

Abstract

Parents of infants served in Neonatal Intensive Care Units (NICU) often experience extreme levels of stress that maybe associated with elevated symptoms of depression and posttraumatic stress. Researchers examined the effect of a brief journal writing exercise on the depressive and posttraumatic stress symptoms of mothers of NICU graduates using an experimental group comparison design. Participants were 38 women who had an infant hospitalized in an NICU in the previous 2 to 14 months. Dependent measures were a measure of depression, the Symptom Checklist 90 Revised (SCL-90-R) and a measure of posttraumatic stress, the Impact of Events Scale Revised (IES-R). Researchers found significant differences between groups at posttest using a MANCOVA, ($p < .000$). Implications for early intervention are discussed.

Expanding early intervention: Reducing maternal psychological distress after the NICU experience through journal writing

Admission to the Neonatal Intensive Care Unit (NICU) is an increasingly common pathway to early intervention services for children and their families (Guralnick, 1997; McNab, 1998). Many early intervention programs that follow an NICU hospitalization have incorporated family-centered approaches for providing services (Dunst, Johnson, Trivette, Hamby, 2000; Malone, 2000). Programs using a family-centered approach may offer services including access to information, parent education and parent training (Dunst et al.; Malone). Primary topics of parental education and training programs after the NICU are responsive interaction between parents and infants and care giving skills of parents (Nurcombe, 1984; Spiker, Ferguson, & Brooks-Gunn, 1993; Mahoney, 1999). Typically, individuals trained in early child development provide these services through brief home visits (Powell, 1993).

Family-centered care in treatment and early intervention in hospital settings are important and contribute to improved outcomes for NICU graduates (Als et al., 1994; Hostler, 1994). These services, however, often fail to address a major component of the larger social issue of family-centered care. Most early intervention programs do not address the potential psychological distress experienced by parents of infants hospitalized in the NICU and the long-term effects of that distress on family and child outcomes (Benfield, Leib, & Reuter, 1976).

The NICU experience leads some mothers to an emotional crisis that exceeds symptoms of postpartum depression experienced by mothers of normal term/birth weight babies (Doering, Moser, & Dracup, 1999; Oehler, Hannan, & Catlett, 1993; Thompson,

Oehler, Catlett, & Johndrow, 1993). Normal postpartum depression occurs in 6% to 13% of childbearing women (O'hara & Swain, 1996; Stuart & O'hara, 1993). Low birth weight (LBW) is typically categorized by extremity of weight into three categories of LBW (weighing < 2500 grams), very low birth weight (VLBW) (weighing < 1500 grams) and extremely low birth weight (ELBW) (weighing < 1000 grams). Thompson et al. reported depression rates ranging from 33% to 48% in mothers of very low birth weight (VLBW) infants, depending on the time of measurement. For some parents, the NICU experience is so intensely stressful that they suffer symptoms similar to individuals who experience Post Traumatic Stress Disorder (PTSD) (DeMier, Hynan, Harris, & Manniello, 1996; Hynan, 1987; Wilson, 1989).

The Diagnostic and Statistical Manual of Mental Disorders defines traumatic life events as, "...witnessing an event that involves death, injury, or threat to the physical integrity of another person; or learning about unexpected or violent death, serious harm, or threat of death or injury experienced by a family member..." (American Psychiatric Association, page 424). Having an infant hospitalized in an intensive care unit is, by definition, a traumatic life event for parents.

Infants who survive the NICU are at elevated risk for later complications (McNab, 1998). One study (Hack et al., 1994) found 30% of VLBW infants and 12% of LBW infants in their study were diagnosed with mental retardation at school age (IQ < 70). More than 70% of VLBW infants have medical complications associated with early birth (Landry, Chapieski, Richardson, Palmer, & Hall, 1990). These later complications may act as reminders to parents of the original NICU experience and it is likely that they

add to the greater anxiety and depressive symptoms experienced by some parents (Taylor, Klein, Minich, & Hack, 2001).

Exacerbating the risks that NICU graduates face are the risks related to being raised by parents who experience depression (Warner, 1995). Children raised by parents who experience major clinical depression are at greater risk for experiencing major clinical depression (Downey & Coyne, 1990; Warner; Wickramaratne & Weissman, 1998), medical problems (McLennan, 2000), conduct disorder (Wickramaratne & Weissman) and difficulty learning (Kaplan, Bachorowski, & Zarlengo-Strouse, 1999). Parents who experience depression may fail to practice disease prevention with their young children and are less likely to use safety precautions such as car seats (McLennan). In addition, individuals who experience depression often suffer from memory loss (Lauer, Giodani, Biovin, & Halle, 1994), inability to recall information (Reidy & Richards, 1997) and deficits in cognitive ability (Austin, Ross, Murray, & O'Carroll, 1992). Parents who experience depression are more likely to have difficulty learning or recalling information from parent training provided through established early intervention programs.

Families need an effective, theoretically based, psychological intervention available within the limited resources of follow-up and early intervention programs. The largest obstacle for implementing early intervention services is cost (Beckman, 1996). An intervention that is inexpensive and cost effective is necessary for implementation to be realistic. In addition, a brief intervention is needed as it becomes increasingly difficult to provide long-term psychological therapy due to limits in insurance policies. A brief intervention would also benefit mothers of infants because mothers are often so

preoccupied with their baby's health that little time remains for their own personal well being (Miles, Carlson, & Funk, 1996).

James Pennebaker (1985) developed a theory of inhibition that relates confiding traumatic events to health outcomes. The basic premise of the theory is failing to confide or share traumatic personal experiences is a type of inhibition (Pennebaker, 1988; Pennebaker & Beall, 1986). Individuals who fail to share traumatic events must restrain themselves from sharing their thoughts and feelings (Pennebaker; Pennebaker & O'Heeron, 1984). This effort expended for restricting communication requires physiological work, which has short and long-term health outcomes (Pennebaker; Pennebaker & Beall).

Pennebaker (1988) proposes that traumatic events that are highly emotionally charged or associated with feelings of guilt are more likely to be inhibited. People may avoid sharing these kinds of experiences with others. The NICU falls into this category of experiences that are unlikely to be shared. The NICU is typically described by mothers as highly emotionally charged, many mothers express feelings of guilt over what has happened to their infant and some parents describe the pain of losing their "ideal" child (Affleck, Tennan, & Rowe, 1991). Mothers who experience the NICU report social isolation, disconnection with family and community and a reluctance to talk about the experience (Lindsay et al., 1993). Feeling social isolation, guilt, and believing that others do not understand makes it unlikely that these mothers have the opportunity to disclose their experience.

Researchers have found both health and psychological benefits from journal writing in college students (Donnelly & Murray, 1991; Pennebaker, Kiecolt-Glaser, &

Glaser, 1988; Smyth, 1998). In Pennebaker's research, health benefits were found when college students were required to either write or talk about a previously experienced traumatic event for a few minutes at a time over several days (Pennebaker, 1988; Pennebaker et al.). In this research, participants were not talking or writing to anyone in particular. They wrote in confidential journals or spoke into an audio recorder in privacy. This research indicates that the cognitive and health benefits of confiding are attainable for individuals without the social interaction assumed necessary in traditional therapy.

Other researchers have established psychological benefits of writing about personal experiences (Donnelly & Murray, 1991; Smyth, 1998). Smyth completed a meta-analysis of nine studies using a writing intervention that also considered psychological measures. Smyth reported an effect size of, $d = 0.661$. Other researchers compared journal writing to one-on-one therapy and found equivalent self-reported benefits when the two groups receiving treatment were compared (Donnelly & Murray). The process of changing information into a written or oral form may provide temporal organization, increased understanding and sequencing of thoughts and feelings (Pennebaker & Francis, 1996). Journal writing about traumatic life events has also been associated with decreased intrusive thoughts of the event, decreases in physical stress and decreases of some long-term stress related illness (Pennebaker, 1988; Pennebaker & Beall, 1986).

It is unknown for whom and in what situations journal writing may be warranted. The preponderance of research thus far has focused on participants with no particular selection criteria. These studies imply that journal writing may be beneficial to anyone who experiences traumatic life events and particularly beneficial for those who have not

disclosed the event previously. The present study aims to further this research by applying journal writing to a particular homogenous group selected for a particular traumatic experience.

Writing about traumatic experiences may be accomplished at minimal financial cost. Journal writing about the NICU experience could be administered as part of discharge planning, in early intervention programs, or in follow-up clinics with little effort. To address the need for a theoretically based, psychological intervention in early intervention that can be implemented within the limitations of these programs, this study evaluated the effects of a brief journal writing intervention on the psychological distress experienced by mothers of infants previously hospitalized in an NICU.

Method

Participants

Thirty-eight women participated in the study. In order to participate in the study, participants were (a) mothers of infants who were hospitalized in an NICU for at least one week in the past 14 months, (b) self reported that they were able to express their thoughts in written English, (c) over 18 years of age and (d) not attending counseling or psychotherapy. Three hundred notification letters were sent to women who met the above criteria 2 to 14 months post discharge. Sixty-four women (21%) returned postcards indicating interest in the study. Thirty-eight women or 59% of those interested completed the protocol within the given time frame. Participants received a \$25.00 stipend prorated in three payments.

Setting and Materials

Participants completed dependent measures and wrote in journals at the location of their choice. Participants received and returned all correspondence through the US postal service. Envelopes and postage were provided to participants. Journals were 4 x 6 inch hardcover bound books with lined pages.

Design

The design was an experimental two groups (between: treatment and waiting list control) X two times (within: pretest and posttest) X two dependant measures analysis. Treatment and waiting list/control groups were randomly assigned and were comprised of 19 participants each. The two within times were a pretest, prior to intervention, and a posttest at four weeks after intervention for both groups. The dependent measures are described in the measures section and included the Symptom Check List 90 Revised (SCL-90-R) and the Impact of Events Scale Revised (IES-R).

Measures

Symptom Check List-90-R (SCL-90-R). The Symptom Check List-90-R (Derogatis, 1977) is a 90 item self-report measure of psychological distress symptoms. Participants report the degree to which they have experienced each symptom over the past 7 days. The Global Symptom Index (GSI) of the scale was used in this study because it has been successful in measuring psychological symptoms of mothers who have had infants hospitalized in NICU's in the past (Meyer et al., 1995; Oehler et al., 1993; Thompson et al., 1993). Previous studies have established a clinical cutoff score as one or more of the following; a GSI *t* score greater than 62 or any two sub-scales having a *t* score greater than 62.

Impact of Events Scale-Revised (IES-R). The IES-R is a brief self-report assessment of intrusion, avoidance and hyper-arousal which are symptoms of traumatic stress. The IES-R targets levels of symptoms in the past 7 days. Responses are scored on a 4-point scale with anchors ranging from “not at all” to “often,” (Weiss, 1996). The IES-R has successfully measured changes in the trauma response over time ranging from 1 week (Manuel & Anderson, 1993) to 18 months follow-up (Sugden, 1998).

The scale is designed to measure three broad domains of response to trauma. Intrusion is the reoccurrence of memories of, or memories related to, the trauma. Avoidance is numbness in the absence of thoughts or feelings about the traumatic experience or numbness with the intention to not have any thought or feeling about the traumatic experience. Hyper-arousal consists of the physiological states associated with the trauma response including lack of sleep, difficulty concentrating, anger and more. The scale has been used widely in populations experiencing posttraumatic stress disorder including survivors of combat, rape and natural disasters (Keane, Fairbank, Caddell, Zimering, & Bender, 1985). It has also been successful in discriminating between groups of trauma victims and non-trauma victims (Leskin, Kaloupek, & Keane, 1998).

Procedure

Two hospitals in the southwestern United States equipped with level 3 neonatal intensive care units participated in this study. Each hospital served approximately 300 infants annually. Staff at the two participating hospitals sent a letter to mothers who spoke English, were over 18 years of age and who had an infant hospitalized in the NICU for at least one week in the previous 2 to 14 months. The letter briefly described the purpose of the study and asked interested mothers to return a provided postcard to the

hospital. These returned postcards formed a contact list that was then given to the experimenters. Experimenters called the contact list to explain the study and sent out the pretests, an informed consent form and a demographic questionnaire. Those who wished to participate were asked to return the completed forms in a provided stamped envelope.

Upon receiving the completed pretests, the participants were rank ordered and matched in pairs by their level of psychological distress as indicated by their score on the SCL-90-R. Participants in each matched pair were then randomly assigned to either the waiting list or to the treatment group using a coin toss. The treatment group received written instructions and a numbered journal. In addition, participants received a phone call to explain the study and answer any questions. Four weeks after the journals were returned, posttests were sent to all participants.

Written instructions. This study requires that you write in this journal for at least thirty minutes a day on four days in a row. You may write for at least thirty minutes at any time during each day that is easy for you. Try to write while you are alone, in a quiet and relaxed place. During each of the four writing days, we want you to write about the most emotional and upsetting experiences of the NICU. These experiences may include any experience or event beginning with your pregnancy until the present day. You may write on different experiences each day or the same experience on every day. Tell us your story. Questions to help you start writing:

1. What were the most emotional or troubling experiences during your infants stay at the NICU? Describe what these experiences were and write about your deepest thoughts and feelings about those experiences in great detail.
2. What happened exactly and in what order?

3. When and where did the experience take place?
4. Who was there?
5. How did you feel then, at the time of the experience?
6. How do you feel now about the experience?
7. Why do you believe the experience happened?
8. Have you learned anything as a result of the experience? if so, What have you learned from the experience?
9. Has the experience helped you in any way? If so, how has it helped you?

Analysis

Equivalence of Comparison Groups At Pretest. One-way ANOVA was used to establish the equivalence of the two groups at pretest for each dependent measure. T-test comparisons were computed to establish equivalence of the two groups on demographic variables.

Main analysis. A MANCOVA of the global scales of each measure at posttest with group as a fixed variable and pretest as a covariate was performed. Effect size was used in addition to traditional probability statistics due to the small sample size. The d statistic yields an index of the standardized difference of means between groups at posttest (Thompson, 1999).

Clinical significance. To assess the clinical significance of the treatment effect, the treatment group was analyzed and displayed using the proportions of those experiencing clinical symptom levels of psychological distress at pretest to those experiencing clinical symptom levels of psychological distress at posttest as indicated by scores on the SCL-90-R.

Results

Descriptive Measures

Demographic information is summarized in Table 1. No demographic variables correlated with outcome measures. Demographic variables were analyzed using correlation and regression with pretest scores to explore possible predictors of symptom levels. Current medical conditions correlated with the assessment of traumatic stress at pretest ($r = .344$, $p = .035$) and accounted for a statistically significant proportion of the variance, $F(1, 36) = 4.819$, $p = .035$. In addition, birth weight correlated with the assessment of psychological distress at pretest ($r = -.357$, $p = .028$) and accounted for a statistically significant proportion of the variance, $F(1, 36) = 5.242$, $p = .028$. These variables were not used as covariates in the later analyses because they did not account for statistically significant proportions of variance on posttests.

Equivalence of the two groups on demographic variables was established using independent sample t-tests. No differences in demographic variables were statistically significant between the two groups at a $p < .05$ level.

Equivalence of Comparison Groups At Pretest

The design of this study employed random assignment to treatment and control groups based on matched pairs at pretest. A one-way ANOVA of those pretest scores yielded an $F(1, 37) = .331$, $p = .569$. This non-significant F score indicates that there were no statistically significant differences between the comparison groups at pretest on the assessment of psychological distress. A one-way ANOVA of the scores of posttraumatic stress at pretest yielded an $F(1, 37) = .033$, $p = .856$. Again, this non-significant F score indicates that the two groups were equivalent on the dependent

measures at pretest. In addition, multivariate tests were conducted on all sub-scales of the two dependent measures. There were no statistically significant differences between the two groups on any sub-scales at pretest, $p < .10$. It is important to note the high variability in the data that contributes to the statistically non-significant differences found at pretest.

Preliminary Analysis

Analysis of clinical scores at pretest of the 38 women who participated in the study indicates 14 women, 37% of participants, reported symptoms beyond the clinical cutoff score for psychological distress as measured by the global symptom index of the SCL-90-R. Seven women experiencing these symptoms were in the treatment group and seven were in the control group. Analysis of the subscales of the SCL-90-R indicates an additional five women reported symptoms that qualify as clinically symptomatic by reporting clinical levels on at least two of the nine subscales. Three of these women were in the control group and two were in the treatment group. Including these five women with the 14 women assessed by the global symptom index produces a 50% rate of clinical scores for psychological distress at pretest.

Main Analysis

A MANCOVA with group as a fixed variable and pretest scores of the two dependant measures as covariates produced an omnibus $F(2, 33) = 14.952, p = .000$. The SCL-90-R produced an $F = 26.164, p = .000$ and the IES-R produced an $F = 17.817, p = .000$. The means and standard deviations of the two dependant measures at pre and posttest are summarized in Table 2. The effect sizes, Cohen's d , of the differences between groups at posttest are also provided in Table 2.

Subsequent analyses were completed on the subscales of the IES-R. The means and standard deviations of the scales by group at posttest are displayed in Table 2. A MANCOVA of the three subscales with pretest as a covariate produced an omnibus $F(3, 31) = 6.134, p = .002$. The subsequent univariate analysis for each subscale found that the intrusion scale of the IES-R at posttest produced an $F = 12.453, p = .001$. The avoidance scale of the IES-R at posttest produced an $F = 5.332, p = .027$. The hyperarousal subscale of the IES-R produced an $F = 19.192, p = .000$.

Clinical Significance

An additional measure of the treatment effect and its clinical significance was computed by comparing the proportions of those who were exhibiting clinical levels of distress at pretest compared to those exhibiting clinical levels at posttest measured by the SCL-90-R. In the treatment group there were 7 out of 19 people (37%) at pretest exhibiting clinical levels of psychological distress. At posttest in the treatment group 3 out of 19 people (16%) were exhibiting clinical levels of distress. The control group remained constant between pre and posttest with 7 out of 19 (37%) reporting clinical levels.

A comparison of the SCL-90-R at pre and posttest is displayed in Figure 1 as a scatter-plot with pretest on the x-axis, posttest on the y-axis and cases labeled by group. The graph demonstrates that the treatment group falls below the line of 1 to 1 correlation, indicating improvement or a decrease in symptom levels over time. Meanwhile the control group predominately falls above the 1 to 1 correlation line indicating increasing symptom levels at posttest.

Fidelity Indicators

The 38 participants completed all assessment and demographic information. Nineteen participants wrote in journals and returned them. Adherence to journal writing directions was assessed by looking for four separate journal entries per journal. All 19 participants who wrote in journals and returned them answered four self-report questions indicating they had finished 30 minutes of writing at these four different times. It is unknown if these writing days were actually consecutive. Seventeen of the journals indicated each new day of writing by showing a date, a new page, or writing “day 1” etc. Participants wrote on average approximately 2446 words in their journals. The two participants who did not indicate new days in their journals wrote approximately the same number of words as those who did indicate new days. All journal writing consisted of NICU related experiences. This indicates that the participants complied with the study’s requests for participation.

Discussion

The results of this study support the prediction that a brief journal writing intervention can reduce the psychological distress of some mothers who have experienced the NICU. Follow up psychological care is rarely provided for families in early intervention hospital settings due to cost. In this study, brief journal writing for thirty minutes a day on four consecutive days reduced psychological distress for mothers of NICU graduates. These mothers wrote about the most intensely stressful events regarding their infants NICU stay. The results of this study are consistent with the growing body of literature demonstrating the psychological benefits of journal writing (Smyth, 1998). This study contributes an extension of the literature by applying a journal

writing exercise in an applied setting with participants selected for a common traumatic experience.

Participants in this study wrote about topics consistent with previously reported common stressors in the NICU context. Mothers also communicated detailed chronology of what happened during their experience. One mother wrote, “The first thing that comes to mind when I think of my baby’s NICU is having to leave him there.” Many mothers expressed grief over being discharged from the hospital without their baby. Mothers described closing the door to their baby’s nursery at home so they wouldn’t be reminded that the infant was not there.

The most consistent theme across all journal entries was the description of loss felt for each experience that was different from what they had expected their baby’s birth to be like. For instance, the description above in which a mother describes having to leave her infant at the hospital when she had expected to be able to bring the infant home. One mother summarized this common feeling, “I was so wanting to breastfeed but since she was in the NICU it didn’t seem like that was going to work out as we had hoped either. So many plans and hopes are dashed when a baby ends up in the NICU. I know that in the end, they do go home and that is the only concern, but each thing that doesn’t happen the way you dreamed it would is its own sorrow to deal with.” These feelings of loss are consistent with the work of Affleck et al. (1991) who studied women’s memories of the NICU using interviews and are also consistent with other reports of mother’s remembrances of the NICU (Holditch-Davis & Miles, 2000).

Current medical problems of the infant and infant birth weight significantly correlated with pretest scores. The significant negative correlation between birth weight

and psychological distress and the significant positive correlation between current medical problems of the infant and psychological distress address a limitation to the findings of this study. The researchers conceptualized the NICU as an acute traumatic event. For some mothers, however, their infants continue to experience difficulty to thrive, suffer from chronic lung disease, or experience lifelong disabilities (Taylor et al., 2001). The difference between acute trauma and chronic traumatic experiences needs further exploration. Future research directions include the application of the treatment in this study to individuals who experience chronic traumatic life events or chronic illness in comparison to those who experience acute traumatic experiences. An implication for early intervention is the possible benefits of the intervention presented here for individuals who experience acute traumas other than the NICU.

A potential limitation of the findings is the effect of a social interaction between the researcher and participants. It is unknown what part of the intervention procedure may have influenced the results due to the nonequivalent comparison of a treatment group who received the entire protocol and a control group who received nothing. The participants wrote in journals following direct instructions and guided questions and then returned their journal to a researcher. It is unknown if the treatment effect is altered when journals are written with the anticipation of sharing them versus keeping the journals private. Future research may include a comparison of participants who write in journals that are later shared and participants who write in journals who keep the journal private. Implications for early intervention include the need to incorporate sharing the journal with someone else as part of the journal writing treatment assessed in this study.

The results of this study provide further support for previous research establishing the benefits of disclosure (Pennebaker, 1985). In this study, mothers who disclosed their NICU experience through journal writing gained benefits of reduced psychological and posttraumatic stress symptoms. In previous research, reductions of stress related illness have also been demonstrated (Pennebaker et al., 1988). These benefits support Pennebaker's prediction that keeping traumatic life events private takes effort that is detrimental to an individual's psychological and physical health.

Implications for practice reach beyond the NICU. Other populations who experience traumatic life events may benefit from disclosure through journal writing. Generalization of findings implies that individuals who have not previously disclosed a personal traumatic experience may gain the most benefit from disclosure through journal writing.

Participants in this study were selected in part by their ability to read and write fluently. This has important implications to consider prior to implementation. Individuals who are not fluent in a written language will clearly not experience benefits from journal writing. Early intervention practitioners should be aware of the possible limitations of this intervention for individuals who are unable to write fluently. In addition, it may be that culturally diverse groups value writing differently and will experience benefits accordingly. Although no differences were found between ethnicities in this study, future research directions may focus on cultural and linguistic diversity and the benefits of journal writing after traumatic experiences.

The findings in this study were considerably stronger than those found in most previous research analyzing the benefits of journal writing with the exception of one

study by Donnelly & Murray (1991). It is likely that the difference is due to the specific sampling used in this study that increase the power of the analysis by increasing the homogeneity of the sample. Previous research of journal writing has predominately used college students in introductory psychology classes as participants. The participants had not been selected for specific traumatic experiences but wrote about whatever happened to be stressful for them. The participants in this study were selected from a population who share a common intensely stressful experience. In addition, this sample was matched according to pretest scores before they were randomly assigned to treatment or control groups. These sampling and assignment procedures increase the homogeneity of the group, and thereby increase the power, by having a common experience and matched distress levels. Further, the participants in this study experienced the stressful event in a relatively contained time period. Previous studies analyzing journal writing have not selected for time differences so that in any given study one person may write about a childhood trauma while another may write about an event from the previous month. Also, the participants in this study chose to participate in a journal writing study that was presented as an experimental treatment. These participants sought out a therapy like experience. By contrast, some participants in previous research have been required to participate in studies as a requirement for a class. The participants in this study may have exhibited a higher treatment effect because they were seeking help.

Benefits of journal writing were found across most participants regardless of their distress level at pretest. The intervention not only helped mothers who were experiencing severe symptoms of psychological distress, but also helped mothers who would otherwise have gone untreated. Mothers who were coping well with the NICU experience as

indicated by low levels of distress at pretest, exhibited even lower scores of distress at posttest. This finding has important implications for the use of screenings as a gateway to services. It is possible that many mothers who appear to be doing fine could benefit from a brief journal writing intervention. Implications for early intervention practice also include the need for an awareness of the traumatic nature of the NICU experience for mothers and an awareness of the psychological benefits of disclosing traumatic life events (Pennebaker, 1985).

The authors wish to be clear that further research is needed before suggesting that journal writing might be a substitute for brief counseling. Rather, it is proposed that journal writing is a cost effective means of reducing psychological distress experienced by some mothers. It is so cost effective that it could be suggested to mothers who have an infant discharged from an NICU, a child admitted to early intervention programs, or related services. This intervention may benefit many mothers who at this point receive no help in their psychological adjustment to the stressful life experience of the NICU. Finally, the intervention assessed in this study provides a possible means of expanding early intervention services to families.

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Table 1

Summary of demographic variables

Demographic variable	Treatment (n = 19)		Control (n = 19)	
	Mean	S. D.	Mean	S. D.
Maternal age	32.79	5.99	32.95	7.00
Paternal age	33.68	5.11	36.11	10.38
Household income	\$52,600	\$16,900	\$49,700	\$19,301
Number of children	2.00	0.67	2.16	1.01
Birth weight in grams	2428.57	832.00	2857.14	1142.86
Infant age in days	289.42	94.81	228.68	97.56
Infant hospital stay	19.21	18.23	23.95	22.29
	Rate		Rate	
Current Medical Problems	4		6	
Married	17		17	
Divorced	2		2	
Ethnicity:	Maternal	Paternal	Maternal	Paternal
African American	1	1	1	2
Anglo-Caucasian	14	16	13	15
Latino	4	2	3	2
Native American	0	0	1	0
Korean	0	0	1	0

Table 2

Pretest and posttest means and standard deviations for both comparison groups for the SCL-90-R and the IES-R with subscales and outcome effect sizes using Cohen's d (N = 38)

Measure	Group	<u>Pre test</u>		<u>Post test</u>		Cohen's d
		Mean	S.D.	Mean	S.D.	
SCL-90-R	Treatment	.511	.441	.336	.399	.805
	Control	.599	.497	.688	.472	
IES-R	Treatment	32.316	27.338	19.263	20.909	.766
	Control	30.842	22.119	36.368	23.677	
Intrusion	Treatment	15.368	10.558	8.947	7.692	.615
	Control	12.684	7.839	13.737	7.880	
Avoidance	Treatment	8.737	10.159	6.474	8.382	.537
	Control	9.263	7.950	11.158	9.039	
Hyperarousal	Treatment	8.211	8.973	3.842	5.776	1.019
	Control	8.895	8.472	11.474	8.878	

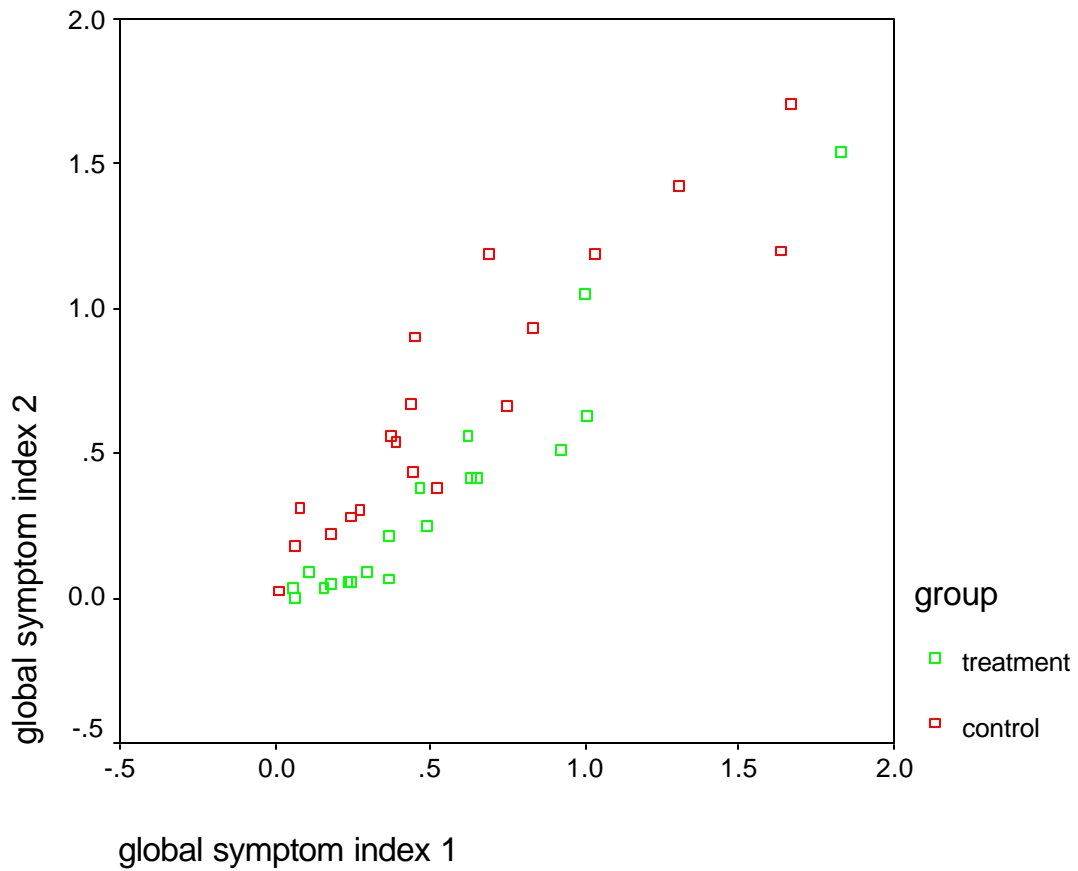


Figure 1. Scatter plot of individual scores on the global symptom index (GSI) of the SCL-90-R at time 1 by time 2 for all participants. Scores of participants in the treatment group fall below the line of 1 to 1 correspondence indicating a decrease in symptoms over time. Scores of participants in the control group fall above the line of 1 to 1 correspondence indicating an increase in symptoms over time.