A Feasibility Trial of Eye movement desensitization and reprocessing therapy- Integrative treatment group protocol for ongoing traumatic stress In Road Traffic Accident Survivors for Reduction of Post-traumatic Stress Symptoms

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Study Summary

Road traffic accidents (RTAs) are a significant public health concern globally, accounting for a substantial proportion of morbidity and mortality. This study evaluates the feasibility and acceptability of the Eye Movement Desensitization and Reprocessing Integrative Group Treatment Protocol for Ongoing Traumatic Stress (EMDR-IGTP-OTS) in the reduction of posttraumatic stress symptoms, depression, and anxiety, while improving the quality of life in individuals who have experienced traffic accidents. Using a randomized control design, participants aged 18–45 will be assessed at three time points: pre-treatment, post-treatment, and one-month follow-up. The study employs the DASS-21, IES-R, and WHOQOL-BREF as evaluation measures. Findings aim to expand evidence on trauma-focused interventions and explore their applicability in culturally diverse, resource-constrained settings.

A Feasibility Exploratory Trial of the EMDR-IGTP-OTS In Road Traffic Accidents Survivors for Reduction of Post-Traumatic Stress Symptoms

Road traffic accidents (RTAs) are a significant public health concern globally, accounting for a substantial proportion of morbidity and mortality. The World Health Organization (WHO) reports that approximately 1.3 million people die annually due to RTAs, with an additional 20 to 50 million suffering non-fatal injuries, often resulting in long-term disabilities (World Health Organization, 2022). According to the World Health Organization (WHO), road traffic accidents are the sixth leading cause of mortality, with a substantial share of physical, psychosocial and economic losses in the productive age group. Low- and middle-income countries bear the brunt of this burden, contributing nearly 93% of the global RTA-related deaths, despite having only 60% of the world's vehicles. Pakistan, a rapidly urbanizing nation, exemplifies this trend, with high RTA rates exacerbated by poor road infrastructure, inadequate traffic enforcement, and increasing vehicles (Salman et al., 2020).

In Punjab, the most populous province of Pakistan, RTAs are particularly prevalent. Data from Rescue 1122 indicate that an average of 1,200 accidents occur daily, leading to approximately 11 fatalities per day (Government of Pakistan, 2023). Beyond the immediate physical injuries, RTAs impose far-reaching psychological consequences on survivors. Many develop conditions such as posttraumatic stress disorder (PTSD), depression, anxiety, and acute stress disorder (ASD), which significantly impair their quality of life (Alghnam et al., 2017).

Defining the Variables

Post-Traumatic Stress Disorder (PTSD). PTSD is a psychiatric condition triggered by experiencing or witnessing a traumatic event. It manifests through symptoms like intrusive

memories, avoidance behaviors, hyperarousal, and negative alterations in cognition and mood (American Psychiatric Association, 2013). Studies suggest that approximately 9% of RTA survivors develop PTSD (O'Donnell et al., 2008).

Depression. A common mental health disorder characterized by persistent sadness, loss of interest in activities, and impaired daily functioning (World Health Organization, 2017). Depression is frequently observed among RTA survivors, often compounded by physical disability or loss of independence.

Anxiety. Defined as excessive fear or worry that interferes with normal functioning, anxiety often accompanies PTSD and depression in RTA survivors, manifesting as generalized anxiety disorder or panic attacks (Bisson et al., 2013).

Acute Stress Disorder (ASD). A short-term condition occurring within one month of a traumatic event, ASD includes symptoms like dissociation, intrusive thoughts, and hypervigilance. If left untreated, it may develop into PTSD (Bryant et al., 2011).

Quality of Life. Referring to an individual's overall well-being across physical, psychological, social, and environmental domains, quality of life often deteriorates following RTAs due to both physical injuries and psychological distress (World Health Organization, 1996).

Addressing Mental Health Problems

The psychological burden of RTAs is well-documented, yet research into effective interventions, particularly in Pakistan, remains limited (Khan et al., 2020). Mental health stigma further complicates the scenario, discouraging survivors from seeking professional help (Farooq et al., 2020). This underscores the urgent need for accessible, evidence-based interventions tailored to the local context.

Eye Movement Desensitization and Reprocessing (EMDR) has emerged as a promising therapeutic approach for trauma-related conditions. Grounded in the Adaptive Information Processing (AIP) model, EMDR therapy addresses pathogenic memories that impede emotional and cognitive functioning (Shapiro, 2018). By facilitating the integration of distressing memories into adaptive memory networks, EMDR therapy alleviates symptoms and promotes psychological resilience (Shapiro, 2018).

While traditionally delivered in individual therapy settings, the EMDR Integrative Group Treatment Protocol for Ongoing Traumatic Stress (EMDR-IGTP-OTS) applies these principles in a group format. This protocol has demonstrated effectiveness in disaster-affected and resourceconstrained settings, offering a scalable solution for collective trauma (Jarero & Artigas, 2022). However, its application among RTA survivors in Pakistan remains underexplored, representing a critical gap in the literature.

This study aims to bridge the gap between global evidence and local practice by evaluating the acceptability and feasibility of EMDR-IGTP-OTS for RTA survivors in Pakistan. The findings will contribute to the growing body of Indigenous research on trauma recovery interventions, providing culturally relevant insights into scalable, evidence-based solutions for mental health challenges in Pakistan.

Literature Review

Francine Shapiro originally developed Eye Movement Desensitization and Reprocessing (EMDR) therapy in the late 1980s as a treatment for post-traumatic stress disorder (PTSD). Over the decades, it has evolved into a versatile therapeutic modality for addressing a broad spectrum

of psychological conditions, including anxiety disorders, depression, phobias, and complex trauma (Shapiro, 2018). The therapy is based on the Adaptive Information Processing (AIP) model, which posits that psychological distress arises from maladaptively stored memories. These memories, often associated with traumatic experiences, disrupt emotional and cognitive functioning, manifesting as anxiety, avoidance, or intrusive thoughts. EMDR therapy employs bilateral stimulation (e.g., guided eye movements, tactile tapping) to reprocess these traumatic memories, integrating them into adaptive memory networks and restoring adaptive emotional and behavioral responses (Shapiro, 2018).

The effectiveness of EMDR has been validated across diverse populations and cultural settings, making it a globally recognized intervention for trauma. Its application in individual therapy is well-documented, with numerous randomized controlled trials (RCTs) demonstrating its efficacy in reducing PTSD symptoms and improving overall mental health (Matthijssen et al., 2020).

A recent study by Konuk et al., (2022) used a randomized-controlled trial methodology to establish the efficacy of the EMDR Flash Technique. This study's sample includes volunteers who were involved in traffic accidents and were given the randomized EMDR Flash Technique. The present study's findings clearly demonstrated that the EMDR Flash technique, when applied to participants involved in traffic accidents, is successful in improving anxiety, intrusion, avoidance, total traumatic stress, and mental quality of life symptoms for at least 1 month.

However, providing individual therapy in resource-constrained settings poses logistical challenges, including shortages of trained clinicians and high costs of therapy. To address these barriers, the EMDR Integrative Group Treatment Protocol for Ongoing Traumatic Stress

(EMDR-IGTP-OTS) was developed. This protocol adapts EMDR for group settings, allowing clinicians to treat multiple individuals simultaneously. EMDR-IGTP-OTS has demonstrated efficacy in alleviating PTSD symptoms, depression, and anxiety in diverse and often underserved populations. Studies conducted in disaster zones and ongoing traumatic stress situations have highlighted its scalability and cultural adaptability (Jarero & Artigas, 2022). The protocol integrates self-administered forms of bilateral stimulation such as the Butterfly Hug and selfregulation exercises which empower participants to manage distress during the sessions. These structured, trauma-informed approaches facilitate emotional stabilization and support the processing of distressing memories within a group context.

Despite its demonstrated potential, the application of EMDR-IGTP-OTS to survivors of road traffic accidents (RTAs) remains underexplored, particularly in South Asia. Survivors of RTAs often experience a unique combination of physical and psychological trauma, leading to conditions such as PTSD, acute stress disorder, and major depressive disorder (O'Donnell et al., 2008). Addressing these conditions requires interventions that are both accessible and effective, especially in regions like Pakistan, where mental health resources are limited (Khan et al., 2020). This study aims to evaluate the applicability and efficacy of EMDR-IGTP-OTS in this specific context, contributing to the growing evidence base for its use in treating collective and individual trauma.

Reliable assessment tools are critical for evaluating the effectiveness of trauma interventions. The Depression Anxiety Stress Scale (DASS-21) is a concise yet robust measure of psychological distress, offering subscales for depression, anxiety, and stress. Its cross-cultural validation makes it particularly suitable for use in diverse populations, including Pakistan (Lovibond & Lovibond, 1995). The Impact of Event Scale-Revised (IES-R) is a widely used

measure for assessing trauma-related symptoms, including intrusion, avoidance, and hyperarousal. Its sensitivity to changes over time makes it ideal for evaluating treatment outcomes in this study (Weiss & Marmar, 1997). Additionally, the WHO Quality of Life-BREF (WHOQOL-BREF) captures changes in physical, psychological, social, and environmental domains, providing a holistic view of participants' well-being (World Health Organization, 1996).

By evaluating the feasibility and preliminary effectiveness of the EMDR-IGTP-OTS with these validated tools, this study seeks to provide a comprehensive evaluation of its impact on RTA survivors. The findings will offer insights into its applicability in Pakistan, addressing critical gaps in the literature on trauma-focused interventions in resource-limited settings.

Objectives of study

- To translate the Eye movement desensitization and reprocessing therapy integrative treatment group protocol for ongoing traumatic stressor (EMDR-IGTP-OTS) on road traffic accident survivors among people aged 18-45.
- Assess the feasibility and acceptability of the trial.
- To assess the preliminary effectiveness of EMDR-IGTP-OTS**.**

Hypothesis

H1:Participants will perceive EMDR-IGTP-OTS as an acceptable and feasible intervention for RTA trauma related symptoms.

H2: EMDR-IGTP-OTS will reduce post traumatic stress symptoms.

H3: EMDR-IGTP-OTS will reduce depression and anxiety symptoms.

H4: EMDR-IGTP-OTS will enhance participant's quality of life.

Method

Design

A randomized control experimental design will be employed, with participants assessed at three time points: pre-treatment, post-treatment, and two-week follow-up.

Inclusion Criteria

- Aged between 18 and 45 years.
- Experienced a traffic accident 3 months to 10 years prior
- Willing to participate and able to understand the intervention components.

Exclusion Criteria

Participants will be excluded from the study if they meet any of the following criteria:

- Diagnosed with conditions such as schizophrenia or bipolar disorder, which require specialized treatment beyond the scope of this study.
- History of severe head injuries resulting in neurological or cognitive deficits.
- Participants who have experienced a traffic accident less than 3 months ago, as immediate post-traumatic responses may not have stabilized.

Measures

The study will employ the following validated tools to measure outcomes.

The Urdu Impact of Event Scale-Revised (UIES-R). It will measure trauma-specific symptoms such as intrusion, avoidance, and hyperarousal. This 22-item scale uses a 5-point Likert scale

ranging from 0 (not at all) to 4 (extreme), providing a comprehensive evaluation of the psychological impact of traumatic incidents. Reliability studies of the Urdu version of the IES-R indicate excellent internal consistency reliability for the total score (Cronbach's $\alpha = 0.91$) and respectable internal consistency reliability for subscales: Avoidance (0.81), Intrusion (0.78), and Hyperarousal (0.77), respectively (Tareen et al., 2018).

The Depression Anxiety Stress Scale (DASS-21). It will be used to assess levels of depression, anxiety, and stress. It is a 21-item scale divided into three subscales, each rated on a 4-point Likert scale from 0 (does not apply) to 3 (applies most of the time). Reliability studies of the Urdu version of the DASS indicate excellent internal consistency reliability for the total score (Cronbach's $\alpha = 0.93$) and respectable internal consistency reliability for the subscales: depression (0.84), anxiety (0.86), and stress (0.83), respectively (33) (Shahzad et al., 2022, Lovibond & Lovibond, 1995).

The WHO Quality of Life-BREF (URDU-WHOQOL-BREF). It will be administered to evaluate participants' quality of life across four domains: physical, psychological, social, and environmental. The 26-item tool is scored on a 5-point Likert scale and is particularly suitable for culturally diverse populations (Khalid & Kausar, 2006).

A socio-demographic data form. It will collect participant details such as age, gender, education, employment status, and accident history.

Sample Size

We aim to recruit 50 participants (N=25 in intervention, N=25 in Waitlist-Control) in total. The audit of the sample sizes for the pilot and feasibility RCTs indicated that the median sample size per arm across all the types of study was 25 (Billingham, S. A., 2013). Browne (1995) also

recommended that 25 participants per condition are needed to estimate a parameter. The proposed sample size will be sufficient to estimate recruitment and retention rates, as well as the variability in the primary outcome measure, which will then be used to determine the sample size for the full definitive trial.

Randomization

Participants will be randomized after matching the Treatment Group or Control Group using a computer-generated randomization sequence created by an independent statistician. Allocation concealment will be ensured using sealed, opaque envelopes containing group assignments. These envelopes will be prepared and managed by an independent researcher who is not involved in the recruitment or assessment process, ensuring blinding and minimizing bias.

Procedure

Translation of EMDR-IGTP-OTS. The EMDR-IGTP-OTS protocol would be translated into Urdu using MAPI guidelines for translation (2014) to make it culturally appropriate.

Recruitment. Participants will be recruited via hospitals, community outreach programs, and social media.

Pre-Treatment Assessment. DASS-21, UIES-R, and WHOQOL-BREF will be administered.

Treatment.

EMDR-IGTP-OTS.

The EMDR-IGTP-OTS will be administered to the same treatment group of participants six sessions (Jarero & Artigas, 2022).

Session Phase	Tasks/Activities	Key Notes

Phase 1: Client History	- Obtain individual client history. - Assess safety factors and suitability for EMDR therapy. - Obtain informed consent. - Apply pre-treatment assessment scales.	Clients with red flags (e.g., dissociation, self-harm) should receive individual therapy instead of group protocol.
Phase 2: Preparation	- Ensure sufficient EPT staff-to-participant ratio (1:10 for adults, 1:5 for children). - Prepare workspace with chairs, tables, crayons, and other materials. - Introduce EPT and explain their role. - Teach Butterfly Hug, SUD scale and selfsoothing exercises (e.g., abdominal breathing, pleasant memory exercise).	Adaptive Information Processing (AIP) system using a simple analogy.

The leader explains the

Phase 3: Assessment	- Guide participants in identifying the most distressing memory. - Have participants draw their experience in 'Square A' and rate disturbance using SUDS.	Allow participants to express themselves without judgment and avoid forcing participation.
Phase 4: Desensitization	- Perform Butterfly Hug while observing what is happening internally. - Draw changes in subsequent quadrants (B, C, D) and rate SUDS after drawing.	Ensure participants move at their own pace; EPT should monitor closely for signs of distress.
Phase 5: Future Vision	- Draw how they see themselves in the future. - Provide a title to their drawing. - Use Butterfly Hug for continued reprocessing.	Encourage honesty in future visualization without forcing positivity.
Phase 6: Body Scan	- Guide participants to perform a body scan to notice pleasant or	Reinforce observation without judgment.

	unpleasant physical sensations. - Use Butterfly Hug to continue reprocessing.	
Phase 7: Closure	- Select a favorite selfsoothing exercise and practice for 1-2 minutes. - Gather materials and drawings. - Encourage participants needing further support to stay for individual attention.	Maintain a supportive environment for those needing follow-up.
Phase 8: Reevaluation	- Review drawings, last SUD ratings, and other outcomes for follow-up needs.	Use the group protocol as a screening tool for additional individual therapy as required.

Post-Treatment and Follow-Up Assessments. Measures will be repeated after treatment and two weeks post-treatment as a follow-up.

Statistical Analysis

Intention-to-Treat Analysis. All randomized participants will be included in the analysis to preserve the integrity of randomization and minimize bias. Missing data will be managed using multiple imputations, ensuring a comprehensive and unbiased results representation.

Inferential statistics. The analysis aims to describe the feasibility and acceptability of the trial and

EMDR intervention by examining the attendance rate of participants in the intervention sessions. Statistical analysis will be performed by using the Statistical Package for Social Sciences (SPSS) version 27.0 for Windows. Summary statistics on primary and secondary outcome measures will be recorded before and after the intervention. Appropriate descriptive statistics and graphical representations will summarize the demographic, baseline, and follow-up data. Treatment effects will be presented with 95% confidence intervals. After adjusting demographics and baseline scores as covariates, analysis of Covariance (ANCOVA) will be used to check the differences between the two arms on primary outcomes.

Effect Size. Cohen's d will be calculated to measure the magnitude of change attributable to the intervention. This provides context beyond statistical significance, indicating whether observed changes are clinically meaningful.

Qualitative Feedback: To evaluate perceived effectiveness, satisfaction with intervention, openended feedback will be employed

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Consent Form

If you are happy to participate, please complete and sign the consent form below:

	Activities	Initials or mark
1	I confirm that I have read the attached information sheet (**Version 1, Date 29 May 2025**) or been told about the study by the researcher, understand what the study involves, and have had a chance to ask questions and had these answered satisfactorily.	
2	I understand that it is my choice to take part in the study and that I can leave at any time without giving a reason.	
3	I agree that the answers I give to questions might be shared with other researchers. This would be done **anonymously**, which means they would not know I had said these things.	
4	I agree that the answers I give to questions might be shared in **books, reports, conferences or science papers**. This would be done **anonymously**, which means they would not know I had said these things.	
5	I agree that if the researcher is worried about my safety they may have to tell my doctor about things I have told them.	
6	(Optional) I agree that the researchers may retain my contact details in order to provide me with a summary of the findings for this study.	
7	I agree to participate in a training program that will be delivered in a group setting in my school, once the main research project is completed.	
8	I agree to take part in the study.	

Data Protection

The personal information we collect and use to conduct this research will be processed in accordance with data protection law as explained in the Participant Information Sheet and the Privacy Notice for Research Participants.

_____	_____	_____
Name of Participant	Signature or mark	Date

_____	_____	_____
Name of the person taking consent	Signature	Date

One copy of this consent form will be given to the participant, and one copy will be kept by the researchers.