RESEARCH ARTICLE

Maladaptive schema modes as the predictor of post-traumatic stress disorder among trauma survivors

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Abstract

Objectives: To study the relationship between dysfunctional schema modes and post-traumatic stress disorder among trauma survivors.

Method: The cross-sectional study was conducted at the Pakistan Institute of Medical Sciences, Islamabad, Pakistan, from March to August 2019, and comprised patients of traumatic brain injury and orthopaedic trauma. Data was collected using Schema Mode Inventory and the Clinician Administered Post-Traumatic Stress Disorder Scale version 5. Data was analysed using SPSS 23.

Results: Of the 281 patients, 203(72.2%) were males, 78(27.8%) were females, and 157 (55.9%) were aged 18-40 years. Besides, 137(48.8%) had orthopaedic trauma, 96(34.2%) traumatic brain injuries, and 48(17%) had multiple injuries. Post-traumatic stress disorder symptoms and dysfunctional schema modes were higher in patients with moderate injuries with a mean of 42.14±7.36. Intentionally injured patients 42.70±6.92 and female trauma survivors 42.05±8.26 had more symptoms.

Conclusion: Maladaptive schema mode could lead to post-traumatic stress disorder symptoms among trauma survivors with history of orthopaedic injury, traumatic brain injury and multiple injuries.

Keywords: PTSD symptoms, Maladaptive schema modes, Trauma survivors. (JPMA 71: 1789; 2021)

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Introduction

Trauma is a stressful, upsetting event that restrains personal skills and abilities to cope, which may cause helplessness and hopelessness in individuals. These physical injuries may also fetch emotional and psychological disorders, like post-traumatic stress disorder (PTSD), anxiety and depression.

Schema is a subjective concept comprising emotions, memories, beliefs and broad pattern of cognitions that provide a guideline to behaviour. It develops in early childhood and matures over time. Personal traits and cultures may also play important roles in schema development and activation.[1] A maladaptive schema consists of multiple modes, such as the child mode and the maladaptive punitive parental mode. Similarly, those in adaptive modes are children who are happy and adults who are healthy.[1] The concept of schema modes is related to core beliefs that direct our cognitive-emotional and behavioural perception. Biased negative beliefs about the world make us more vulnerable to depression. In the same way, over- and under-developed beliefs may also cause depression and anxiety.[2] In this regard, it is important to study any correlation between the core beliefs of patients and brain and orthopaedic injury.

Maladaptive schemas are associated with a variety of psychopathology generally in individuals with history of interpersonal trauma. Such psychological disorders include depression and anxiety,[3] self-harm behaviour,[4] eating disorder,[5] social phobia,[6] attachment and personality disorder.[7,8] Moreover, the relationship between early maladaptive schema (EMS) and PTSD has been established in both men and women health workers having history of trauma, with four maladaptive schemas, including dependency, defectiveness, enmeshment and failure, significantly predicting PTSD.[9]

In addition, PTSD is a mental health condition that may develop in some individuals after experiencing life-threatening events, such as accidents, assaults, and natural or man-made disasters.[10] According to the Diagnostic Statistical Manual version 5 (DSM-5), PTSD is characterised by a variety of behaviours, such as intrusive symptoms, negative cognition, avoidance and hyper-arousal. Intrusive symptoms include flashbacks and repetitive memories, instances of negative cognition involve blaming oneself, and not being able to concentrate. Similarly, avoidance symptoms include the suppression of distressing thoughts, whereas with hyper-arousal individuals might become aggressive and engage in destructive behaviours.[10] Clinicians can diagnose PTSD when all of these symptoms occur for more than one month post-trauma. In the same way, if symptoms persist for

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more than three months, the condition is considered chronic PTSD. If symptoms do not appear until six months post-trauma, the patient is diagnosed as having a delayed onset of PTSD.[10] PTSD can lead to additional behavioural disabilities, including social problems, intimacy problems, educational issues, and work-related issues, and functional disabilities, including problems with memory, concentration and decision-making.[11]

The risk of psychiatric symptoms like those of PTSD are remarkably associated with instances of orthopaedic trauma and traumatic brain injuries (TBIs). These may restrain the rehabilitation process related to physical as well as socio-emotional health of an individual.[12,13] The change in maladaptive schema modes is a PTSD consequence. Therefore, dysfunctional schema and related problems in PTSD have recently gained importance in behavioural research.[14,15] It has been observed that EMSs eventually manifest as a constellation of personality traits. A study showed that the occurrence of maladaptive schemas were higher in people with PTSD symptoms than those having other mental illnesses.[14] Another study found EMS among veterans in Australia and New Zealand who suffered from PTSD, and the same was the case among French prison officers.[14,16]

Pakistan is a developing country with a high number of trauma survivors than in the developed countries owing to continual exposure to terrorism and violence in the last few decades. The current study was planned to study the relationship between dysfunctional schema modes and PTSD among trauma survivors in the Pakistani context.

Patients and Methods

The cross-sectional study was conducted at the Pakistan Institute of Medical Sciences (PIMS), Islamabad, Pakistan, from March to August 2019. After approval from the institutional ethics review committee, the sample size was calculated while assuming 0.3 prevalence of PTSD among trauma survivors with a precision of 0.04 and confidence level 95% by using the formula $n=z^2 P(1-P)/d^2$.[17] The sample was rasied using purposive sampling technique.

Those included were adults of either gender with a history of TBI, orthopaedic trauma, or multiple injuries with a history of trauma >1 month. Those excluded were trauma survivors with other physical or psychological disorders and a history of trauma <1 month. Data was collected after taking informed consent from the subjects during a single face-to-face interview.

Demographic data as well as injury types were noted.

A short Urdu version of the Schema Mode Inventory (SMI) consisting of 124 items was used to assess maladaptive and adaptive schema modes.[18] It had a six-point rating scale, and is used for both educational and clinical purposes, having a good discriminatory value, convergent validity and internal consistency for all sub-scales with Cronbach's alpha ranging from 0.76 to 0.96.

Also used was the Clinician Administered Post-Traumatic Stress Disorder Scale version 5 (CAPS-5) which has 30 items: 20 for PTSD symptoms, 2 for the onset of symptoms, 3 to measure social and occupational distress, 3 for global improvement and validity, and 2 items are for dissociative subtypes. It has a five-point 0-4 rating to assess the severity of all items. CAPS-5 is available in past week, past month, and worst month versions,[19] and takes about 45-60 minutes to complete. Some items on CAPS-5 are related to trauma and determine whether PTSD symptoms are attributed to the existing trauma.

Psychometric assessment showed that both the Urdu version of SMI and CAPS-5 had internal consistency with alpha reliability >0.7 in the current study. Skewness and kurtosis values for both the scales indicated that data was normally distributed. Potential range of the scores showed that there were no outliers in the data.

Data was analysed using SPSS 23. Mean and standard deviations (SDs) were calculated for continuous variables. A t-test was used for different study variables. Analysis of variance (ANOVA) and simple linear regression were used for evaluating associations between maladaptive schema modes and PTSD. $P<0.05$ was considered significant.

Results

Of the 281 patients, 203(72.2%) were males, 78(27.8%) were females, and 157 (55.9%) were aged 18-40 years. Besides, 137(48.8%) had orthopaedic trauma, 96(34.2%) TBIs, and 48(17%) had multiple injuries (Table-1).

Female patients with a mean of 42.05±8.26 had more PTSD symptoms compared to male patients with a mean of 39.64±6.84 (p=0.01). Patients with moderate disease severity had more PTSD symptoms with a mean of 42.14±7.36 compared to those with mild disease severity having a mean of 39.43±7.17 (p=0.001). Patients with moderate disease severity had more maladaptive schemas with a mean of 142.20±12.62 compared to those with mild disease severity with a mean of 139.31±10.70 (p=0.05). Patients with low disease severity had more adaptive schemas with a mean of 60.04±8.78 compared to those with moderate disease severity with a mean of 57.33±9.02 (p=0.02) (Table-2).

Differences in PTSD symptoms, maladaptive schema modes and adaptive schemas were statistically non-significant for other variables like disease nature, education and occupation (Tables-3, 4).

Table-1: Sample characterisitcs (n=281).

Demographic Characteristics	*f*(%)
Gender	
Male Patients	203 (72.2)
Female Patients	78 (27.8)
Marital Status	
Married	196 (69.8)
Single	85 (30.2)
Age	
18-40 Years	157 (55.9)
41-55 Years	80 (28.5)
Above 55 Years	44 (15.7)
Education	
Matric	107 (38.1)
FA/FSc	92 (32.7)
Graduation	82 (29.2)
Occupation	
Employed	80 (28.9)
Unemployed	201 (71.1)
Monthly Inclome	
Below 25000 Rs.	134 (47.7)
26000-50000 Rs.	116 (41.3)
Above 50000 Rs.	31 (11.0)
Disease Type	
Traumatic Brain Injury (TBI)	96 (34.2)
Orthopaedic trauma	137 (48.8)
Multiple injury	48 (17.1)
Injury Severity	
Mild	190 (67.6)
Moderate	91 (32.4)
Nature of Injury	
Unintentional	224 (79.7)
Intentional	57 (20.3)
PTSD Severity	
Mild-Moderate	55 (19.6)
Severe	168 (59.8)
Extreme	58 (20.6)

PTSD: Post-traumatic stress disorder.

Table-3: Maladaptive schema mode as predictor of PTSD symptoms among trauma survivors (N=281).

	PTSD Symptoms as Outcome		
Predictor	***Model B***		**95% CI range**
Maladaptive Schema Modes	0.004**		[0.04-0.18]
R^2		0.03	
F		8.33**	

**p< .01PTSD: Post-traumatic stress disorder; CI: Confidence interval.

Table-4: Adaptive schema modes as predictor of PTSD symptoms among trauma survivors (N=281).

	PTSD Symptoms as Outcome		
Predictors	***Model B***		**95% CI range**
Adaptive Mode	-0.04		[-0.12-0.07]
R^2		0.00	
F		0.34	

PTSD: Post-traumatic stress disorder, CI: Confidence interval.

Regression analyses showed that maladaptive schema modes predicted PTSD symptoms among trauma survivors (F=8.33, p=0.01), while adaptive schema modes did not predict PTSD symptoms (F=.034, p=0.48) among trauma survivors.

Discussion

The key finding of the current study was that trauma survivors who used adaptive schema modes were associated with mild to moderate PTSD symptoms, and a simple linear regression revealed that only maladaptive schema modes led to PTSD symptoms among trauma survivors. Additionally, severe PTSD symptoms and maladaptive schema modes were more common among female trauma survivors compared to male trauma survivors. Moreover, PTSD symptoms and maladaptive

Table-2: Comparison of study variable with PTSD, MSM and AM values (n=281).

Variables	Male (n=203) M±SD	Female (n=78) M±SD	t(279)	p	95 LL	%CI UL	Cohen's d
PTSD	39.64±6.84	42.05±8.26	2.49	.01	.51	4.31	.32
MSM	139.73±11.51	141.58±11.12	1.21	.23	-1.15	4.83	.16
AM	58.50±9.07	57.45±8.91	-.88	.38	-3.41	1.31	.12
	Mild Severity (n=190)	Moderate Severity (n=91)	t(279)	p	95	%CI	Cohen's d
PTSD	39.43±7.17	42.14±7.36	-2.94	.00	-4.52	-.90	.37
MSM	139.31±10.70	142.20±12.62	-1.99	.05	-5.73	-.03	.25
AM	60.04±8.78	57.33±9.02	-2.38	.02	-4.96	-.47	.30
	Intentional (n=57)	Unintentional (n=224)	t(279)	p	95	%CI	Cohen's d
PTSD	42.70±6.92	39.70±7.32	7.32	2.80	.006	.89	5.12
MSM	147.86±10.68	138.31±10.78	10.78	5.99	.000	6.41	12.69
AM	58.95±8.74	58.02±9.10	9.10	.70	.49	1.71	3.56

Note. p* < 05, p** < 01, p***<001, PTSD: Post traumatic stress disorder, MSM: Maladaptive schema mode, AM: Adaptive modes, CI: Confidence interval, LL: lower level, UL: Upper level, SD: standard deviation.

schema mode were high in moderately-injured trauma survivors compared to those having mild injuries.

One study revealed a significant association between maladaptive schema modes and psychopathology, such as the cognitive model of PTSD, among individuals with history of interpersonal trauma.[20] Another study showed that dysfunctional schema modes, such as being vulnerable to harm, might be associated with a variety of psychopathological features.[21] It was observed in the current study that the full extent of maladaptive schema modes emerged and developed early in life; thus, it was unclear in the study sample whether maladaptive schema modes were triggered by current trauma. It was concluded that maladaptive schema modes develop when individuals' internal states interact with the environment, especially during early life experiences.[1]

In terms of limitations, the current study was conducted at a single tertiary care hospital, and the results may not be generalisable to other parts of Pakistan. Additionally, various demographic informations of the sample may have also affected the results. Besides, the schema inventory is used only with relation to clinical samples, and the findings should not generalised to non-clinical populations.

Future studies should assess the moderating role of disease severity and gender on the association between maladaptive schema modes and PTSD symptoms among trauma survivors.

Conclusion

Maladaptive schema modes and PTSD symptom severity among female trauma survivors was high compared to male trauma survivors, and patients with moderate disease severity were more at risk of PTSD due to maladaptive schema modes because of trauma. Overall, PTSD severity was higher among trauma survivors who used maladaptive schema modes than among those who used adaptive schema modes, indicating that maladaptive schema modes lead to PTSD.

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