

The Effect of Expressive Writing on Post-traumatic Stress Disorder and Hopelessness in Mothers with Premature Neonates Hospitalized in NICU

Abstract

Background: Premature birth and hospitalization of infants in the Neonatal Intensive Care Unit (NICU) can contribute to Post-Traumatic Stress Disorder (PTSD) in mothers who also experience high levels of hopelessness. It is essential that a proper strategy be used for managing these challenges. This study aims to determine the effect of Expressive Writing (EW) on PTSD and hopelessness in mothers with premature neonates who were hospitalized in NICU. **Materials and Methods:** This clinical trial involved 65 mothers with premature neonates admitted to an NICU in Esfahan (Iran) in 2023. Samples were selected by the convenience sampling method and divided into control (n = 33) and intervention (n = 32) groups. The intervention group engaged in EW three times a week. All the participants completed the Perinatal Posttraumatic Stress Disorder Questionnaire and Beck's Hopelessness Scale. Moreover, statistical analyses including independent *t*-test, paired *t*-test, Chi-square test, and Fisher exact test were performed using SPSS 24. **Results:** Following the intervention, the mean scores of PTSD and hopelessness were significantly lower in the intervention group compared with the control group (($t = 13.86$, $df = 63$, $p < 0.001$) and ($t = 8.32$, $df = 63$, $p < 0.001$), respectively). **Conclusions:** Expressive writing proved effective in reducing PTSD and hopelessness in mothers with premature neonates. This low-cost and effective intervention is recommended for enhancing maternal mental health and empowering mothers for optimal care of premature infants in NICUs and after discharge.

Keywords: Expressive writing, hopelessness, neonatal intensive care unit, post-traumatic stress disorder, premature neonate

Introduction

Annually, 15 million premature infants are born worldwide. Iran also faces a high prevalence of preterm deliveries,^[1] which poses an unexpected problem for parents unprepared physically, mentally, and emotionally to cope with its consequences.^[2] As a result, they experience elevated levels of stress compared with mothers of healthy infants.^[3] The intricate nature of the NICU's physical environment, the physical appearance and behaviors of the infants, and interactions between staff and parents are also other stressor for parents.^[4] The premature birth of infants and their admission to NICU contribute to the development of Post-Traumatic Stress Disorder (PTSD) in mothers. PTSD is a syndrome arising from exposure to life-threatening events,^[3] resulting in futile attempts to control unwanted thoughts, emotions, and memories associated with traumatic

events,^[5] and is accompanied by feelings of horror, helplessness, or fear.^[6] PTSD as defined by the Diagnostic and Statistical Manual of Mental Disorders, fifth edition, is categorized as the consequence of trauma-related disorders with symptoms divided into four clusters: re-experiencing the traumatic event, sustained negative changes in cognition and mood, continuous avoidance of stimuli associated with the traumatic event, and increased arousal and reactivity.^[5,7] Compared with mothers with healthy infants, mothers with high-risk neonates, requiring NICU care, are more likely to suffer from PTSD with a prevalence rate of 24 to 44%.^[3]

Premature birth can also instill a sense of hopelessness in mothers.^[8] Hopelessness is defined as the lack of expectation and hope in achieving a goal, involving judgment of failure or negative feelings about future,^[9] which is classified as symptoms of

Behnaz Soltanpour¹,
Zahra
Pourmovahed²,
Mousa Alavi³

¹Department of Nursing, International Campus, Shahid Sadoughi University of Medical Sciences, Yazd, Iran, ²Department of Nursing, Research Center for Nursing and Midwifery Care, Non-Communicable Diseases Research Institute, School of Nursing and Midwifery, Shahid Sadoughi University of Medical Sciences, Yazd, Iran, ³Nursing and Midwifery Care Research Center, Department of Mental Health Nursing, Isfahan University of Medical Sciences, Isfahan, Iran

Address for correspondence:
Dr. Zahra Pourmovahed,
Department of Nursing,
Research Center for Nursing
and Midwifery Care,
Non-Communicable Diseases
Research Institute, School of
Nursing and Midwifery, Shahid
Sadoughi University of Medical
Sciences, Yazd, Iran.
E-mail: movahed446@yahoo.
com

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depressive disorders according to DSM-5.^[10] Naturally, when parents envision becoming parents, they harbor specific hopes and ideals for their children. If these aspirations are unmet, a sense of hopelessness may arise, impeding their ability to accept their child.^[11]

One effective psychological intervention for stress is expressive writing (EW) introduced by Pennebaker and Beall in 1986.^[12] EW is a technique which individuals, typically in a private setting and disregarding grammar, write for 15 to 20 minutes a day for 3 or 4 consecutive days about a distressing experience. Through this technique, individuals express their thoughts and feelings about a traumatic event to enhance their physical and psychological well-being.^[13] Given the importance of physical and mental health of mothers with premature infants, the negative effects of the use of pharmacotherapy on breastfeeding, and limited studies in this area, the present study aimed to determine the impact of EW on PTSD and hopelessness in mothers with premature neonates hospitalized in NICU.

Materials and Methods

This clinical trial, registered under the code IRCT20230305057623N1, was conducted from April to August 2023 at Shahid Beheshti Hospital in Isfahan, Iran. Based on two similar studies,^[14] considering a confidence interval of 95%, a test power of 80%, a significance level of 5%, and a 10% dropout rate, the total sample size was calculated to be 35 participants for each group. Ultimately, 65 mothers with premature infants were enrolled in two control ($n = 33$) and intervention ($n = 32$) groups. Inclusion criteria were mothers aged 18 and above, willing to participate in the research, having a preterm infant born before 37 weeks, proficiency in Persian, Iranian nationality, scoring higher than six on the PPQ questionnaire, and having no hearing impairment. Exclusion criteria included a history of PTSD; substance abuse; use of antianxiety, antidepressant, or psychotropic drugs in the month before sampling; experiencing acute stressful conditions in the past 6 months; prior NICU experience; mothers using other stress reduction methods; taking care of the infant by family members other than the mother; and the presence of genetic disorders in the infant. Data collection tools included a demographic information questionnaire, PPQ (Perinatal Posttraumatic Stress Disorder questionnaire), and BHS (Beck Hopelessness Scale). PPQ consists of 14 yes/no items with a score range of 0 to 14, the reliability and validity of which were confirmed in Iran.^[3] BHS includes 20 true/false items validated in Iran as well.^[15]

During the first week postpartum, after obtaining informed consent, mothers completed demographic questionnaires about themselves and their infants. Then, during the fourth week following the delivery (stage 1), all mothers completed PPQ and BHS questionnaires. Participants scoring higher than six on PPQ^[3] and any score on BHS (because it does not have a cutoff point) were included in the study based

on the inclusion criteria. To prevent information exchange, initially, all eligible mothers were selected as the control group. After the control group's discharge, sampling for the intervention group commenced. Following that, EW technique and its writing method were fully explained by the researcher to the intervention group, providing an instructional pamphlet on EW. The participants were instructed to write about their deepest feelings and thoughts regarding their infant's birth and hospitalization in NICU, three times a week (1 day apart), for at least 15 minutes each time in a private and quiet place, without concern for grammar and language rules.^[16] The control group only received routine care. After 2 to 4 weeks from stage 1,^[3] mothers in both groups again completed PPQ and BHS, which were then compared to preintervention scores. Independent sample *t*-tests, paired *t*-tests, Chi-square test, and Fisher's exact test were used for statistical analysis. All analyses were performed using SPSS 24 (IBM Company), considering a significance level of 5%.

Ethical considerations

The present study was approved by the Ethics Committee of Shahid Sadoughi University of Medical Sciences, Yazd (IR.SSU.REC.1401.103). The study's objectives were explained to the participants, ensuring the confidentiality of information and obtaining informed consent. At the end of the study, in order to meet ethical principles, EW pamphlets were also provided to the control group.

Results

According to the findings in Tables 1 and 2, there was no statistically significant difference between the two groups in demographic characteristics ($p > 0.05$). The mean (SD) age of mothers in the control group was 32.24 (5.58), and in the intervention group, it was 32.09 (6.72).

Before the intervention, the mean scores of PTSD and hopelessness in both control and intervention groups did not differ significantly ($p > 0.05$). However, after the intervention, the intervention group statistically obtained lower mean (SD) scores on both PTSD and hopelessness compared with the control group ((5.03 (1.43) vs 9.97 (1.45), $t = 13.86$, $p < 0.001$) and (4.69 (1.75) vs 9.12 (2.47), $t = 8.32$, $p < 0.001$), respectively) [Table 3]. According to the results of the paired *t*-test, compared with the beginning of the study, the control group showed a statistically significant reduction in terms of mean (SD) scores regarding PTSD (10.61 (1.52) vs 9.97 (1.45), $t = 2.63$, $p = 0.01$) and hopelessness (10.03 (3.51) vs 9.12 (2.47), $t = 2.49$, $p = 0.02$) [Table 3]. In contrast, this reduction in the intervention group was more statistically significant for mean (SD) scores respecting PTSD (10.25 (1.70) vs 5.03 (1.43), $t = 17.78$, $p < 0.001$) and hopelessness (9.53 (2.51) vs 4.69 (1.75), $t = 15.72$, $p < 0.001$) [Table 3].

Discussion

The present study aimed to investigate the impact of EW on PTSD and hopelessness in mothers with premature neonates hospitalized in the NICU, revealing significant effects in reducing hopelessness and PTSD. Consistent with this study, Horsch *et al.*^[17] reported a reduction in PTSD scores in mothers with premature babies through EW. Mothers found EW beneficial and expressed that it was worth to spend time on it. They also mentioned a decrease in the need for medical visits and consequently reduced costs. Blasio *et al.*^[18] achieved similar results, although they focused on mothers with full-term pregnancies. Notably, the control group performed neutral writing, suggesting

that the impact of writing about traumatic events might be more substantial than neutral writing.

Most studies in this field have focused on acute stress in mothers with preterm infants, and according to the study by Williams, acute stress typically leads to PTSD 1 month after symptoms onset.^[19] Therefore, studying PTSD and following up the mothers 1 month after preterm delivery was one of the strengths of this research. In line with the recent study, Rabiipoor *et al.*^[16] and Kadivar *et al.*^[20] also revealed that narrative writing alleviated stress in mothers with premature neonates.

On the other hand, in contrast with the findings of the present study, Vukčević Marković *et al.* argued that during the COVID-19 pandemic, EW not only did not reduce patients' stress but also increased it. This discrepancy may be due to the timing of EW, suggesting that it might be more effective either after or in the absence of a traumatic event but less so when done simultaneously.^[21] In a study conducted by Merz *et al.*,^[22] EW did not show any specific physical or psychological effects on patients with cancer. The distinction might be attributed to their focus on sick individuals.

Ayers *et al.*, stated that writing has no effect on postpartum anxiety and depression.^[23] Jouybari *et al.* also showed that EW and art therapy did not decrease stress scores in mothers with preterm infants,^[24] which was perhaps due to the higher weight and age of most infants at birth and the short follow-up period.

Given the limited number of studies on hopelessness in mothers with premature neonates, addressing this issue was another strength of this research. Akdogan confirmed a significant reduction in hopelessness scores in parents

Table 1: Comparison of demographic characteristics of the control and intervention groups

| Variable | Intervention group number (%) | Control group number (%) | df | p |
|--------------------|-------------------------------|--------------------------|----|--------|
| Mothers' job | | | | |
| House keeper | 26 (81.20) | 29 (87.90) | | |
| Employee | 6 (18.80) | 4 (12.10) | – | 0.35* |
| Neonates' gender | | | | |
| Female | 15 (46.90) | 13 (39.40) | | |
| Male | 17 (53.10) | 20 (60.60) | 1 | 0.54** |
| Mothers' education | | | | |
| High school | 3 (9.40) | 7 (21.20) | | |
| Diploma | 17 (53.10) | 10 (30.30) | 3 | 0.25** |
| Bachelor's | 11 (34.40) | 15 (45.50) | | |
| Master's | 1 (3.10) | 1 (3) | | |

*Fisher's exact test, **Chi-square test

Table 2: Comparison of demographic characteristics of the control and intervention groups

| Variable | Intervention group Mean (SD) | Control group Mean (SD) | t* | df* | p* |
|-----------------------|------------------------------|-------------------------|------|-----|------|
| Mothers' age (year) | 32.09 (6.72) | 32.24 (5.58) | 0.10 | 63 | 0.92 |
| Neonates' age (week) | 32.16 (2.48) | 31.15 (2.40) | 1.66 | 63 | 0.10 |
| Neonates' weight (gr) | 1777.50 (567.23) | 1526.36 (517.69) | 1.86 | 63 | 0.07 |

*Independent t-test

Table 3: Within- and between-group comparisons in terms of the total mean scores of Post-Traumatic Stress Disorder (PTSD) and hopelessness

| Variable | Group | Before Mean (SD) | After Mean (SD) | t** | df** | p** |
|--------------|--------------|------------------|-----------------|--------|------|--------|
| PTSD* | Control | 10.61 (1.52) | 9.97 (1.45) | 2.63 | 32 | 0.01 |
| | Intervention | 10.25 (1.70) | 5.03 (1.43) | 17.78 | 31 | <0.001 |
| | t*** | 0.89 | 13.86 | | | |
| | df*** | 63 | 63 | | | |
| | | P*** | 0.38 | <0.001 | | |
| Hopelessness | Control | 10.03 (3.51) | 9.12 (2.47) | 2.49 | 32 | 0.02 |
| | Intervention | 9.53 (2.51) | 4.69 (1.75) | 15.72 | 31 | <0.001 |
| | t*** | 0.66 | 8.32 | | | |
| | df*** | 63 | 63 | | | |
| | | P*** | 0.51 | <0.001 | | |

*Post-traumatic stress disorder, **paired t-test, ***Independent t-test

of children with special needs after group counseling, expressing concerns and sharing their thoughts and feelings, which was in line with the current research. Participants recommended such programs for individuals facing similar challenges.^[25] Khosrobeigi *et al.*^[26] stated that self-compassion training and writing a compassionate letter significantly reduced hopelessness in parents of children suffering from cancer. This intervention proved effective in mitigating parental hopelessness due to the severe self-criticism these parents face.

Erguner *et al.*^[27] also believed that social support for mothers of children with autism was effective in reducing their hopelessness. Teaching relaxation and positive thinking helped these mothers to have a more positive attitude toward their current experiences regarding their children and potential future challenges and became more hopeful. EW transforms unspoken and unconscious emotions which are more fearful into consciously articulated expressions in order to reduce their tension and stress. This method, due to its simplicity and self-guided nature without the need for face-to-face visits or lengthy sessions, distinguishes itself from other therapeutic approaches.^[28] Since this research was conducted as a master's thesis with a time limitation, it is recommended to carry out a similar study with more sample size and in a longer time.

Conclusion

The results of this study indicated that EW can be an effective intervention for reducing the symptoms of PTSD and hopelessness in mothers with preterm infants hospitalized in NICU. EW, as a practical and cost-effective method, provides an opportunity for mothers to write about their deepest thoughts and feelings concerning a traumatic event, making it easier for them to verbally express the problems that are challenging for them. Therefore, it is recommended to use this method to preserve and enhance mental health of mothers, empower them, and increase their sense of competence for optimal care of infants in NICU and after discharge.

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Conflicts of interest

Nothing to declare.

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