Annals of Psychophysiology

Ann. psychophysiol.
ISSN 2412-3188 (Online) | 2410-1354 (Print)

Original Article

Investigating the impact of eye movement desensitization and reprocessing (EMDR) in reducing birth trauma symptoms

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Abstract

Background: Childbirth-related traumatic experiences are an overlooked area of psychological suffering, often leading to Post-Traumatic Stress Disorder, Perinatal Mood and Anxiety Disorders, and difficulties in bonding between mother and baby. This study aimed to evaluate the effectiveness of Eye Movement Desensitization and Reprocessing as a brief psychological intervention in reducing Birth Trauma symptoms.
Methodology: Using a prospective experimental longitudinal design, 12 women residing in Singapore with Birth Trauma symptoms received three 90-minute eye movement and desensitization (EMDR) sessions over two weeks on average. Participants were assessed through two trauma self-report questionnaires and underwent a brief Autonomic Nervous System (ANS) assessment.
Results: Post-treatment assessment showed significant differences in mean trauma scores with a 76% reduction on the Modified Perinatal PTSD Questionnaire ($z = -3.061$, $p = .002$) and 70% reduction on the Impact of Event Scale-Revised ($z = -3.061$, $p = 0.002$). Skin conductance response changes from baseline to stressor reduced by 4% but were not statistically significant ($z = -.863$, $p = 0.39$).
Conclusion: Brief EMDR has shown promise as an effective treatment for Birth Trauma. Larger controlled randomized studies are required to evaluate the effectiveness of EMDR compared to a placebo control group.

Keywords

Post-Traumatic Stress Disorder, PTSD, Birth, Postpartum, EMDR, GSR, Skin Conductance

OPEN ACCESS

Citation: Wetherell S. Investigating the impact of eye movement desensitization and reprocessing (EMDR) in reducing birth trauma symptoms. APP. 2022; 9(2): 67-75

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DOI: 10.29052/2412-3188.v9.i2.2022.67-75

Received 20/10/2022

Accepted 06/11/2022

Published 01/12/2022

Funding: The author(s) received no specific funding for this work.

Conflicts of Interests: The authors have declared that no competing interests exist.

ISSN 2412-3188 (Online) | 2410-1354 (Print)

Introduction

Childbirth is a watershed moment that can trigger profound changes for the mother, with lasting repercussions for the whole family. While birth can be a joyful experience for many women, as many as 33% of women describe their birth as traumatic[1]. Of these, 2-8% of women in community samples and up to 19% in high-risk samples develop Postpartum Post-traumatic Stress Disorder[2–4]. An adverse childbirth experience and associated trauma symptoms can contribute to maternal distress and postpartum depression[5] and adverse health outcomes for the infant[6].

Birth Trauma is defined by the woman's appraisal of the birth as traumatic. It involves trauma responses such as re-experiencing, avoidance, negative affect, and hyper-arousal[7], which may not meet all PTSD criteria according to the DSM-V[8]. Causal or contributing factors for Birth Trauma include an emergency Caesarean section, forceps or vacuum delivery, poorly managed pain, unanticipated complications, and concern for the baby's life[1,5,9]. A prior history of trauma, psychiatric disorders, poor support during childbirth, and mode of delivery can increase women's risk of developing trauma symptoms in the postpartum period, which may progress to diagnosable PTSD[7]. Prenatal depression and a higher-risk pregnancy can also increase vulnerability to developing postpartum PTSD[9]. Beyond those factors, the literature shows high co-morbidity between Birth Trauma and postpartum depression (PPD)[10].

Evidence-based psychological interventions for Birth Trauma include EMDR and trauma-focused cognitive behavioral therapy[11]. Despite the U.K.'s National Institute for Clinical Excellence (NICE) guidelines recommending EMDR as one of the preferred interventions for Birth Trauma[12], there is little research to support the effectiveness of EMDR in this population. The evidence on which such guidelines are based is not drawn from studies of perinatal populations, so they do not reflect the unique differences in the etiology of trauma in postpartum women[13]. EMDR is a psychological intervention developed by Shapiro[14] in the late 80s[15] that has shown great effectiveness in treating trauma symptoms and PTSD[16–19]. During EMDR treatment, the client brings up the most distressing moments of the traumatic memory, then is asked to track saccadic visual targets, and may hear bilateral tones and sensory tapping[14]. The individual is encouraged to allow disturbing images, thoughts, feelings, sensations, and self-beliefs to arise during this bilateral stimulation phase of EMDR treatment[14]. The bilateral stimulation technique starkly differentiates EMDR from other types of psychotherapy to treat trauma in individuals. Shapiro hypothesizes that the bilateral stimulation triggers a physiological state which helps process traumatic memories, "moving the disturbing information – at an accelerated rate further along the appropriate neurophysiological pathways until it is adaptively resolved[14].

Evidence supporting the use of EMDR in trauma treatment includes findings by Bisson et al.[16], who, in a systematic review of 36 randomized controlled trials, found that EMDR was an effective intervention in reducing trauma symptomatology. Furthermore, a recent meta-analysis of PTSD treatments[17] concluded that EMDR and TF-CBT were the most effective in reducing trauma symptoms and sustaining those gains at follow-up. The evidence for EMDR as an effective trauma intervention has led to it being recommended by national and international guidelines and organizations[20–23].

ISSN 2412-3188 (Online) | 2410-1354 (Print)

Despite NICE recommendations[24], only two case studies and one more extensive controlled study have been conducted to examine the potential effectiveness of EMDR therapy in treating Birth Trauma[25–27]. In a small study of EMDR for Birth Trauma[26], all four participants reported a reduction of post-traumatic stress symptoms after treatment, as measured by the Traumatic Events Scale. Three participants showed maintained gains at a three-year follow-up. A separate pilot study with three pregnant women with unresolved Birth Trauma found that it was an effective intervention to reduce trauma symptoms based on interviews with a health psychologist[26]. Finally, a controlled study by Chiorino et al.[25] compared EMDR to treatment as usual for postpartum PTSD symptoms, with one single session delivered in the maternity ward. The authors found that most women showed significant improvement in trauma symptoms after one session, compared to one treatment session as usual (78.9% EMDR vs. 39.9% TAU). The authors concluded that "a brief EMDR intervention could be a viable and promising tool in the early treatment of post-traumatic stress related to traumatic childbirth" (p.795).

Increased psychophysiological reactivity, such as elevated galvanic skin response (GSR), has been shown to correlate with trauma symptoms and PTSD[28]. EMDR has also reduced GSR in traumatized individuals in as little as one session[29].

Methodology

The study took place in Singapore with referrals from midwife-led clinics, perinatal support groups, and allied health professionals. This investigation received Institutional Review Board Approval from Saybrook University, which followed the Declaration of Helsinki rules and met the required rules of Singapore's Personal Data Protection Act.

Entry Criteria

- Adult women who had given birth to a live infant in the past 18 months considered their delivery traumatic.
- Significant trauma symptoms were measured by cut-off scores on one of two screening tools.
- If on medication had been on a stable dose for at least four weeks and required to remain on the same regimen until the conclusion of the study, and if receiving counseling had been in counseling for at least six weeks and would not initiate any other type of treatment until the conclusion of the study.

Exclusion criteria

- Pregnant
- Experiencing a severe medical condition,
- Scored over 20% on dissociative symptoms as assessed by the Dissociative Experiences Scale[30]

The study comprised a pre-assessment, three 90-minute EMDR sessions, and a post-assessment two weeks following the conclusion of treatment. Participants completed the three-session treatment within an average of two weeks.

Measures

The screening instruments measured psychological and psychophysiological symptoms associated with trauma, and they were easy to administer and validated for use with a postpartum population. The investigator also conducted pre- and post-treatment Autonomic Nervous System assessments measuring galvanic skin response.

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Participants completed several self-report measures, including the following.

a) Modified Perinatal PTSD Questionnaire (M-PPQ) is a 14-question, self-report screening instrument on a 5-point scale to identify childbirth and perinatally related trauma symptomatology[31]. The screening tool addresses birth experience regarding intrusive thoughts or re-experiencing of the birth, avoidant behaviors, and hyperarousal. As reported by Callahan et al. (2006), it has good internal consistency (α = 0.85) and test-retest reliability (r = 0.92). It has been validated to measure PTSD in the parents of infants[32] and significantly correlates with the Impact of Event Scale to screen for trauma symptomatology. A cut-off score of 19 is usually recommended for referring women to treat trauma symptoms.

b) Impact of Event Scale-Revised (IES-R)[33] is a 22-item self-report screening tool that can be used post-delivery to measure symptoms of avoidance, intrusions, and arousal following a traumatic event. Items are rated on a 5-point scale from 0 ("not at all") to 4 ("extremely"). According to Ayers[7], the IES-R has been widely used in postpartum studies, has high internal consistency (α = 0.96), and has a good correlation with the PTSD checklist (r = 0.84). The cut-off score of 33 had the highest probability of predicting PTSD[34].

c) Participants underwent a brief 12-minute Autonomic Nervous System (ANS) assessment using a skin conductance sensor, monitoring galvanic skin response (GSR) as a baseline, in response to a mild stressor, in response to a trauma-related stressor and while recovering from both stressors. Adding such a measure was to objectively evaluate changes in this physiological correlate of sympathetic nervous system activation[28]. Percentage change from baseline to trauma stressor was used to calculate significance from pre- to post-assessment.

d) Finally, participants were asked to complete the Edinburgh Postpartum Depression Scale (EPDS)[35] as a secondary outcome measure. The EPDS is a 10-item self-report screening instrument for symptoms of depression and anxiety during pregnancy and in the postpartum period. The EPDS has been found to have high test-retest reliability (α = 0.92), 86% sensitivity, and 78% specificity[36,37].

Procedure

Following written consent and pre-treatment assessments, participants received three in-person 90-minute EMDR sessions and a post-assessment two weeks after treatment completion. Participants completed the EMDR intervention within two weeks on average. Treatment was conducted by the principal investigator, a counselor with certification in perinatal mental health, Level I and Level II trained in EMDR by the EMDR Institute, with six years of experience using this therapeutic modality. EMDR sessions followed the protocol by Shapiro[14], which included identifying a specific target moment from the traumatic birth. The participant was then asked to focus on the emotional disturbance while simultaneously tracking the investigator's fingers moving side to side or receiving bilateral tapping on the knees.

Result

Comparison of pre-and post-treatment results of psychological questionnaires showed reductions in all measures: 76% in the M-PPQ, 70% in the IES-R score, and 4% on the baseline to trauma stressor percentage increase. Using the SPSS statistics program (38), non-parametric Wilcoxon signed-rank tests pre- to post-intervention outcome measures showed a statistically significant reduction in the M-PPQ (z = -3.06, p = .002) and also the IES-R

ISSN 2412-3188 (Online) | 2410-1354 (Print)

(z = -3.06, p = .002). Galvanic skin response changes from baseline to stressor reduced by were not statistically significant (z = -0.86, p = .39). The secondary outcome measure of the EPDS also showed a considerable reduction of 51% which was statistically significant (z = -3.06, p = .002).

Table 1: Descriptives of Pre- and Post-Treatment Values.

Variables	Mean±SD	95% Confidence Interval for Mean	
		Lower Bound	Upper Bound
IES-R PRE	40.67± 15.95	30.53	50.8
IES-R POST	12± 9.5	4.57	16.04
M-PPQ PRE	40± 9.08	34.23	45.77
M-PPQ POST	9.42± 6.13	5.52	13.31
GSR % INC. PRE	18.89± 28.48	0.79	36.98
GSR % INC. POST	14.95± 99.88	-48.51	78.41
EPDS PRE	15.42± 6	11.6	19.23
EPDS POST	7.58± 3.8	5.17	10

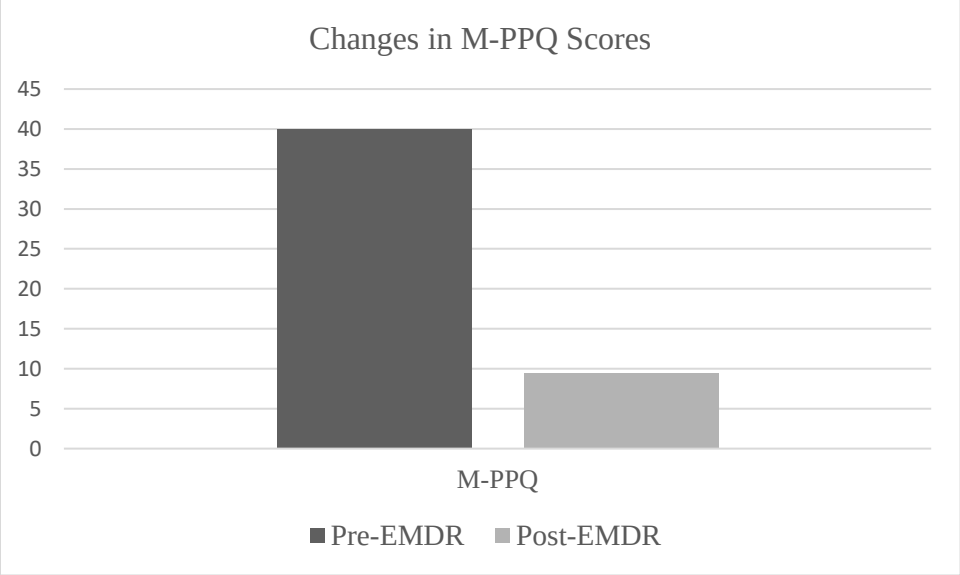

Figure 1: Bar Graph of Pre- to Post M-PPQ Score Changes.

ISSN 2412-3188 (Online) | 2410-1354 (Print)

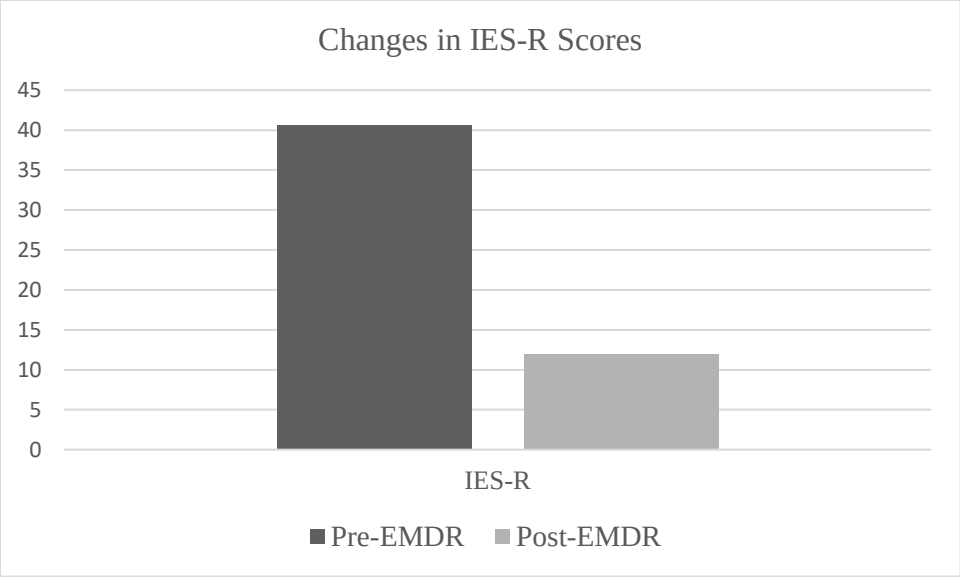

Figure 2: Bar Graph of Pre- to Post IES-R Score Changes.

Table 2: Results of Wilcoxon Signed-Rank Test).

Variables	Z	Asymp. Sig. (2-tailed)
M-PPQ	-3.06	0.002
IES-R	-3.06	0.002
Skin Cond.	-0.86	0.388
EPDS	-3.06	0.002

Discussion

Both main outcomes measures post-treatment scores showed a significant clinical change in the direction of functionality. Scores reduced on the M-PPQ from a mean of 40 pre-treatment to 9.4 post-treatment, below the recommended clinical cut-off score of 19[37]. Scores on the IES-R reduced from a mean score of 40.7 pre-treatment to 12 post-treatment, below the recommended PTSD clinical cut-off score of 33[32]. Every participant in the study had a reduction in self-screening trauma questionnaires to the below cut-off for both M-PPQ and IES-R. The significant score reduction for both self-screening instruments confirms that trauma symptomatology was significantly reduced through the brief EMDR intervention. An underpowered sample could explain the lack of significance regarding GSR changes with a small effect size. Additionally, participants were not screened for any other existing or complex trauma, which could have confounded these psychophysiological results. Finally, evidence has recently highlighted a subtype of PTSD whereby individuals may show reduced physiological arousal to aversive trauma-related stimuli[38].

Regarding the secondary outcome measure of postpartum depression and anxiety, the EPDS showed a significant clinical

ISSN 2412-3188 (Online) | 2410-1354 (Print)

reduction from a mean score of 15.4 to a mean score of 7.6 post-treatment, below recommended clinical cut-off score of 11[39]. This reduction in symptoms of PPD possibly reflects improved mood due to the reduction of trauma symptomatology. Time since traumatic childbirth ranged from 2 to 17 months, with a mean of 9.75 months. Only four of the participants had an infant under six months of age. Considering the research supporting the marked reduction of trauma symptomatology in the five months following the traumatic incident[39], it is possible that the women participating in the study would be less likely to have experienced spontaneous remission since most had delivered at an average of 10 months prior to commencing the study.

The findings from this pilot study indicate that EMDR shows promise as an effective and brief intervention for Birth Trauma. Self-report questionnaires clearly show a marked post-treatment reduction in trauma symptomatology, with none of the participants meeting cut-off scores for PTSD following the intervention. There is also the vital matter of acceptability and tolerability when working with women in the postpartum period considering the many obstacles to women seeking mental health support in the postpartum period[40]. Strengths of this study include the short duration of the intervention to minimize time-lapse effects on trauma symptom reduction and the use of validated outcome measures for this population. Limitations include a small sample size and a single psychophysiological measure to measure stress responses in individuals.

Conclusion

Brief EMDR significantly reduced trauma symptoms in postpartum women with Birth Trauma. Additional psychophysiological measures such as heart rate and peripheral temperature are recommended in future Birth Trauma studies. Future research recommendations include randomization to a control group with a credible sham intervention, larger sample sizes, EMDR through videoconferencing, and replicability studies.

Acknowledgment

The authors would like to acknowledge all the mothers fighting postpartum birth trauma.

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