Research Article

Journal of Clinical Pediatrics (ISSN 2995-6560)

A strong start: The benefits of coping strategies for neonatal intensive care unit families

Mariana Meneses[1*] & Sílvia Duarte Costa[1*], Sílvia Oliveira[2], Cristina Carvalho[2], Cláudia Ferraz[2], Ana Azevedo[2]

1. Department of Pediatrics, Unidade Local de Saúde de Matosinhos - Hospital Pedro Hispano, Porto, Portugal
2. Department of Neonatology, Unidade Local de Saúde de Matosinhos - Hospital Pedro Hispano, Porto, Portugal

* These authors contributed equally to this work.

***Corresponding author**

Mariana Meneses & Sílvia Duarte Costa ,
Department of Pediatrics, Hospital Pedro Hispano, Rua Dr. Eduardo Torres, 4464-513 - Matosinhos, Portugal
Email : marianameneses1992@gmail.com,
silviagfdcosta@gmail.com

Received Date : April 18, 2024
Accepted Date : April 19, 2024
Published Date : May 21, 2024

ABSTRACT

Health, relationships and bonding between parents and infants are at risk when preterm babies need intensive care for extended periods, affecting child's development and parental mental health. Pedro Hispano Hospital Neonatal Team trough "VIP neo project", uses bonding hearts and NICU diaries to address these issues. Parents of newborns admitted to NICU between May and October 2022 were included. They reported enhanced self-assurance and reduced anxiety (94.1%) using NICU diaries and 17.2% reported use by other family members. Similarly, fostered connection (83.3%) and reduced anxiety (75%) was described with bonding hearts. Furthermore,83.3% of parents felt that their newborns were more peaceful. Interestingly, 91.7% of mothers and 66.7% of fathers could identify their baby's scent. This project shows promise in promoting parental involvement, attachment and infant-parent well-being using creative interventions and cutting-edge resources that can provide a template for enhancing family support in NICUs, tackling the difficult journey of preterm birth.

Keywords : neonatology; diary; parent-child relation; NICU; parents; emotional ADJUSTMENT; BONDING

INTRODUCTION

Preterm newborns (NB) are delicate humans who require a great deal of care and attention, which is frequently associated with a substantial hazard to the child's and family's life and future well-being. Not only might they be subjected to unusual noise, light, and odor in the neonatal intensive care unit, but also parents may have psychological difficulties as their child remains hospitalized for an extended period of time[1,2] and that may have a huge impact in the future relationship parent – child.

Current studies reveal that prolonged separation causes major changes in the neuroendocrine system, which has serious implications for the child's development and ability to cope with crises in adulthood.[1,2] Furthermore, Post-Intensive Care Syndrome (PICS), is a collection of cognitive, physical, and mental health difficulties that commonly occur in patients after they are discharged from the Intensive Care Unit (ICU)[3]. Parents are regarded to provide the most important and secure environment for the creation of the earliest emotional attachment.[4] Studies have emerged that address neuroprotection as a way of minimizing the negative consequences of NICU admission, since not only is the brain more susceptible to external insults, but there is also a potential risk to brain maturation. The critical period for brain development is in the third trimester and all preterm are therefore more susceptible.[5]

As a result, the "Neo VIP project" was launched at Pedro Hispano Hospital's NICU with the goal of promoting activities to lessen parent separation and stress during hospitalization, resulting in more active and joyful parenting. The NICU diary and the bonding heart are essential strategies of this project.

The NICU diaries are journals in which parents can post photos, write about the recovery process, including each achievement or other information about the family's experiences during this period. The whole team and family members are invited to keep daily records. They should be written down even if there are no positive developments and parents should be encouraged to participate. This is a well-established mental health promotion technique, encouraging the humanization of care, preventing emotional effects, and improving depression and anxiety rates (during and after hospitalization).[6]

In addition, it has been established that this technique

Journal of Clinical Pediatrics (ISSN 2995-6560)

enhances the capacity to care for the baby, increases relationships that encourage development, and promotes long-term health and well-being benefits.[7] Also, the diaries can be useful after hospitalization in cases of stress or worry, in psychological consultations, and even in death situations.[1] Therefore, the diaries must be implemented in infants born with a gestational age of fewer than 32 weeks and a hospital stay of more than two weeks.[6]

About the bonding hearts, the physiology supporting the concept is based on the olfactory system, which is one of the earliest emerging systems in fetal development known to have certain social communicative capabilities, like learning of favorability related with their mothers and being attracted to smells of their mothers and odors of milk.[8] Therefore, it has been proposed that during the embryonic stage, children are drawn to or comforted by the odor of the amniotic fluid through olfactory learning and later develop various communication abilities through the reinforcement of this memories, providing a strong connection with their mother.[8] They may memorize and respond to the odors of their mother and mother-related odors such as milk and amniotic fluid. Simultaneously, moms and/or other caring adults may be aware of the fragrances released by babies and actively seek the smell of such odors in their daily child rearing.[8]

The attachment heart we developed in our unit is made of cotton fabric cut into the shape of a heart and sewn together in pairs. For each heart is necessary two pieces of heart shaped tissue. Then, one heart is given to the mother/father, who must keep it in contact with the skin for 6 to 8 hours, and the other is given to the baby, who must keep it in contact with it for 12 to 24 hours and after this period we change the bonding heart so that the parent can stay in touch with the NB's smell and the baby can stay in touch with her mother/father smell when they are absent (especially during the night period). We hypothesize that with this simple strategy, the parents feel more involved with their babies cares, feeling that even when they're not with the baby, they can be useful, that the baby smell can also stimulate the mother's production of milk and that it can help the baby relax.

The aim of this article is to evaluate the perception of parents regarding the usefulness of the NICU diaries and bonding hearts.

METHODS

A questionnaire was carried out after verbal consent. The participants were parents of newborns that were in the NICU during the period from May to October 2022. They were addressed directly by the authors and invited to take part in the research. Both mothers and fathers were included. The answers were registered by 2 health professionals, and the data were analysed using SPSS®.

RESULTS

A group of twenty-nine newborns who were admitted to Pedro Hispano Hospital's NICU between May and October 2022 were reunited. Two groups were formed: one for the NICU diary (n=17) and another for the bonding heart (n=12). Table1 contains information about the general characterization of the sample.

Table 1. Characteristics of the cohort

N total	29
Gender (n)	
Male	15
Female	14
Gestational age (n)	
Extreme preterm	6
Very preterm	19
Moderate preterm	4
Late preterm	0
Born weight (n)	
<1000	4
1000-1500	15
1500-2500	9
>2500	1
Mean days of hospitalization (days)	42.4

First-group analyses – NICU diaries

The neonates who parents received the NICU diary, in terms of gestational age, were 68.9% (n=11) moderate to very preterm, 23.5% (n=4) extremely preterm, and 11.8% (n=2) late preterm. In terms of weight, 82.8% (n=14) were extremely low to very low birth weight and 17.2% (n=3) were low birth weight.

Each parent visited their child frequently. The mothers were present every day and fathers at least 4 times per week.

When asked if they were worried or nervous about the hospitalization of their child, 94.1% (n=16) of the parents said they were. Despite this, the same number of parents reported that the NICU diary helped them feel more confident about their child's recovery, get closure, and reduce their anxiety about the future. Regarding the use by other family members, 17.2% (n=5) said that it was used.

Regarding the type of use given to the diary, it was found that parents considered it more beneficial to read the information written by the team than to write on it (37.9% versus 13.8%). Following discharge, 58.8% (n=10) continued to use the diary to cope with the challenges of parenting, with a positive outcome. We also assessed whether the diaries had an impact on trust in the services provided by the team of health professionals and the result was that 41.4% (n=12) felt more confidence about it. 31% of parents said that they understood

Journal of Clinical Pediatrics (ISSN 2995-6560)

the information about their baby's medical condition better.

Second group analyses – Bonding hearts

The neonates whose parents received the bonding hearts displayed the following characteristics in terms of gestational age: 25% (n=3) were classified as very preterm, 58.3% (n=7) as extremely preterm, and 16.7% (n=2) as moderate to late preterm. In regard to birth weight, the majority, 58.3% (n=7), had extremely low weight.

When queried, 75% (n=9) of respondents expressed apprehension during their newborn's hospitalization. A vast 83.3% (n=10) affirmed that the utilization of the bonding heart device significantly alleviated their anxiety, while an equivalent proportion attested to an enhanced sense of closeness with their child.

In the context of olfactory recognition of their infants, a notable 91.7% (n=11) of mothers and 66.7% (n=8) of fathers exhibited the ability to discern their baby's unique scent. Moreover, once at home, 41.7% (n=5) of parents persisted in employing this device as a mean to soothe their offspring.

With regard to the impact on the newborn, 83.3% (n=10) of parents reported that their infants exhibited increased tranquillity when in contact with the bonding heart.

In assessing whether the bonding heart contributed to the perception of the quality of healthcare services provided by professionals, 33% (n=4) responded positively.

DISCUSSION

In the Neonatal Intensive Care Unit of Pedro Hispano Hospital, a promising initiative called the "Neo VIP project" was launched with the goal of relieving the difficulties that preterm infants and their families encounter while in the hospital. The two main parts of the project, bonding hearts and NICU diaries, are meant to boost parental involvement, offer emotional support, and eventually improve the health of parents and newborns.

The Value of Emotional Support for Familiesn

Premature newborns face a variety of difficulties, and the NICU atmosphere can be daunting for parents.[9] Long-term psychological problems brought on by prolonged separation from their newborns may have an impact on the parentchild bond.[3] It is important to recognize that parents' stress and anxiety during NICU stays might have long-lasting consequences. It is crucial to offer coping mechanisms and emotional support in order to overcome these obstacles.

NICU Diaries as a Tool for Promoting Mental Health

The NICU diaries give parents an opportunity to communicate about their emotions, successes, and experiences while also allowing them to record their child's healing process. Numerous advantages of this journaling method have been demonstrated.[7] In addition to preventing emotional discomfort and promoting the humanization of treatment, it can also lower the rates of anxiety and depression both during and after hospital stays. Additionally, documenting their child's development can help parents become better caregivers and strengthen the bond between parent and child, both of which are essential for the long-term health and wellbeing of the child. The diaries are a helpful tool for parents who are experiencing stress, anxiety, psychiatric consultations, and even loss.[7]

The Neo VIP Project's NICU Diaries' effectiveness

The questionnaire's results show that this tool was helpful to the parents in the NICU diary group. The majority of parents used the diary even after their child was discharged, indicating that it had a lasting effect on their capacity to handle the difficulties of parenthood. A sizable percentage of parents also stated that they had a better knowledge of their infant's medical condition and felt more confident in the NICU team's ability to provide quality care. These results demonstrate the beneficial effects of NICU diaries on parental well-being, emotional support, and confidence in healthcare providers.

Bonding Hearts

With an emphasis on olfactory bonding, the bonding hearts constitute a crucial component of the Neo VIP initiative. One of the earliest developing systems in fetal development, the olfactory system, is essential to the bonding process between parents and newborns.[2,8] By enabling parents and infants to share each other's scent even when they are physically apart, the bonding hearts are intended to promote this bond.[4,10] This straightforward but creative method seeks to improve parental participation and promote the infant's wellbeing.

The outcomes for Bonding Hearts

Based on the questionnaire, it appears that parents in the NICU were pleased with the bonding hearts. Parents could share their scent with their infant and foster a sense of comfort and involvement even in situations where they couldn't be physically present by keeping their heart in contact with their skin. One may reflect that this approach could encourage the mother to produce more milk and aid in the baby's relaxation, in addition to making parents feel helpful in the care of their child.

Limitations and upcoming courses

Although the findings seem encouraging, it's critical to recognize the relatively small sample size and the possibility of selection bias given that parents were asked to take part in the study. The efficacy of these interventions may be further confirmed in the future by investigations involving bigger and more varied sample sizes.

Journal of Clinical Pediatrics (ISSN 2995-6560)

CONCLUSION

In summary, the Neo VIP project's bonding hearts and NICU diaries have great potential to enhance the overall wellbeing of preterm newborns and their parents by strengthening the parent-infant bond and providing emotional support. Situated at the intersection of olfactory bonding and mental health promotion, these cutting-edge tools are a promising first step toward comprehensive care for neonates and could potentially serve as a model for other NICUs looking to improve family support.

REFERENCES

1. Lammertink F, Vinkers CH, Tataranno ML, Benders MJNL. Premature Birth and Developmental Programming: Mechanisms of Resilience and Vulnerability. Front Psychiatry. 2021 Jan 8;11:531571. doi: 10.3389/fpsyt.2020.531571. PMID: 33488409; PMCID: PMC7820177

2. Küçük Alemdar D, İnal S. The Effect of Individualized Developmental Care Practices in Preterm Infants. Complement Med Res. 2020;27(2):97-104. English. doi: 10.1159/000504357. Epub 2019 Nov 21. PMID: 31751994

3. Manning JC, Pinto NP, Rennick JE, Colville G, Curley MAQ. Conceptualizing Post Intensive Care Syndrome in Children-The PICS-p Framework. Pediatr Crit Care Med. 2018 Apr;19(4):298-300. doi: 10.1097/PCC.0000000000001476. PMID: 29406379.

4. Perrelli JG, Zambaldi CF, Cantilino A, Sougey EB. Mother-child bonding assessment tools. Rev Paul Pediatr. 2014 Sep;32(3):257-65. doi: 10.1590/0103-0582201432318. Epub 2014 Oct 3. PMID: 25479859; PMCID: PMC4227350.

5. Ckerman S. Discovering the Brain. Washington (DC): National Academies Press (US); 1992. 6, The Development and Shaping of the Brain. Available from: https://www.ncbi.nlm.nih.gov/books/NBK234146/)

6. Carley, A., 2012. Can journaling provide support for NICU families? J. Spec. Pediatr. Nurs. (JSPN) 17, 254–257.

7. J.M. Hofbauer et al. The meaning of NICU-Diaries to parents of premature children in the neonatal intensive care unit: Trust that everything will be fine. Journal of Neonatal Nursing. 2021

8. Uebi, T., Hariyama, T., Suzuki, K. et al. Sampling, identification and sensory evaluation of odors of a newborn baby's head and amniotic fluid. Sci Rep 9, 12759 (2019). https://doi.org/10.1038/s41598-019-49137-6

9. Myrhaug HT, Brurberg KG, Hov L, et al. Survival and Impairment of Extremely Premature Infants: A Meta-analysis. Pediatrics 2019;143(2):e20180933

10. Croy I, Mohr T, Weidner K, Hummel T, Junge-Hoffmeister J. Mother-child bonding is associated with the maternal perception of the child's body odor. Physiol Behav. 2019 Jan 1;198:151-157. doi: 10.1016/j.physbeh.2018.09.014. Epub 2018 Sep 24. PMID: 30261171.