve mother-infant bonding is essential. These efforts should focus on treating perinatal mental illness, permitting more bonding opportunities (especially the first hour after the infant has been born), and preventing factors that lead to these complications. This includes reducing factors associated with trauma during childbirth, such as perceived cruelty or apathy from caregivers, feelings of powerlessness, and medical interventions patients did not consent to. The interventions used in many births are not always medically necessary.

For example, the World Health Organization states that the ideal C-section birth rate is 10-15%, while the actual C-section birth rate in the U.S., for example, is roughly 32%, indicating a number of these cesarean births are not necessary for the health and safety of the mother and infant (Lindmeier, 2015, & CDC, 2018). There is evidence to suggest that doctors performing these surgeries may sometimes perform them for reasons unrelated to the patient's wellbeing, such as the potential for greater financial gain and ending labor earlier for doctors' convenience (Doucleff, 2018, Thangaratinam, 2018). However, factors like hospital layout and design may also contribute to the caesarian section rate, as well as the only recently disproven misconception that if a woman has had previous c-sections, she cannot have a vaginal birth

with any subsequent children (Shah, 2020, ,Barber, Lundsberg, Belanger, Pettker, Funai, & Illuzzi, 2011).

C-sections are linked with physical and mental maternal trauma and impaired bonding compared to vaginal births, so decreasing the rate of unnecessary c-sections may help more mothers and infants have an easier bonding experience (Chen & Tan, 2019). In order to reduce the excessive amount of C-sections performed annually, I would suggest that doctors study the latest research on them, in order to dispel popular myths surrounding them (particularly the myth that vaginal births after C-sections are not possible) among members of the medical community, as well as among expecting mothers and families. I would also suggest that hospitals should not profit more from c-sections by default, as not only do C-sections sometimes actually require less time and resources than vaginal births, but also because financial incentives may influence doctor's decisions at the patient's expense (Oster, 2019). I would also suggest maternity wards be structured more effectively to promote collaboration between doctors and nurses and patients. Maternity healthcare receiving more funding could not only allow for more research on maternal health and mother-infant bonding, but may also result in more medical personnel being hired, and therefore give women more birthing options and by extent a greater sense of control, which is linked with a decreased likelihood of maternal trauma and by extent reduced chances of bonding impairment.

Socially, more mothers being encouraged to open up about their struggles with impaired bonding may allow them to get the help they need and

may help other mothers be more motivated to get help. Doctors and patients having clear discussions about the patient's rights and what they should be prepared to expect may result in reduced feelings of helplessness. Implementing a federal paid maternity leave policy may allow more time for mothers and babies to bond. In the United States, there is no federal maternity leave requirement. This often results in women who have just given birth weeks ago to go back to work full time while their children are at home (Plotka & Busch-Rossnagel, 2018). While the children of mothers with careers can have just as secure attachments as children of stay at home mothers, there is no denying that forcing new mothers back into the workforce prematurely is an added stressor that has the potential to interfere with attachment.

Conclusion

The bond between mother and child appears to be largely contingent on opportunities for bonding and the mother's mental health. Mothers with postpartum psychopathology experienced greater difficulty bonding with their infants, however, the combination of therapy and bonding interventions like the ones employed by MBC may help mothers' mental health improve and improve their relationship with their child. Parents who were less stressed and experienced more bonding time with their infants due to being placed in a single-family room with them had less difficulty bonding with them than parents who could only see their babies in an open bay unit seven hours a day. Ensuring birthing mothers feel safe and empowered is key to preventing birth trauma and by extent facilitating better mother-baby bonding. Reducing stress

and focusing on enrichment activities may help facilitate attachment between mothers and their children, although more research may be needed in order for the evidence to be conclusive. Adopting policies designed to help mothers' wellbeing may also help form more secure attachments. These policies include national paid maternity leave, greater funding for maternal healthcare research, more required education in the medical community on the impacts of medical interventions such as caesarean sections, allowing mothers and infants more time to engage in skin to skin contact immediately after birth, clearer communication between patients and their doctors, and the development of more programs like Mother Baby Connections.

References:

1. O'Higgins, M. S. J., & Roberts, I. S. J. (2013). Mother-child bonding at 1 year; associations with symptoms of postnatal depression and bonding in the first few weeks. Springer-Verlag Wien, 16, 381–389. Retrieved from Archives of Women's Mental Health
2. Panthuraamphorn, C., Dookchitra, D., & Sanmaneechai, M. (1998). Environmental Influences on Human Brain Growth and Development. Journal of Prenatal & Perinatal Psychology & Health, 12(3/4), 163–173.
3. Geller, P., Posmontier, B., Andrews Horowitz, J., Bonacquisti, A., & Chiarello, L. (2018). Introducing Mother-Baby Connections: a model of intensive perinatal mental health outpatient programming. Journal of Behavioral Medicine - Springer, 600–613.
4. Tandberg, B., Flacking, R., Grundt, H., & Moen, A. (2019). Parent Psychological wellbeing in a single-family room versus an open bay neonatal intensive care unit. PLOS ONE, 14(11), 1–18
5. Muzik, M., London Bockneck, E., Broderick, A., Richardson, P., Rosenblum, K., thelen, K., & Seng, julia. (2012). Mother-Infant Bonding Impairment across the first 6 months postpartum: the primacy of psychopathology in women with childhood abuse and neglect histories. Springer-Verlag Wien, 29–38. Retrieved from Archives of Women's Mental Health

6. Crenshaw, J. T. (2014). Healthy Birth Practice #6: Keep Mother and Baby Together- It's Best for Mother, Baby, and Breastfeeding. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4235060/
7. Chateau, P. D., & Wiberg, B. (1977). LONG-TERM EFFECT ON MOTHER-INFANT BEHAVIOUR OF EXTRA CONTACT DURING THE FIRST HOUR POST PARTUM II. A Follow-up at Three months. Acta Paediatrica, 66(2), 145–151. doi: 10.1111/j.1651-2227.1977.tb07826.x
8. Liu, J., Leung, P., & Yang, A. (2013, December 24). Breastfeeding and active bonding protects against children's internalizing behavior problems. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3916850/#B2-nutrients-06-00076
9. Hollander, M.H., van Hastenberg, E., van Dillen, J. et al. Preventing traumatic childbirth experiences: 2192 women's perceptions and views. Arch Womens Ment Health 20, 515–523 (2017). https://doi.org/10.1007/s00737-017-0729-6
10. Brockington, I. F., Fraser, C., & Wilson, D. (2006). The Postpartum Bonding Questionnaire: a validation. Springer-Verlag, 233–242. Retrieved from Archives of Women's Mental Health
11. Lindmeier, C. (2015, April 29). Caesarean sections should only be performed when medically necessary. Retrieved from https://www.who.int/mediacentre/news/releases/2015/caesarean-sections/en/

12. CDC. (2018). FastStats-Births - Method of Delivery. Retrieved from https://www.cdc.gov/nchs/fastats/delivery.htm

13. Doucleff, M. (2018, October 12). Rate Of C-Sections Is Rising At An 'Alarming' Rate, Report Says. Retrieved from https://www.npr.org/sections/goatsandsoda/2018/10/12/656198429/rate-of-c-sections-is-rising-at-an-alarming-rate

14. Thangaratinam , S. (2018). The Lancet. Optimising Caesarean Section Use. Retrieved from https://www.thelancet.com/series/caesarean-section

15. Shah, N. (n.d.) (2020). Doctor-architect collaboration explores whether hospital design impacts care during childbirth. Retrieved from https://www.ariadnelabs.org/resources/articles/news/doctor-architect-collaboration-explores-whether-hospital-design-impacts-care-during-childbirth-2/

16. Barber, E. L., Lundsberg, L. S., Belanger, K., Pettker, C. M., Funai, E. F., & Illuzzi, J. L. (2011, July). Indications contributing to the increasing cesarean delivery rate. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3751192/

17. Chen, H., & Tan, D. (2019, February 21). Cesarean Section or Natural Childbirth? Cesarean Birth May Damage Your Health. Retrieved from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6394138/

18. Emily Oster, W. S. M. C. (2019, October 17). Why the C-Section Rate Is So High. Retrieved from

https://www.theatlantic.com/ideas/archive/2019/10/c-section-rate-high/600172/

19. Plotka, R., & Busch-Rossnagel, N. A. (2018). The role of length of maternity leave in supporting mother–child interactions and attachment security among American mothers and their infants. International Journal of Child Care and Education Policy, 12(1). doi: 10.1186/s40723-018-0041-6