



ORIGINAL ARTICLE

Eye movement desensitization and reprocessing for treating psychological disturbances in Taiwanese adolescents who experienced Typhoon Morakot



Tze-Chun Tang ^a, Pinchen Yang ^{a,b}, Cheng-Fang Yen ^{a,b}, Tai-Ling Liu ^{a,b,*}

^a Department of Psychiatry, Kaohsiung Medical University Hospital, Kaohsiung City, Taiwan

^b Department of Psychiatry, Faculty of Medicine, and Graduate Institute of Medicine, College of Medicine, Kaohsiung Medical University, Kaohsiung City, Taiwan

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Abstract In this case–control study, we aimed to assess the intervention effects of four-session eye movement desensitization and reprocessing (EMDR) on reducing the severity of disaster-related anxiety, general anxiety, and depressive symptoms in Taiwanese adolescents who experienced Typhoon Morakot. A total of 83 adolescents with posttraumatic stress disorder related to Typhoon Morakot, major depressive disorder, or current moderate or high suicide risk after experiencing Typhoon Morakot were allocated to a four-session course of EMDR ($N = 41$) or to treatment as usual (TAU; $N = 42$). A multivariate analysis of covariance was performed to examine the effects of EMDR in reducing the severity of disaster-related anxiety, general anxiety, and depressive symptoms in adolescents by using preintervention severity values as covariates. The multivariate analysis of covariance results indicated that the EMDR group exhibited significantly lower preintervention severity values of general anxiety and depression than did the TAU group. In addition, the preintervention severity value of disaster-related anxiety in the EMDR group was lower than that in the TAU group ($p = 0.05$). The results of this study support that EMDR could alleviate general anxiety and depressive symptoms and reduce disaster-related anxiety in adolescents experiencing major traumatic disasters.

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* Corresponding author. Department of Psychiatry, Kaohsiung Medical University Hospital, Kaohsiung Medical University, 100 Tzyou 1st Road, Kaohsiung City 807, Taiwan.

E-mail address: dai32155@gmail.com (T.-L. Liu).

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Introduction

Major traumatic disasters have frequently occurred worldwide in recent years. Every year, millions of adolescents and children experience a traumatic disaster. Previous studies have found that exposure to a disaster has a tremendous impact on the development of psychiatric disorders. For example, Kristensen et al. [1] reported that the rate of newly developed mental disorders was twice as high in people directly exposed to a disaster than in those not directly exposed. In addition, research has found that the prevalence rate of trauma-related posttraumatic stress disorder (PTSD) is approximately 10–20%, that of major depressive disorder (MDD) is > 20%, and that of suicide risk is > 10% [2–4]. However, if trauma-related psychiatric symptoms remain untreated, symptoms would persist over a 1-year period following mass trauma [3] and cause severe damage to the mental health of adolescents [5]. Thus, adequate, timely intervention is necessary to improve the mental health of adolescents experiencing major natural disasters.

On August 7, 2009, Typhoon Morakot made landfall in Taiwan. Most areas of Southern Taiwan recorded heavy daily rainfall, peaking at 2777 mm (109.3 in). This large amount of rain caused severe flooding throughout Southern Taiwan and triggered enormous mudslides in mountainous areas, causing the deadliest typhoon-related disaster in Taiwan in 50 years. Because of the mudslides, nearly all the inhabitants of steep mountainous areas had a life-threatening experience, and most of their homes were buried by several meters of mud. The Center for Disaster Medicine at Kaohsiung Medical University, Kaohsiung, Taiwan organized a team to provide medical services to people who experienced Typhoon Morakot. Sheehan et al. [6] conducted diagnostic interviews 3 months after the typhoon using the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID), based on the criteria of the *Diagnostic and Statistical Manual of Mental Disorders (DSM-IV-TR)* [7]. They interviewed 271 adolescents in three junior high schools in the mountainous regions of Southern Taiwan that were the worst affected by Typhoon Morakot. Subsequent studies have described the results of these diagnostic interviews [8–10]. In summary, 70 (25.8%) adolescents had PTSD related to Typhoon Morakot, 50 (18.5%) had MDD, and 36 (13.3%) had current moderate or high suicide risk, based on the MINI-KID (total score on the suicidality module, ≥ 9). A total of 97 (34.7%) adolescents had a significant psychological disturbance defined by having PTSD, MDD, or current moderate or high suicide risk. These results have indicated that mental health professionals must provide intervention for the adolescents who experienced Typhoon Morakot-associated mudslides.

Although cognitive-behavioral therapy (CBT) is a frequently used therapeutic approach in treating adolescents with PTSD or depression [11,12], whether other psychotherapeutic approaches are equally effective in treating adolescents with PTSD or depression remains unclear. Eye movement desensitization and reprocessing (EMDR) has been proven to be potentially therapeutic for PTSD and has been extended to the treatment of depression in recent

years [11–13]. EMDR can rapidly desensitize traumatic experiences and reduce symptoms within fewer sessions than CBT can [13]. Because of efficacious desensitization techniques, EMDR enables managing numerous cases, has a low dropout rate, and produces a prolonged therapeutic effect [14]. The level of emotional processing in adolescents with traumatic memory significantly increased after therapy [15]. A recent meta-analysis showed that EMDR revealed a medium-large effect associated with reducing symptoms of PTSD [16]. In addition, studies have shown that EMDR is superior to psychoeducation [17], and produced significant changes in the brain through functional brain image research [18]. Previous research has examined the efficacy of EMDR treatment for children with PTSD compared with untreated children in a waiting list control group participating in a randomized controlled superiority trial, reporting that the EMDR group showed significantly greater alleviation of PTSD-related symptoms compared with the waiting list control group [19]. Bae et al. [20] reported the potential application of EMDR for treating depressive disorders related not only to trauma but also to stressful life events. Lee and Drummond [21] determined that EMDR can relieve distress through mechanisms dissimilar to those of traditional methods such as CBT and psychoeducation; however, a significant reduction in vividness and the symptom of intrusion occurred only in the eye movement group but not in the other intervention group. According to the results of a study on adolescents experiencing Typhoon Morakot, adolescents suffering from multiple comorbidities, including PTSD and MDD, have an increased risk of suicide, thus rendering the intervention more complicated and time emergent [8]. Brief and effective intervention strategies in managing complicated comorbidities should be administered as soon as possible to prevent a prolonged course of PTSD [22]. According to the aforementioned studies, the efficacy of EMDR in treating adolescents requires further investigation.

In this case-control study, we aimed to assess the intervention effects of four-session EMDR in reducing the severity of the psychological impact of Typhoon Morakot (including disaster-related anxiety, general anxiety, and depression) in Taiwanese adolescents who experienced Typhoon Morakot by comparing our results with those receiving treatment as usual (TAU). We hypothesized that the four-session EMDR would show stronger treatment effects than TAU would for adolescents with a significant psychological disturbance who experienced Typhoon Morakot.

Methods

Participants

A total of 271 adolescents were diagnostically interviewed 3 months after Typhoon Morakot; previous studies have described the prevalence rates of adolescents with PTSD related to Typhoon Morakot, MDD, and suicide risk [8–10]. The assessment results were provided to the adolescents, their families, and school teachers. The researchers arranged lectures for the adolescents' parents and school

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