

Evaluating the Support for Students Exposed to Trauma (SSET) intervention: multi-domain indicators of change among trauma-exposed adolescents

Ocena interwencji psychologicznej SSET (Support for Students Exposed to Trauma – wsparcie dla uczniów dotkniętych traumą): wielowymiarowe wskaźniki zmian u młodzieży z doświadczeniem traumatycznym

¹ Department of Behavioural Sciences, Fatima Jinnah Women University, Pakistan

² Behavioural Sciences, Fatima Jinnah Women University, Pakistan

Correspondence: Sajida Naz, Behavioural Sciences, Fatima Jinnah Women University, 46000, Rawalpindi, Pakistan, e-mail: dr.sajida@fjwu.edu.pk

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ORCID iD

Sajida Naz <https://orcid.org/0000-0003-4723-6611>

Abstract

Introduction and objective: This study presents findings from a clustered randomised controlled trial evaluating the Support for Students Exposed to Trauma (SSET) intervention among trauma-exposed adolescents in public schools of Azad Jammu and Kashmir, Pakistan. Against a backdrop of political unrest, war-related escalations, disasters, and chronic displacement, children in this region face heightened psychological vulnerability. The 10-week intervention was designed to address core trauma-related difficulties using structured, evidence-informed techniques appropriate for low-resource educational settings. **Materials and methods:** A total of 131 students aged 10–16 were assigned to intervention and control clusters. To assess the effectiveness of SSET, five outcome domains – post-traumatic stress symptoms, psychological distress, behavioural/emotional problems, perceived social support, and resilience – were measured at pre-, post-, and 3-month follow-up stages. These indicators were selected based on the SSET programme's theoretical foundations in cognitive-behavioural and trauma-informed approaches, each targeting specific emotional and interpersonal capacities expected to change through intervention. **Results:** Statistical analysis using mixed-design ANOVA revealed significant improvements across all five indicators in the intervention group. Notably, reductions in post-traumatic stress disorder symptoms, emotional/behavioural problems, and psychological distress were accompanied by increased perceptions of social support and resilience. **Conclusions:** The findings provide strong evidence of the intervention's effectiveness and demonstrate how schools in under-resourced regions can serve as vital platforms for delivering early psychological interventions.

Keywords: effectiveness, school-based trauma intervention, Support for Students Exposed to Trauma (SSET), PTSD, resilience, randomised controlled trial, Pakistan

Streszczenie

Wprowadzenie i cel: W pracy przedstawiono wyniki klastrowego randomizowanego badania kontrolowanego oceniającego skuteczność interwencji Support for Students Exposed to Trauma (SSET) przeprowadzonej wśród młodzieży z doświadczeniem traumy uczęszczającej do szkół publicznych w pakistańskim regionie Azad Dżammu i Kaszmir. Ze względu na niestabilność polityczną, eskalację konfliktów zbrojnych, katastrofy oraz długotrwałe przesiedlenia dzieci w tym regionie są bardziej narażone na wystąpienie problemów psychologicznych. Dziesięciotygodniowa interwencja została opracowana w celu przeciwdziałania głównym trudnościom związanym z traumą poprzez zastosowanie ustrukturyzowanych technik opartych na dowodach naukowych, dostosowanych do warunków placówek edukacyjnych o ograniczonych zasobach. **Materiał i metody:** Łącznie 131 uczniów w wieku 10–16 lat przydzielono do klastrow interwencyjnych lub kontrolnych. W celu oceny skuteczności programu SSET mierzono pięć obszarów wynikowych – objawy stresu pourazowego, dystres psychologiczny, problemy behawioralne i emocjonalne, postrzegane wsparcie społeczne oraz rezyliencję – przed rozpoczęciem interwencji, po jej zakończeniu oraz podczas 3-miesięcznej obserwacji kontrolnej. Wskaźniki te wybrano na podstawie teoretycznych założeń programu SSET, opartych na podejściu poznawczo-behawioralnym oraz uwzględniającym specyfikę

traumy. Każdy z obszarów odnosi się do określonych zdolności emocjonalnych i interpersonalnych, które zgodnie z założeniami programu powinny ulec zmianie na skutek interwencji. **Wyniki:** Analiza statystyczna przeprowadzona z wykorzystaniem mieszanej analizy wariancji (*mixed-design ANOVA*) wykazała istotną statystycznie poprawę we wszystkich pięciu ocenianych wskaźnikach w grupie interwencyjnej. Co szczególnie istotne, redukcji objawów zespołu stresu pourazowego, problemów emocjonalnych i behawioralnych oraz dystresu psychicznego towarzyszył wzrost postrzeganego wsparcia społecznego i rezyliencji. **Wnioski:** Uzyskane wyniki dostarczają istotnych dowodów na skuteczność opisywanej interwencji oraz wskazują, że szkoły w regionach o ograniczonych zasobach mogą odgrywać kluczową rolę we wdrażaniu wczesnych interwencji psychologicznych.

Słowa kluczowe: skuteczność, interwencja szkolna ukierunkowana na traumę, program Support for Students Exposed to Trauma (SSET), PTSD, rezyliencja, randomizowane badanie kontrolowane, Pakistan

INTRODUCTION

Adolescent mental health has become an urgent international public health priority. The majority of mental illnesses begin before age 14, yet many remain untreated into adult life (Carlén, 2022; Solmi et al., 2022). Despite being among the most widely recognised factors contributing to adolescent mental health difficulties, childhood trauma is an area requiring further discussion and exploration. The occurrence of traumatic incidents during childhood has consistently shown associations with far-reaching adverse effects on emotional regulation, social development, and cognitive functioning (McLaughlin et al., 2015; Mohaved Abtahi and Kerns, 2017). It has been suggested that trauma exposure occurring at critical developmental periods interferes with the proper functioning of neural pathways and emotional learning mechanisms, thereby increasing the likelihood of developing anxiety, depression, and post-traumatic stress disorder (PTSD) (Pollak et al., 2000; Pollak and Kistler, 2002; Zhang et al., 2022). Furthermore, cognitive distortions resulting from trauma – such as heightened anger sensitivity or threat perception – may damage social relationships, quality of life, and academic functioning (McLaughlin et al., 2012). PTSD, one of the most chronic consequences of traumatic exposure, encompasses constant re-experiencing, avoidance, and hyperarousal, together with negative alterations in cognition and mood following a distressing event. Moreover, diverse types of trauma faced during childhood and adolescence, including physical or sexual abuse, emotional neglect, bereavement, violence, natural disaster, bullying, painful medical procedures, and serious accidents can leave psychological effects that shape developmental trajectories well into adulthood (Norman et al., 2012; Teicher and Samson, 2016). Although different forms of trauma affect individuals differently, they share several common outcomes, including anxiety, depression, PTSD, behavioural issues, and impaired social functioning (Afifi et al., 2014). Research indicates that traumatised children may develop higher levels of poor emotion regulation, most likely resulting in externalising and internalising behavioural disorders (Shonkoff et al., 2012). Similarly, traumatised adolescents frequently withdraw from social interactions, have peer detachment

issues, and demonstrate lower levels of trust and self-esteem (Briggs et al., 2021).

In light of the alarming prevalence and psychological impact of trauma among children and adolescents, schools have increasingly become important settings for early intervention and support. Cognitive behavioural therapy (CBT)-based interventions show promise in treating trauma-related symptoms, particularly post-traumatic stress and psychological distress in school-based settings. School-based CBT programmes are structured to assist students in recognising maladaptive thought patterns, developing coping strategies, and improving emotional regulation (Cohen and Mannarino, 2017). Interventions such as Support for Students Exposed to Trauma (SSET), based on CBT principles, have demonstrated appreciable reductions in PTSD and depressive symptoms among middle school students who have been exposed to trauma (Jaycox et al., 2010). Integrating CBT-based interventions into school environments would not only support students affected by trauma but also help build trauma-informed environments that promote resilience and increased support from peers (Langley et al., 2015). Teachers and school psychologists trained in trauma-focused CBT can make significant contributions to early detection and prevention, lowering the risk of chronic psychological disorders later in life. With increasing global attention towards mental health and education, embedding evidence-based therapeutic practices within school systems may be a proactive and sustainable way to ensure that young people are less affected by trauma in the long term.

In light of these factors, a study was conducted to investigate the effectiveness of a trauma-focused school-based intervention among adolescents who had exposure to traumatic events and were experiencing PTSD symptoms. The main objective was to investigate the effectiveness of the SSET programme in reducing post-traumatic stress symptoms, psychological distress, and behavioural/emotional problems, while enhancing perceived social support and resilience among adolescents exposed to trauma. These indicators were selected because SSET offers distinct elements that directly target trauma-related distress while simultaneously promoting resilience and strengthening social support through interactive sessions.

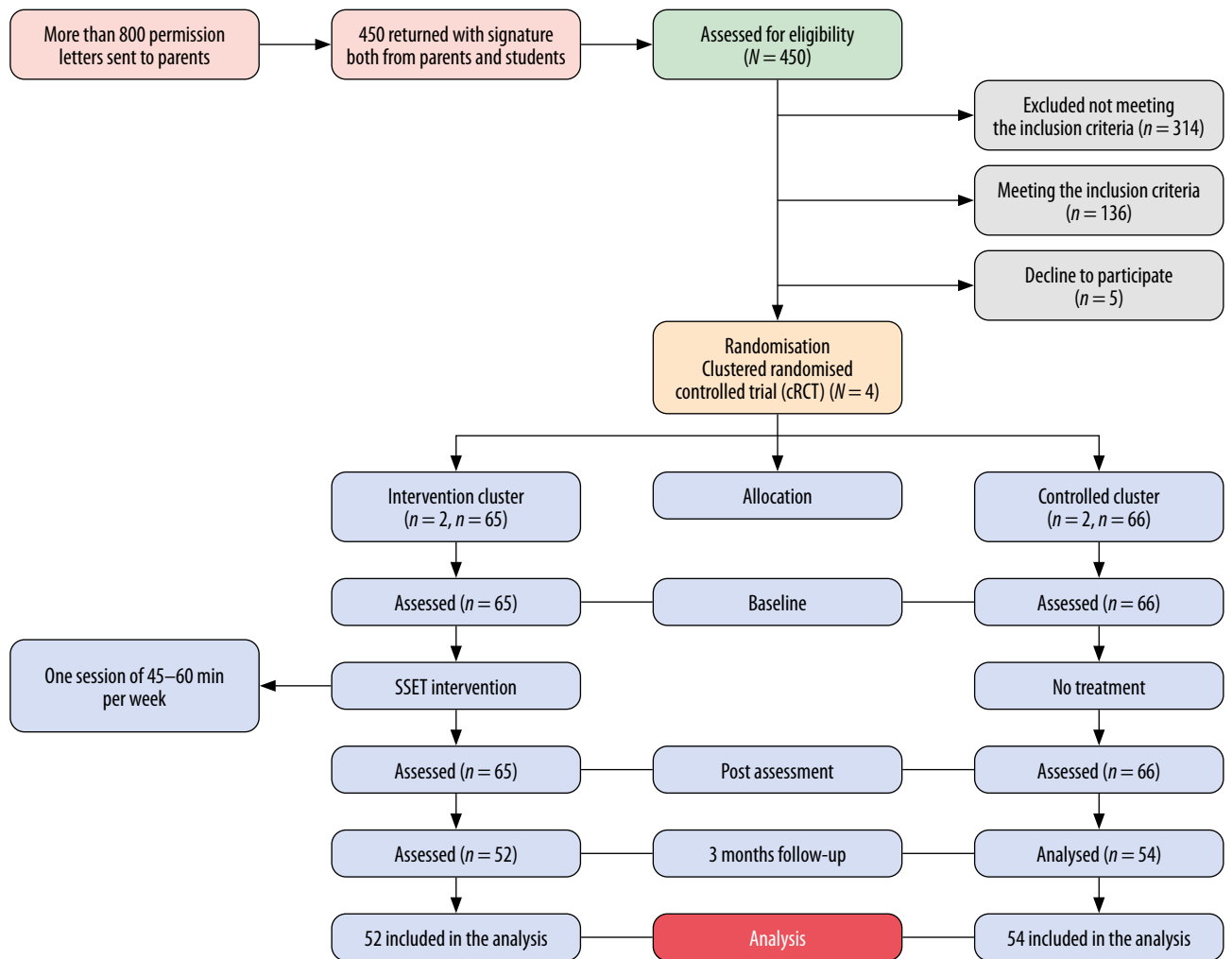


Fig. 1. CONSORT diagram

MATERIALS AND METHODS

Study participants and procedure

The present study utilised a clustered randomised controlled trial (cRCT), in which four schools were randomised into two clusters: intervention and control (1 : 1 allocation ratio). The detailed CONSORT flow diagram illustrating the randomisation process is presented in Fig. 1.

The study was approved by the Ethics Committee of Fatima Jinnah Women University (FJWU/EC/2022/45) and adhered to the ethical principles outlined in the Declaration of Helsinki. The study was also registered at ClinicalTrials.gov with the identifier NCT05631691. The participants in the present study were adolescents aged 10–16 years. The sample was chosen using purposive sampling, and data were collected from four government high schools located in Muzaffarabad, Azad Jammu, and Kashmir, Pakistan. The researcher collected the data from participants during their school hours, in their classrooms, with the help of the class teacher. The inclusion criteria for the present study required participants to have experienced a traumatic event

and to have scored 21 or above on the Child and Adolescent Trauma Screen (CATS). Exclusion criteria included individuals with a history of psychological or psychiatric conditions, as well as those currently undergoing psychotherapy or taking psychiatric medication. Informed consent was obtained from both participants and their parents prior to data collection. Initially, 450 participants were screened using the CATS to identify those experiencing PTSD symptoms. Of these, 131 participants met the inclusion criteria. After screening, schools were randomised into two clusters: intervention and control, via randomisation, as shown in Fig. 1. A baseline assessment was conducted using the Urdu versions of the following instruments: the Child and Adolescent Trauma Screen (CATS), Revised Children's Anxiety and Depression Scale (RCADS), Strengths and Difficulties Questionnaire (SDQ), Multidimensional Scale of Perceived Social Support (MSPSS), and Youth Resilience Measure (YRM), prior to administering the intervention to the assigned groups. The intervention was delivered in group settings, with each group comprising 6 to 7 participants. The Urdu-translated version (worksheets) of the SSET programme, translated by Amin et al. (2020), was

used. Permission was obtained from the authors to use the SSET programme, and the researcher completed certified online training in its implementation. The researcher was a PhD scholar, and the study was conducted as part of their doctoral research. The intervention was administered by the researcher over a period of 10 weeks to the intervention group, whereas no intervention was delivered to the control group. To ensure participant safety, clinical psychologists were available on-site should any student exhibit distress throughout the research process. Following the 10-week intervention, post-assessment data were collected from both the intervention and control groups using the same set of questionnaires. Additionally, a follow-up assessment was conducted three months later. After completion of the follow-up assessment, the intervention was also offered to the control group. Participants received gift hampers as a token of appreciation after completing the intervention procedure. Later, the schools were provided psychoeducational training to brief them on the study findings, as well as resources to assist their students when necessary.

Measures

The demographic information sheet was used in the current study to collect data on the following variables: age, parents' marital status, birth order, family system, medical history and psychological/psychiatric history.

The **Child and Adolescent Trauma Screen (CATS)** (Sachs et al., 2017) is a DSM-5-based screening instrument that includes 15 potentially traumatic events, including serious accidents or injury, natural disasters, physical and sexual abuse, domestic violence, loss of a loved one, exposure to war, painful medical procedures, or any other serious life events. The second section consists of 20 post-traumatic stress symptom (PTSS) items, and five impairment items. CATS items are scored on a scale from 0 (never) to 3 (almost always). A total symptom score is calculated by summing the raw scores for items 1–20, with a recommended cut-off score of ≥ 21 as an indication of a clinically relevant level of symptoms. In the present study, the reliability coefficient was 0.84, indicating a high level of acceptability for this population.

The **Revised Children's Anxiety and Depression Scale (RCADS)** (de Ross et al., 2002) consists of 47 items, with a Total Anxiety Scale (sum of the five anxiety subscales) and a Total Internalising Scale (sum of all six subscales), ranges from 0 (never) to 3 (always). The RCADS was used to assess psychological distress among adolescents exposed to traumatic events. In the present study, the Urdu version translated by Mehmood and Sultan (2014) was used, and the reliability coefficient obtained was 0.94.

The **Strength and Difficulty Questionnaire (SDQ)** (Goodman, 1997) is a tool used to assess psychological functioning including behavioural and emotional problems in children and adolescents. It consists of 25 items and is divided into five subscales: conduct problems, hyperactivity, emotional

problems, prosocial behaviour, and peer relationship problems. The Urdu version of the SDQ, previously validated by Samad et al. (2005), was employed in this study, with higher scores reflecting greater behavioural and emotional difficulties in children and adolescents. In the present study, the reliability coefficient was 0.79, indicating that the Urdu version is acceptable for use in this population.

The **Multidimensional Scale of Perceived Social Support (MSPSS)** (Zimet et al., 1988) is 7-point Likert scale consisting of 12 items ranging from 1 to 7, measuring perceived social support from family, friends, and significant others. In the current study, the Urdu version developed by Tonsing et al. (2012) was used, and the results indicated a Cronbach's alpha of 0.84.

The **Children and Youth Resilience Measure (CYRM)** (Ungar and Liebenberg, 2011) is a five-point scale consisting of 28 items scored from 1 to 5 and comprising three subscales measuring contextual, caregiver, and personal resilience. In the current study, the Urdu version translated by Pervaiz and Naz (2013) was used, and the reliability coefficient was found to be 0.84.

SSET programme

The SSET intervention consisted of 10 lessons. Each lesson comprised a 45-minute to 1-hour session implemented once a week and delivered in groups of 6–10 students to allow participants to practise their skills on their own throughout the week after each group session (Jaycox et al., 2009). Each lesson's agenda included an independent practice review, new skill teaching and practice, and homework assignments. Practice assignments were given during lessons to complete at home in order to reinforce the skills learned during the lessons (Jaycox et al., 2009). The first session, "Introduction of SSET", is focused on building trust among group members and providing information about what to expect from the group. The 2nd session, "Common reaction to trauma and strategies for relaxation", consisted of psychoeducation, relaxation exercises, and information about common reactions to stress or trauma, supported by worksheets. During this session, students also learned about the importance of support from peers and family in reducing negative thoughts and feelings related to trauma. The 3rd session, "Thoughts and feelings", enabled students to observe their thoughts and increases helpful thinking through the fear thermometer technique. The 4th session, "Helpful thinking", enabled students to overcome anxiety and master new skills through the hot seat exercise. The 5th session, "Facing your fears", taught students to recognise events, situations, places, or people they might be avoiding in relation to a traumatic event. The 6th session, "Exposure to trauma memory: trauma narrative", taught students the importance of writing about their traumatic experiences using newspaper story worksheets. The 7th session, "Trauma narrative", taught students to write about their experiences and share them with the group to begin

	Weekly sessions 45 min – 1 hr		Weekly sessions 45 min – 1 hr
1.	"Introduction of SSET (Support for Students Exposed to Trauma)"	6.	"Exposure to trauma memory: trauma narrative"
2.	"Common reaction to traumas and strategies for relaxation"	7.	"Exposure to trauma narrative, part two"
3.	"Cognitive restructuring: thoughts and feelings"	8.	"Problem solving"
4.	"Cognitive restructuring: helpful thinking"	9.	"Practice with social problem, hot seat exercise"
5.	"Facing your fears"	10.	"Planning for future and graduation"

Tab. 1. Weekly sessions of the SSET intervention

the process of healing. The 8th session, "Problem solving", enabled students to learn new skills and techniques that are required to solve real-life challenging situations and circumstances. The 9th session, "Practice with social problems", taught students to increase competence and skills in dealing with real-life problems and managing negative thoughts. The final 10th session, "Planning for the future and graduation", enabled students to recognise their progress, identify future challenges, and celebrate their graduation. Tab. 1 shows the weekly sessions of the SSET intervention.

Statistical analysis

After data collection, the data were analysed using both descriptive and inferential statistical methods in the Statistical Package for the Social Sciences (SPSS). Descriptive statistics were applied to assess the characteristics of the sample, while reliability analysis was conducted for the scales used. Additionally, normality tests, including skewness and kurtosis, were performed to confirm that the data followed a normal distribution. To evaluate the effectiveness of the SSET intervention, a mixed-design analysis of variance (ANOVA) was conducted to compare pre-test (T1), post-test (T2), and follow-up (T3) scores between the intervention and control groups. In addition, post-hoc tests were carried out to identify specific group differences.

RESULTS

The intervention group ($n = 65$) and the control group ($n = 66$) were demographically comparable (Tab. 2). The mean ages were similar ($M = 13.98$, $SD = 1.19$ vs. $M = 13.62$, $SD = 1.14$). The majority of individuals were from nuclear families (73.8% compared with 68.2%) and had parents who were living together (93.8% vs. 90.9%). No participants reported any psychological illness in past, and only a small proportion had received medical treatment (10.8% compared with 9.1%). The prevalence of medical illness (any chronic or prolonged illness) was slightly higher in the intervention group (18.5% compared with 12.7%).

Tab. 3 shows the mean scores for PTSD symptoms, psychological distress, perceived social support, resilience and behavioural/emotional problems at pre-test, post-test, and

Number	Demographics		Intervention group ($n = 65$, $n = 2$)	Control group ($n = 66$, $n = 2$)
1.	Age [years]	Mean $\pm$ SD	13.98 $\pm$ 1.19	13.62 $\pm$ 1.14
2.	Family system	Joint Nuclear	17 (26.2) 48 (73.8)	21 (31.8) 45 (68.2)
3.	Marital status of parents	Living together Separated Divorced	61 (93.8) 2 (3.1) 2 (3.1)	60 (90.9) 2 (3.0) 4 (6.1)
4.	Birth order	Eldest Middle Younger	15 (23.1) 46 (70.8) 4 (6.2)	14 (21.2) 51 (77.3) 1 (1.5)
5.	Any psychological illness	Yes No	0.0 65 (100.0)	0.0 66 (100.0)
6.	Any medical illness	Yes No	12 (18.5) 53 (81.5)	15 (12.7) 51 (77.3)
7.	Any medical treatment	Yes No	7 (10.8) 58 (89.2)	6 (9.1) 60 (90.9)

n – sample size; N – clusters.

Tab. 2. Frequency and percentages of sample characteristics of the intervention and control groups across demographics ($N = 131$)

Variables	Group	Pre-test ($M \pm SD$)	Post-test ($M \pm SD$)	Follow-up ($M \pm SD$)
PTSD symptoms	Intervention	28.30 $\pm$ 9.76	19.42 $\pm$ 7.84	15.59 $\pm$ 9.56
	Control	27.92 $\pm$ 8.77	25.51 $\pm$ 10.74	24.29 $\pm$ 9.23
Psychological distress	Intervention	63.76 $\pm$ 20.99	47.38 $\pm$ 21.01	41.73 $\pm$ 24.35
	Control	67.74 $\pm$ 20.73	69.24 $\pm$ 27.02	62.01 $\pm$ 23.89
Perceived social support	Intervention	53.38 $\pm$ 13.47	64.75 $\pm$ 13.85	64.30 $\pm$ 13.14
	Control	55.37 $\pm$ 13.88	54.85 $\pm$ 15.55	52.59 $\pm$ 14.10
Resilience	Intervention	104.69 $\pm$ 15.17	118.00 $\pm$ 12.40	116.34 $\pm$ 17.28
	Control	102.94 $\pm$ 16.48	104.88 $\pm$ 16.31	105.29 $\pm$ 17.28
Behavioural/emotional problems	Intervention	18.76 $\pm$ 5.52	16.25 $\pm$ 4.08	16.23 $\pm$ 3.80
	Control	20.27 $\pm$ 6.30	19.33 $\pm$ 5.02	19.00 $\pm$ 6.63

Tab. 3. Mean scores of PTSD symptoms, psychological distress, perceived social support, resilience, and behavioural/emotional problems at pre-test, post-test, and follow-up

follow-up. The result indicate that the mean scores changed following the intervention.

Comparisons between the pre-intervention, post-intervention, and follow-up assessments carried out using a mixed-design ANOVA shown in Tab. 4.

The ANOVA assumptions were also confirmed through skewness and kurtosis analyses, confirming that the data followed a normal distribution. Mauchly's test was also used to assess sphericity assumptions. All variables met the sphericity assumption except resilience. Therefore, in this case, any three values including Greenhouse-Geisser, Huynh-Feldt, or Lower-bound could be used as provided in the SPSS table of Mauchly's test of sphericity (Allen et al., 2014). The results show that significant interactions were observed across the pre-intervention, post-intervention,

Variables		Effect	SS	df	MS	F	p	η^2p
PTSD symptoms	Between subject effect	Group	1,834.54	1	1,834.54	22.75	0.000	0.18
		Time	3,709.01	2	1,854.50	20.30	0.000	0.16
	Within subject effect	Time $\times$ Group	1,158.69	2	579.34	6.34	0.002	0.05
Psychological distress	Between subject effect	Group	18,778.53	1	18,778.53	36.55	0.000	0.26
		Time	10,225.36	2	5,112.68	9.36	0.000	0.08
	Within subject effect	Time $\times$ Group	5,196.91	2	2,598.45	4.75	0.01	0.04
Perceived social support	Between subject effect	Group	3,401.72	1	3,401.72	16.01	0.000	0.13
		Time	1,689.20	2	844.60	4.46	0.01	0.04
	Within subject effect	Time $\times$ Group	2,933.75	2	1,466.87	7.75	0.001	0.06
Resilience	Between subject effect	Group	5,927.41	1	5,927.41	23.21	0.000	0.18
		Time	3,799.99	1.87	2,030.16	7.51	0.001	0.06
	Within subject effect	Time $\times$ Group	1,941.75	1.87	1,037.39	3.83	0.02	0.03
Behavioural/emotional problems	Between subject effect	Group	478.47	1	478.47	14.88	0.000	0.12
		Time	235.63	2	117.81	4.39	0.01	0.04
	Within subject effect	Time $\times$ Group	36.80	2	18.40	0.68	0.50	0.007

η^2p – partial eta square; df – degree of freedom; MS – mean square; p – significance value; SS – sum of squares.

Tab. 4. Mixed-design ANOVA interaction effect analysis of the intervention and control group across pre-intervention (T1), post-intervention (T2), and follow-up (T3)

Group I	Group J	Mean difference (I–J)	SE	95% CI (lower, upper)	p-value
PTSD symptoms (T1)	PTSD symptoms (T2)	9.83*	1.60	6.04, 13.62	0.000
PTSD symptoms (T1)	PTSD symptoms (T3)	11.83*	1.70	7.81, 15.85	0.000
PTSD symptoms (T2)	PTSD symptoms (T3)	2.00	1.70	–2.01, 6.02	0.468
Psychological distress (T1)	Psychological distress (T2)	19.27*	3.92	9.99, 28.56	0.000
Psychological distress (T1)	Psychological distress (T3)	21.17*	4.16	11.32, 31.02	0.000
Psychological distress (T2)	Psychological distress (T3)	1.90	4.16	–7.94, 11.74	0.89
Perceived social support (T1)	Perceived social support (T2)	–9.89*	2.46	–15.72, –4.05	0.000
Perceived social support (T1)	Perceived social support (T3)	–11.90	2.61	–18.09, –5.71	0.000
Perceived social support (T2)	Perceived social support (T3)	2.01	2.61	–8.02, 4.17	0.72
Resilience (T1)	Resilience (T2)	–12.87*	2.63	–19.09, –6.05	0.000
Resilience (T1)	Resilience (T3)	–0.91*	2.79	–16.51, –3.31	0.001
Resilience (T2)	Resilience (T3)	2.96	2.79	–3.63, 9.55	0.53
Behavioural/emotional problems (T1)	Behavioural/emotional problems (T2)	3.40*	0.97	1.10, 5.69	0.002
Behavioural/emotional problems (T1)	Behavioural/emotional problems (T3)	4.51*	1.03	2.08, 6.95	0.000
Behavioural/emotional problems (T2)	Behavioural/emotional problems (T3)	1.11	1.03	–1.31, 3.55	0.52

T1 – pre-intervention; T2 – post-intervention; T3 – follow-up.

Tab. 5. Post-hoc analysis of variables across pre-intervention (T1), post-intervention (T2), and follow-up phases (T3)

and follow-up phases for post-traumatic stress symptoms [$F(1,208) = 22.75$, $p < 0.001$, $\eta^2 = 0.18$], psychological distress [$F(1,208) = 36.55$, $p < 0.001$, $\eta^2 = 0.26$], perceived social support [$F(1,208) = 16.01$, $p < 0.001$, $\eta^2 = 0.13$], resilience [$F(1,194.66) = 23.21$, $p < 0.001$, $\eta^2 = 0.18$], and behavioural/emotional problems [$F(1,208) = 14.88$, $p < 0.001$, $\eta^2 = 0.12$] compared with the control group. These results indicate that SSET significantly reduced PTSD symptoms, psychological distress, and behavioural/emotional problems, while significantly enhancing perceived social support and resilience in the intervention group. These results also indicated that participants in control cluster did not demonstrate any significant change from pre-intervention to the follow-up phase.

In addition, post-hoc Tukey test analysis was carried out to identify differences within the group from pre-intervention (T1) to follow-up (T3). Pairwise comparisons of means using the Tukey test revealed a significant difference between PTSD symptom scores at pre-test (T1) and post-test (T2) ($p < 0.01$), as shown in Tab. 5.

Similar patterns were observed for psychological distress (RCADS), behavioural/emotional problems, perceived social support, and resilience, with all measures showing significant improvements from pre-intervention (T1) to post-intervention (T2) and from pre-intervention (T1) to follow-up (T3) ($p \leq 0.001$). However, no significant changes were detected between post-test and follow-up across any of the measures ($p > 0.05$). These findings indicate that the

No	Items	Not at all true f(%)	A little bit true f(%)	Mostly true f(%)	Very true f(%)
1	"The group leader shows interest in me"			13 (20)	52 (80)
2	"The group leader was friendly and warm"		2 (3.1)	12 (18.5)	51 (78.5)
3	"The group leader listened to me"		1 (1.5)	15 (23.1)	49 (75.4)
4	"The other kids in group listened to me what I said"	8 (12.3)	12 (18.5)	29 (44.6)	16 (24.6)
5	"The group leader seemed to understand my problems"				100 (100)
6	"The group leader answered my questions"		2 (3.1)	17 (26.2)	46 (70.8)
7	"The group leader spent enough time with me"	1 (1.5)	5 (7.7)	18 (27.7)	41 (63.1)
8	"The group leader made me feel comfortable in the group"		8 (12.3)	14 (21.5)	43 (66.2)
9	"Other children in the group made me feel comfortable"	6 (9.2)	11 (16.9)	19 (29.2)	29 (44.6)
10	"I got information on the kinds of problems I've been having"		7 (10.8)	25 (38.5)	33 (50.8)
11	"I got advice on what can do to feel better"	1 (1.5)	5 (7.7)	21 (32.3)	38 (58.5)
12	"The things I learned in group make me feel better"		1 (1.5)	27 (41.5)	37 (56.9)
13	"The things I learned in the group helped me solve problems"		2 (3.1)	23 (35.4)	40 (61.5)
14	"The things I learned in group help me feel better about what happened to me"	1 (1.5)	2 (3.1)	27 (41.5)	35 (53.8)
15	"The group helped me to talk about what happened to me"		8 (12.3)	23 (35.4)	34 (52.3)
16	"I liked the group"			6 (9.2)	59 (90.8)
17	"If something happened to my friend, I'd recommend that he or she join the group"		4 (6.2)	21 (32.3)	40 (61.5)

Tab. 6. Participants' reflection on SSET

intervention produced significant benefits that were maintained throughout the follow-up period.

In addition, intervention fidelity was measured through participant reflections using an SSET response sheet consisting of 17 closed-ended questions with four response options: "not at all", "a little bit true", "mostly true", and "very true", as shown in Tab. 6.

Most participants' responses were rated as "mostly true" [59 (90.8%)] and "very true" [13(20%)], which shows that participants were generally satisfied with the SSET support group intervention.

DISCUSSION

The present study investigated the impact of a school-based intervention in reducing traumatic stress symptoms, psychological distress, and behavioural problems, while enhancing perceived social support and resilience among adolescents exposed to trauma. The results of the study show that SSET is an evidence-based intervention for reducing post-traumatic stress symptoms, psychological distress, and behavioural/emotional issues, and enhancing perceived social support and resilience among adolescents. The present findings are in line with a number of other studies that aimed to determine the effectiveness of school-based counselling and other forms of therapeutic intervention in reducing trauma-related symptoms. These findings are supported by previous research demonstrating that SSET is an evidence-based intervention for trauma symptoms (Amin et al., 2020; Jaycox et al., 2009).

Children and adolescents are particularly vulnerable to the effects of traumatic experiences due to their developmental stage and reliance on caregivers for protection and support. Because of their age, they are more vulnerable to

psychological issues and have fewer social and psychological resources to cope with trauma than adults, making them more likely to develop PTSD (Fortin et al., 2013). Existing literature indicates that trauma-focused interventions for school-aged children and adolescents have been extensively researched and disseminated for the treatment of PTSD and other comorbid conditions, such as depression and anxiety (Cary and McMillen, 2012; Cohen and Mannarino, 2017; Kowalik et al., 2011; Njoroge and Yang, 2012). Trauma-focused cognitive behavioural therapies, considered the gold standard for PTSD treatment, allow young people to process traumatic memories and reframe negative cognitions (Cohen and Mannarino, 2017). In addition, these approaches help children manage trauma reminders and boost personal safety (Cary and McMillen, 2012). A systematic review showed that trauma-focused cognitive behaviour therapy is more effective in treating post-traumatic stress symptoms and depression among children and adolescents (Lenz and Hollenbaugh, 2015).

SSET emphasises skill-building activities, strengthening peer support networks, and teaching trauma coping strategies. Cohen and Mannarino (2017) stated that trauma-focused interventions combining resilience-building components have demonstrated efficacy in reducing PTSD symptoms among adolescents by improving coping skills and nurturing emotional regulation. Likewise, SSET includes a specific component to foster resilience and increase support, in addition to reducing PTSD symptoms. SSET nurtures resilience through its dedicated component of problem-solving skills and teaches students how to manage overwhelming emotions and unhelpful or maladaptive thoughts in their daily lives. On the basis of the current study, the SSET intervention with school students supports the notion that early treatment is necessary for addressing

post-traumatic stress symptoms, depression, anxiety, and behavioural/emotional problems due to adverse traumatic events. These findings show that school-based interventions for students exhibiting trauma symptoms have the potential to address unmet mental health needs, foster resilience, and promote students' overall growth and well-being.

LIMITATIONS

The study has several limitations. First, the clusters were relatively small with respect to geographical coverage, as the study was conducted in only one district of Azad Kashmir. Secondly, only government schools were included for data collection and intervention purposes. Thus, to gain a more comprehensive understanding, it is recommended that future researchers include both government and private schools, and employ larger clusters to assess the broader impact of this psychological intervention. Thirdly, data were collected only from adolescents, without incorporating the perspectives of teachers and parents. Future studies could therefore include their views to obtain a larger picture. Lastly, the impact of SSET was evaluated at post-test and the 3-month follow-up. However, to gain a better understanding of the long-term effects of SSET, future randomised controlled trial should examine the effects of SSET at six months, one year, and beyond.

CONCLUSION

The findings from this cluster randomised controlled trial of SSET demonstrated its effectiveness in reducing post-traumatic stress symptoms, psychological distress, and emotional/behavioural issues among adolescents. Additionally, SSET significantly enhanced resilience and perceived social support through its structured, skills-based activities and lessons. This study emphasises the importance of early intervention and the integration of mental health strategies within school settings, particularly in low- and middle-income countries where access to basic mental health facilities is often limited. By embedding mental health initiatives within schools, which serve as a primary point of contact for young people, it becomes possible to bridge this service gap, promote resilience, and address emerging psychological difficulties among school-going adolescents.

Transparency of data

The possibility of researcher bias was proactively addressed through multiple methodological safeguards. Data collection followed standardised, pre-specified protocols, and validated instruments were used to minimise subjective influence during assessment. The researcher did not modify procedures based on interim findings, and no data-driven adjustments were made during data collection. All data coding and entry were conducted using predefined criteria, and random spot checks were performed by the research supervisor to ensure accuracy. Data analysis was conducted according to an a priori analysis plan, and results were independently cross-verified by a faculty member with expertise in

quantitative methods. In addition, statisticians were consulted to ensure the appropriate application of data analysis techniques and accurate interpretation. Collectively, these measures reduced the risk of expectancy effects or selective reporting, thereby strengthening the objectivity and credibility of the findings.

Author's declaration

This research forms part of larger study conducted as part of a PhD research thesis. A smaller component of the study was published previously. This article integrates the main findings with the follow-up data.

Conflict of interest

The authors do not report any financial or personal connections with other persons or organisations which might negatively affect the content of this publication and/or claim authorship rights to this publication.

Author contribution

Original concept of study; collection, recording and/or compilation of data; analysis and interpretation of data; writing of manuscript; critical review of manuscript; final approval of manuscript: NK, SN.

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