DOI: 10.7860/IJNMR/2021/50625.2300

Original Article

Paediatrics Section

Impact of Neonatal Counselling on Parental Stress in a Neonatal Intensive Care Unit: A Quasi-experimental Study

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ABSTRACT

Introduction: There are various reasons for stress in the parents of infants admitted in Neonatal Intensive Care Unit (NICU) e.g., sickness, environment and communication with healthcare staff. An effective communication and structured counselling may help in alleviating the parental stress.

Aim: To determine the impact of counselling in alleviating parental stress of the sick babies admitted in the NICU.

Materials and Methods: This quasi-experimental study was conducted in NICU of a tertiary care hospital during April-September 2020. The babies with a Score for Neonatal Acute physiology with Perinatal Extension II (SNAPE II) score ≥7 at the time of admission were included. Either parent was counselled daily by physician in charge of the unit for at least one counselling session and more so depending on the clinical condition of the baby. The parental stress was evaluated on Parental Stressor Scale: NICU (PSS: NICU) scale at two time points: 24 hours after admission and subsequently after three to five days of counselling. This scale uses the stressor points in four domains (Physical environment, Infant behaviour and appearance, Parental role alteration and Parental relationships with the staff of the unit). Each item was rated on a 5-point Likert scale; 0 being least stress and 5 being maximum stress. The overall pre and post counselling scores were compared using t-test.

Results: There were total 61 study subjects. The mean±SD gestational age and birth weight was $34^{3/7}$±$4^{1/7}$ weeks and 2225±598 grams respectively for the neonates. The mean SNAPE II score was 27.7±18.76. There was significant reduction in cumulative score on PSS: NICU scale after counselling (7.41 to 3.55, p<0.001). The results were also significant for individual domains.

Conclusion: The structured daily counselling helps in ameliorating the parentral stress of sick babies admitted in NICU.

Keywords: Communication, Neonate, Parental stressor scale: neonatal intensive care unit scale

INTRODUCTION

Parents of the babies admitted in the NICU often suffer from significant emotional stress (sadness, fear, anxiety, grief and helplessness). As technology has developed even smaller and sicker babies are being cared and saved in highly technical NICUs and this critical environment have been identified as an important stressor [1,2]. Often parents feel isolated and uninformed and it is therefore vital that they are kept up to date with the condition of their baby. Most of the times, the treatment of the sick babies remain first priority, but offering counselling and psychosocial support is also equally important.

Studies have found both the mothers and fathers of infants in the NICU, exhibit a higher percentage of clinical symptomology compared to control parents [3,4]. Their overall experiences during hospital stay were different from that of healthy infants [5]. The causes of stress in NICU can be because of many reasons including the NICU environment, infant behaviour, parental role alteration and staff communication [6]. Moreover, parents are often also distressed about the future health and development of their infant, developmental disabilities, and their child's future coping [7]. Complex medical language and technology used by the NICU physicians, nurses, and staff can also be confusing and hard to understand, causing frustration and stress in parents [7,8].

There are various scales devised for the assessment of parental stress e.g., PSS: NICU scale [9], Neonatal Unit Parental Stress Scale (NUPS) [10], etc., PSS:NICU scale is a comprehensive, validated and most widely used tool for assessing stress in NICUs. Often the different subset of stressors may have different impact [11]. The counselling practices are not standardised and practiced properly. Studies have shown that counselling helps in alleviating stress but the objective impact of counselling in alleviating parental stress has not been studied much [12,13]. Hence, this study aimed to determine the impact of counselling on parental stress in the NICU.

MATERIALS AND METHODS

This quasi-experimental study was carried out in the Level III NICU at a tertiary care teaching hospital after due approval from the Institute Ethical Committee (letter number PGI/BE/183/2020 dated 17th March 2020), from April 2020 to September 2020.

Inclusion and Exclusion criteria: Either parent was enrolled for the study (father or mother, depending on the availability) of the babies admitted to the NICU with a SNAPE II [14] score ≥7. The consecutive parents were enrolled after informed consent was taken. Parents who refused to give consent and babies with a SNAPPE II score of <7 were excluded from the study. The study was time bound and a convenient sample was taken over a study period.

There was at least one counselling session for parents every day, done by the physician-in-charge. During the counselling, they were informed about general aspects as well as disease-specific care of their baby. One counselling session of each baby lasted at least 10 minutes. The duration and frequency of the counselling session were increased in critically sick babies. Time for counselling was pre decided so that parents were available at that time. A structured counselling format was used which covered all aspects. The counselling was done in a quiet room with the availability of an optimum number of chairs to sit for at least five people. Proper lighting, availability of water was ensured. Then parents were given basic education regarding the NICU structure, set-up, and functions and medical information of the baby (clinical condition, investigation, treatment and prognosis) during counselling sessions by the NICU in-charge. Easy and simple language was used along with simple diagrams to make them understand the condition wherever required. Parents were allowed to take a closer look at the baby and their queries, if any, were clarified. As soon as the baby's condition improved parents were allowed and advised to participate in the care of their baby.

The demographic details of babies admitted in the NICU and their parent were collected. Paternal stress levels were assessed by first two authors using the PSS: NICU, which is a validated scale and relates to the physical environment (6 items), infant behaviour and appearance (13 items), parental role alteration (10 items) and staff behaviour and communication (8 items). Each item was rated on a 5-point Likert scale (where 0 meant no experience with the described situation or phenomenon, 1 expressed no stress response, 2 meant little stress, 3 expressed moderate stress, 4 represented very stressful score, and 5 extreme stress in a given situation). Their stress responses were measured at the time of admission and after three consecutive counselling sessions to assess the change in stress levels of the parents from the baseline.

STATISTICAL ANALYSIS

Continuous data (age of parents, birth weight, gestational age, age at admission and SNAPE-II score) were presented as mean±SD (Standard Deviation) and categorical data (inborn/outborn status, gender of baby, education and socioeconomic status) as frequency. Individual items of the questionnaires were first coded and processed using Statistical Package for the Social Sciences (SPSS) version 23.0 and perceived stress of the parents were evaluated statistically using descriptive statistics presented as mean and SD. The stress scores pre- and postintervention were then compared using the Wilcoxon signed rank test and a statistical significance was set at p-value <0.05.

RESULTS

A total of 61 NICU parents participated in the study. Baseline characteristics are displayed in [Table/Fig-1]. Mean (SD) age of the parents (included in the counselling) was 30 (4.37) years. The mean age at admission was 7.5 (3.2) days of life. Most of the parents were from (77.1%) lower middle class category of occupation as per Kuppuswamy scale [15]. The mean (SD) gestational age and birth weight were $34^{3/7}$ ($4^{1/7}$) weeks and

Variable	Mean (SD)#/N(%)
Age of parents (years)#	30 (4.37)
Parents (Enrolled for stress)	
Mother	19 (31.2)
Father	42 (68.8)
Birth weight (grams)#	2225 (598)
Gestational age (weeks)#	$34^{3/7}$ ($4^{1/7}$)
SNAPE II score#	27.7 (18.76)
Age at admission (days of life)#	7.5 (3.2)
Mean number of counselling attended#	15 (8.3)
Gender of neonates	
Male	36 (59)
Female	25 (41)
Outborn	44 (72.1)
Education	
Primary	9 (14.8)
10th	10 (16.4)
Intermediate	8 (13.1)
Graduation	24 (39.3)
Postgraduation	10 (16.4)
Socioeconomic status [15]	
Lower	12 (19.7)
Middle	35 (57.4)
Upper	14 (23)

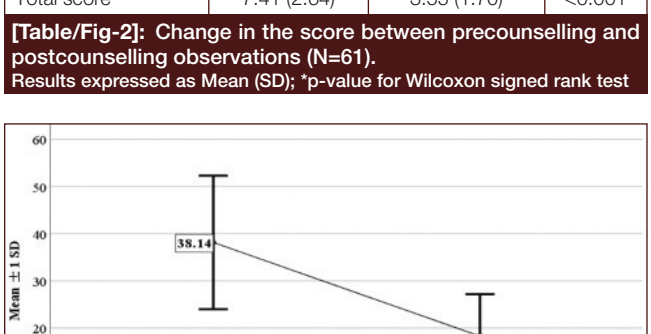
[Table/Fig-1]: Descriptive statistics of the study patients and participants (N=61).
All values expressed as N (%) except #which is as mean (SD)

2225 (598) grams respectively for the neonates. The mean (SD) SNAPE II score was 27.7 (18.76). Approximately 60% of the babies were preterm. Three fourth of the babies were outborn. Mean (range) number of counselling attended was 15 (4-38).

The individual scores of various domains of counselling are depicted in [Table/Fig-2]. There was significant reduction in cumulative score on PISS: NICU scale after counselling. The result was also significant for individual domains. The reduction was also observed when scores were compared individually domain wise (Sight and sound/Infant Behaviour/Parental role alteration/Staff behaviour and communication). Three parents reported overall increase in stress after counselling. The impact of counselling in scores (scores decreased from 38.14 to 18.27) is depicted in [Table/Fig-3].

Variables	Precounselling	Postcounselling	p-value*
Sight and sound	2.78 (0.11)	1.39 (0.66)	<0.001
Infant behaviour	2.60 (0.98)	1.31 (0.68)	<0.001
Parental role alteration	1.97 (0.98)	0.81 (0.54)	<0.001
Staff behaviour and communication	0.04 (0.11)	0.02 (0.13)	0.04
Total score	7.41 (2.64)	3.55 (1.70)	<0.001

[Table/Fig-2]: Change in the score between precounselling and postcounselling observations (N=61).
Results expressed as Mean (SD); *p-value for Wilcoxon signed rank test



[Table/Fig-3]: Error bar showing reduction in the stress level before and after counselling.

DISCUSSION

There are various factors which lead to stress in parents of critically sick babies in NICU. The type of stressors has been identified under different domains [16]. A structured, emphatic and effective communication is important to reduce the stress. This study was done to look for objective impact of counselling in alleviating the stress in parents and a significant reduction was observed in all stressor domains.

In the present study, the stress score was assessed on either parent as mother was not accompanying in several outborn cases and was not available in initial few days. In the study by Ashwani N et al., the stress score was tested in both the parents while in the study by Chourasia N et al., only mothers were assessed for stress score [17,18]. The magnitude of stress as per gender of parents varies in different studies.

Important stressors have been identified and validated by Miles MS et al., into four group parental role alteration, infant behaviour, NICU environment and staff-parent interaction and PSS: NICU scale [9]. In the present study, the mean precounselling subscale stress score was highest for sight and sounds followed by infant behaviour, parent role alteration and staff behaviours. The most important stressor was sight and sound which was consistent with the study by Carter JD et al., Musabirema P et al., and Ganguly R et al., [19-21]. While in few other studies the most important identified stressor was parental role alteration and infant appearance [11,18,22-24]. In these studies, the stress by "sight and sounds" and "staff behaviour" was lesser. As majority of births still does not happen at higher facility, therefore the NICU environment may have been more distressing in the present study.

The baseline scores in the present study was 7.41 which was higher than that of mothers in the United States (2.24) and mothers in the United Kingdom (2.44) and Korea (3.43) and also from another study in India (3.5) [18,23,25]. The probable reason for this could be better education, socioeconomic support and financial status in developed countries.

In the present study, the difference in the stress scores after counselling was assessed and the significant reduction was observed in all domains similar to the study by Chourasia N et al., [18]. In the present study, the maximum difference postcounselling occurred in parental role alteration (mean difference: 1.16). A comparable reduction was observed in other domains. The reduction in stress scores postcounselling has also been observed in other studies with parental support program as intervention [26-28]. The possible reason could be clarification of doubts, increased parental support and increased sense of participation by counselling.

A study by Månsson C et al., evaluated the impact of individualised parent support program on parental stress by PSS: NICU scale. They also observed a decrease in stress in some individual subsets (e.g., other sick babies being cared for in the room, my baby's unusual or abnormal breathing patterns, not being able to hold my baby, being afraid of touching or holding my baby) but there was no difference in total stress scores in comparison to control group [29]. In this study, the difference was mostly observed in the items related to parental role alteration and it was in line with findings from research that parental role alteration being most important stressor.

In the present study, a structured counselling format was used to address all the issues related to health of neonates. In the study

by Enke C et al., the parents were asked to report the counselling on "Perceived Information and Empathetic Communication-Scale' from their point of view. They observed that staff needs to be more empathetic during communication [12].

Different parents may have different stress level even with similar sickness level in the baby. Other factors like previous neonatal death, financial burden, literacy level, family support may not be assessed always. In the present study, the increase in overall stress was observed in three parents, that reason could be technical information during counselling or others. Moreover, if the clinical condition worsens, even with counselling anxiety and stress cannot be allayed. The absence of improvement in PSS score postcounselling was also observed by Ahn YM and Kim NH in mothers with complicated pregnancies or abnormal reproductive outcomes [25]. The training of the healthcare staff in communication skills to meet the parents' need is important as it was observed in a survey that half of the parents felt that nurses and doctors do not understand their emotional needs [30].

Limitation(s)

The limitation of the study was that the scale was not specifically evaluated for Indian settings. Also, the scale application before and after counselling may cause a sense of learning process how to answer the questions. However, the duration of 72 hours between the two interviews was ensured to avoid this error.

CONCLUSION(S)

The results of this study show an objective decrease in stress in all domains and emphasise the need and widespread implementation of uniform counselling policy which should be diligently followed. Simultaneously, the counselling policy should be customised depending upon socio-cultural, educational and financial background of patients.

REFERENCES

[1] Miles MS, Funk SG, Kasper MA. The neonatal intensive care unit environment: Sources of stress for parents. AACN Clin Issues Crit Care Nurs. 1991;2(2):346-54.

[2] Shields-Poë D, Pinelli J. Variables associated with parental stress in neonatal intensive care units. Neonatal Netw. 1997;16(1):29-37.

[3] Miles MS, Funk SG, Kasper MA. The stress response of mothers and fathers of preterm infants. Res Nurs Health. 1992;15(4):261-69.

[4] Treyvaud K, Anderson VA, Lee KJ, Woodward LJ, Newnham C, Inder TE, et al. Parental mental health and early social-emotional development of children born very preterm. Journal of Pediatric Psychology. 2010;35(7):768-77.

[5] Singer LT, Salvator A, Guo S, Collin M, Lilien L, Baley J. Maternal psychological distress and parenting stress after the birth of a very low-birth-weight infant. JAMA. 1999;281(9):799-805.

[6] Carter JR, Mulder RT, Darlow B. Parental stress in the NICU: The influence of personality, psychological, pregnancy and family factors. Personality and Mental Health. 2007:40-50.

[7] Holditch-Davis D, Miles MS. Mothers' stories about their experiences in the neonatal intensive care unit. Neonatal Netw. 2000;19(3):13-21.

[8] Perehudoff B. Parents' perceptions of environmental stressors in the special care nursery. Neonatal Netw. 1990;9(2):39-44.

[9] Miles MS, Funk SG, Carlson J. Parental Stressor Scale: Neonatal intensive care unit. Nurs Res. 1993;42(3):148-52.

[10] Reid T, Bramwell R, Booth N, Weindling AM. A new stressor scale for parents experiencing neonatal intensive care: The NUPS (Neonatal Unit Parental Stress) scale. J Reprod Infant Psychol. 2007;25:66-82.

[11] Dudek-Shriber L. Parent stress in the neonatal intensive care unit and the influence of parent and infant characteristics. Am J Occup Ther. 2004;58:509-20.

[12] Enke C, Oliva Y Hausmann A, Miedaner F, Roth B, Woopen C. Communicating with parents in neonatal intensive care units: The impact on parental stress. Patient Educ Couns. 2017;100(4):710-19.

[13] Bry A, Wigert, H. Psychosocial support for parents of extremely preterm infants in neonatal intensive care: A qualitative interview study. BMC Psychol. 2019;7:76.

[14] Richardson DK, Gray JE, McCormick MC, Workman K, Goldman DA. Score for neonatal acute physiology: A physiology severity index for neonatal intensive care. Pediatrics. 1993;91(3):617-23.

[15] Saleem SM, Jan SS. Modified Kuppuswamy socioeconomic scale updated for the year 2021. Indian J Forensic Community Med. 2021;8(1):01-03.

[16] MacDonald, M. Mothers of preterm infants in neonate intensive care. Early Child Development and Care. 2007;177(8):821-38.

[17] Ashwani N, Rekha NA, Suresh Kumar C. Parental stress experiences with NICU admission in a tertiary care centre. Int J Psychol Behav Sci. 2017;7:27-31.

[18] Chourasia N, Surianarayanan P, Bethou A, Bhat V. Stressors of NICU mothers and the effect of counselling-experience from a tertiary care teaching hospital, India. J Matern Fetal Neonatal Med. 2013;26(6):616-18.

[19] Carter JD, Mulder RT, Frampton CM, Darlow BA. Infants admitted to a neonatal intensive care unit: Parental psychological status at 9 months. Acta Paediatr. 2007;96(9):1286-89.

[20] Musabirema P, Brysiewicz P, Chipps J. Parents perceptions of stress in a neonatal intensive care unit in Rwanda. Curationis. 2015;38(2):1499.

[21] Ganguly R, Patnaik L, Sahoo J, Pattanaik S, Sahu T. Assessment of stress among parents of neonates admitted in the neonatal intensive care unit of a tertiary care hospital in Eastern India. J Educ Health Promot. 2020;9:288.

[22] Chourasia N, Surianarayanan P, Adhisivam B, Vishnu Bhat B. NICU admissions and maternal stress levels. Indian J Pediatr. 2013;80:380-84.

[23] Franck LS, Cox S, Allen A, Winter I. Measuring neonatal intensive care unit-related parental stress. J Adv Nurs. 2005;49(6):608-15.

[24] Schenk LK, Kelley JH. Mothering an extremely low birth-weight infant: A phenomenological study. Adv Neonatal Care. 2010;10(2):88-97.

[25] Ahn YM, Kim NH. Parental perception of neonates, parental stress and education for NICU Parents. Asian Nurs Res (Korean Soc Nurs Sci). 2007;1(3):199-210.

[26] McAnulty GB, Duffy FH, Butler SC, Bernstein JH, Zurakowski D, Als H. Effects of the Newborn Individualised Developmental Care and Assessment Program (NIDCAP) at age 8 years: Preliminary data. Clin Pediatr (Phila). 2010;49(3):258-70.

[27] Kleberg A, Hellström-Westas L, Widström AM. Mothers' perception of Newborn Individualised Developmental Care and Assessment Program (NIDCAP) as compared to conventional care. Early Hum Dev. 2007;83(6):403-11.

[28] Melnyk BM, Feinstein N, Fairbanks E. Two decades of evidence to support implementation of the COPE program as standard practice with parents of young unexpectedly hospitalized/critically ill children and premature infants. Pediatr Nurs. 2006;32(5):475-81.

[29] Månsson C, Sivberg B, Selander B, Lundqvist P. The impact of an individualised neonatal parent support programme on parental stress: A quasi-experimental study. Scand J Caring Sci. 2019;33(3):677-87.

[30] Wigert H, Dellenmark MB, Bry K. Strengths and weaknesses of parent-staff communication in the NICU: A survey assessment. BMC Pediatrics. 2013;13:71.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]
- Plagiarism X-checker: Jun 05, 2021
- Manual Googling: Jun 18, 2021
- iThenticate Software: Jul 01, 2021 (19%)

ETYMOLOGY: Author Origin

AUTHOR DECLARATION:
- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

Date of Submission: **May 31, 2021**
Date of Peer Review: **Jun 15, 2021**
Date of Acceptance: **Jun 22, 2021**
Date of Publishing: **Sep 30, 2021**