
**Prevalence and predictors of post-traumatic stress disorder among Yazidi women:
a cross-sectional study in the Kurdistan region of Iraq**

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Abstract

Background and objective: The Yazidi community, an ethno-religious minority in Iraq, was severely affected by the 2014 ISIS attacks, which led to mass killings, abductions, and widespread psychological trauma. This study aimed to assess the prevalence and severity of Post-Traumatic Stress Disorder (PTSD) among Yazidi women in the context of ISIS-related violence.

Methods: A cross-sectional study was conducted, where 300 women were chosen among those who were displaced from Sinjar during the 2014 ISIS attacks and currently residing in Shariya IDP Camp, and 300 women from the long-term residents of Shariya Complex in Duhok Governorate, who were not directly exposed to ISIS violence. Data were collected through structured interviews addressing demographics, socioeconomic characteristics, trauma exposure and conflict-related experiences, mental health history, and support systems. PTSD symptoms were assessed using the Impact of Event Scale–Revised (IES-R).

Results: Severe PTSD symptoms were reported by 73.3% of participants, with significantly higher rates among IDP camp residents (88.7%) compared to non- directly exposed residents (58.0%) ($P < 0.001$). PTSD severity was significantly associated with displacement ($P < 0.001$), captivity ($P < 0.001$), sexual and physical violence ($P < 0.001$), current residence ($P < 0.001$), illiteracy ($P < 0.001$), number of children ($P = 0.005$) and marital status ($P = 0.015$). Access to mental health services showed limited impact, with major barriers including unavailability, stigma, and low awareness. Moreover, displacement due to ISIS, low educational level and number of children were identified as predictors of PTSD as analyzed using binary logistical regression among the studied covariates.

Conclusion: PTSD remains alarmingly prevalent among Yazidi women, even 11 years after the 2014 genocide. Prevalence is notably higher among displaced multiparous women and increases with lower levels of education. Elevated symptoms are also observed among women who were not directly exposed to the violence, suggesting the presence of vicarious and intergenerational trauma.

Keywords: Violence, Women, Psychological Trauma, Internally Displaced Persons, Survivors.

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Introduction

The Yazidi community, whose religion incorporates elements of Islam, Zoroastrianism, and Mithraism, has historically been subjected to deep-rooted prejudice, including the widespread misconception that they practice “devil-worship.” Such stigmatization contributed to the targeted and brutal attacks they endured during the 2014 genocide perpetrated by the so-called Islamic State of Iraq and Syria (ISIS) (1-2). This assault, marking the 74th genocide in Yazidi history, resulted in forced religious conversion and the displacement of nearly 200,000 individuals, many of whom later found safety in camps across the Duhok Governorate in the Kurdistan Region of Iraq (3). ISIS attacks also led to the abduction of approximately 6,800 people, about half of whom were eventually rescued (4). Among them were 1,000 severely ill or left-behind women and children, who had been held hostage and were later brought to Germany to receive integrated care (5). The extreme brutality of the so-called Islamic State against religious minorities has had severe psychological consequences. One of the most common outcomes is Post-Traumatic Stress Disorder (PTSD), particularly among individuals who have endured mass human rights violations during armed conflicts (6).

The rationale for addressing PTSD amongst the Yazidis following ISIS attacks is in light of the well-established link between wars, genocides, and adverse mental health outcomes, especially PTSD. The justification for deciding to tackle PTSD among Yazidis is further rooted in the urgency to understand the magnitude and mitigate the psychological impact of traumatic events, displacement of survivors and sexual violence, and associated factors, particularly on women 11 years following the genocide.

Several studies have reported alarmingly high rates of PTSD among Yazidi survivors, with prevalence estimates ranging from 80% to 90% (7-9). However, limited research has explored comparative data on the effects of direct versus indirect exposure to violence. The objectives of this study were to 1) Assess the prevalence of PTSD among Yazidi women affected by the 2014 ISIS attacks, 2) Compare PTSD severity between women directly exposed to ISIS violence and those not directly exposed, and 3) Identify demographic, socioeconomic, trauma exposure, conflict-related factors and support systems associated with PTSD severity.

Subjects and Methods

Study design and setting

During the period from December 18, 2024 to March 18, 2025, a cross-sectional study was conducted in

Shariya, a town near Duhok governorate.

Study population and sampling

Using a two-stage multistage cluster sampling method, a total of 600 Yazidi women were selected—300 from Shariya IDP Camp (Group 1), who were directly exposed to ISIS attacks in Sinjar in 2014, and 300 from Shariya Complex (Group 2), who had lived all their lives in Duhok Governorate. In the first stage, three out of five blocks in the IDP camp and four out of seven villages in the Shariya Complex were selected using simple random sampling. In the second stage, tents (in the camp) and households (in the complex) within each selected cluster were approached using systematic sampling. All eligible Yazidi women aged ≥ 18 years were invited to participate. When more than three eligible women were present in a tent or household, three were randomly selected. Individuals with cognitive impairments that hindered their ability to provide informed consent were excluded from the study.

Data collection

A researcher-developed questionnaire was administered through face-to-face interviews conducted in Kurdish (Kurmanji) by the researchers, accompanied by a Mental Health and Psychosocial Support Specialist. Prior to participation, the selected women were informed about the requirement for a private, 30-minute interview. A daily

appointment schedule was created, with separate arrangements for participants residing in the IDP camp and those living in Shariya Complex, allowing individuals to propose times that were most convenient for them. Participants generally chose time slots during which their tents or houses were less occupied, in order to maximize privacy. In cases where sufficient privacy could not be ensured, interviews were conducted at Dak Organization for Yazidi Women's Development office in the Shariya Complex, which offered a secure and confidential environment for the private interviews.

Study tools

The questionnaire included questions on demographic and socioeconomic characteristics, trauma and conflict-related experiences, mental health history, and support systems. In addition, the Impact of Event Scale-Revised (IES-R) (10), a validated tool in humanitarian settings, was administered to assess PTSD symptoms related to ISIS-related trauma (IES-R-A) and to other traumatic events unrelated to ISIS (IES-R-B). The tool was adapted under the supervision of a psychiatrist to ensure contextual relevance and accuracy. The IES-R is an instrument of 22 questions with a 5-point Likert scale designed to assess trauma-related symptoms, including intrusion, avoidance, and hyperarousal. Responses range from "Not at all" to "Extremely"

with total scores from 0 to 88. The score is calculated by adding the scores for the 22 items. Though not a diagnostic tool, higher scores indicate a higher level of distress related to the traumatic event, with a cutoff score of 33 used to indicate further clinical evaluation and the scores were grouped as: normal/minimal:0-23, mild psychological impact: 24-32, moderate psychological impact (PTSD of clinical concern):33-36, and severe psychological impact (Probable PTSD):37-88.

Ethical approval

Ethical approval was obtained from the Research Ethics Committee of the College of Medicine, Hawler Medical University, and verbal informed consent was secured from all participants after explaining the aim and objectives of the study using simple, non-technical language to ensure full understanding and avoid confusions caused by academic or clinical jargons. Each woman was informed that participation was entirely voluntary, and that she had the right to decline to participate or to withdraw from the study at any point without any consequences. It was also made clear that their responses would remain strictly confidential, with no names or personally identifiable information recorded. All data were collected anonymously and used solely for the purpose of this research. A 12% non-response rate was anticipated; however, oversampling was conducted,

where additional participants were interviewed to compensate for the refusal and to maintain a total sample size of 600.

Statistical Analysis

Data analysis was performed using Software Package of Social Science (SPSS) version 26, with Pearson's Chi-square test and Fisher's Exact test applied to explore associations between PTSD and selected demographic, socioeconomic and contextual conditions among Yazidi women directly and indirectly affected by the 2014 ISIS attacks in Sinjar. PTSD served as the primary outcome variable, assessed through validated clinical criteria. Independent variables included trauma exposure characteristics (e.g., captivity, violence, displacement), sociodemographic factors (e.g., age, marital status, education, employment), and contextual conditions (displacement status, access to mental health care, and social support). The analysis aimed to identify factors significantly associated with PTSD symptom severity and diagnostic thresholds. Additionally, logistic regression analysis was used to identify independent predictors of PTSD severity, with odds ratios (OR) and 95% Confidence Intervals (CI) reported for each covariate. The primary outcome variable for the binary logistic regression analysis was the presence of moderate to severe PTSD symptoms,

assessed separately for trauma related to ISIS events (IES-R-A) and for trauma unrelated to ISIS (IES-R-B). The predictors included in both models were selected based on their prior statistical significance in Pearson's Chi-square test and Fisher's Exact tests. A P-value of <0.05 was considered statistically significant.

Results

Prevalence of PTSD

Among the 600 participants, and based on the IES-R-A scale—which measures trauma directly associated with ISIS-related events—73.3% exhibited severe

PTSD symptomatology, indicating a substantial psychological burden within the study cohort. A significantly higher proportion of women residing in the Shariya IDP Camp reported severe PTSD symptoms (88.7%) compared to their counterparts in the Shariya Complex (58.0%) ($P < 0.001$). The IES-R-B scale, assessing PTSD symptoms unrelated to ISIS trauma demonstrated a comparable but attenuated pattern, with severe symptom prevalence at 72.3% among camp residents and 54.0% within the Shariya Complex group, as shown in Table 1.

Table 1. Prevalence and severity of PTSD among Yazidi women by group (Shariya IDP Camp vs. Shariya Complex)

PTSD Severity (IES-R- results)	Comparison Groups			P-value*
	Shariya IDP Camp No. (%)	Shariya Complex No. (%)	Total No. (%)	
PTSD Severity (IES-R-A related to ISIS events)				<0.001
Normal/Minimal Impact	4 (1.3)	56 (18.7)	60 (10.0)	
Mild Psychological Impact	21 (7.0)	43 (14.3)	64 (10.7)	
Moderate Psychological Impact (PTSD of clinical concern)	9 (3.0)	27 (9.0)	36 (6.0)	
Severe Psychological Impact (Probable PTSD)	266 (88.7)	174 (58.0)	440 (73.3)	
PTSD Severity (IES-R-B not related to ISIS events)				<0.001
Normal/Minimal Impact	35 (11.7)	55 (18.3)	90 (15.0)	
Mild Psychological Impact	30 (10.0)	48 (16.0)	78 (13.0)	
Moderate Psychological Impact (PTSD of clinical concern)	18 (6.0)	35 (11.7)	53 (8.8)	
Severe Psychological Impact (Probable PTSD)	217 (72.3)	162 (54.0)	379 (63.2)	
Total	300 (100.0)	300 (100.0)	600 (100.0)	

*Calculated using the Pearson Chi-Square test

Factors associated with PTSD

Distribution of PTSD severity by sociodemographic characteristics

The majority of participants were young adults (59.7% aged 20–29) and predominantly unmarried (54.7%). Among the sociodemographic variables assessed, marital status was significantly associated with PTSD severity in the IES-R-A model ($P = 0.015$), with widowed and divorced women exhibiting the highest proportions of severe PTSD symptoms. In the IES-R-B model, number of children was significantly associated with PTSD ($P = 0.005$), with severity increasing markedly with parity and peaking at 93.0% among women with seven or more children. In both models, educational attainment and current housing status were significantly associated with PTSD severity. Women with the lowest educational levels—particularly those who were illiterate—showed significantly higher rates of moderate to severe PTSD symptoms related to both ISIS-related trauma ($P < 0.001$) and non-ISIS trauma ($P < 0.001$). Similarly, participants residing in tents or temporary shelters experienced significantly greater PTSD severity compared to those living in owned or rented houses ($P < 0.001$ for IES-R-A; $P = 0.001$ for IES-R-B). A detailed breakdown of PTSD severity across sociodemographic variables is provided in Table 2.

PTSD severity by trauma and conflict-related experiences

Table 3 presents a cross-tabulation of PTSD symptoms severity stratified by displacement due to ISIS events along with duration of displacement for those who were displaced. A statistically significant association was observed between displacement and PTSD severity ($P < 0.001$). The table also explores the relationship between PTSD severity, captivity experience and exposure to physical and sexual violence during the ISIS conflict. Among women who reported being exposed to either physical or sexual violence, 100% exhibited moderate to severe PTSD symptoms. Among those who had not experienced either form of violence, 76.9% still met the threshold for moderate/severe PTSD, while 23.1% were classified as having normal or mild symptoms. The association between exposure to both types of violence and PTSD severity was statistically significant ($P < 0.001$).

Table 2. Distribution of PTSD severity related to ISIS trauma (IES-R-A) and unrelated to ISIS trauma (IES-R-B) by sociodemographic characteristics of Yazidi women

	Sample Distribution	PTSD Severity (IES-R-A related to ISIS events)		PTSD Severity (IES-R-B unrelated to ISIS events)			
		Normal/ Mild	Moderate/ severe	Normal/ Mild	Moderate/ severe		
	No. (%)	No. (%)	No. (%)	No. (%)	No. (%)	P-value* IES- R-A	P-value* IES-R-B
Age (years)						0.083	0.106
< 20	2 (0.3)	0 (0.0)	2 (100.0)	0 (0.0)	2 (100.0)		
20–29	358 (59.7)	84 (23.5)	274 (76.5)	112 (31.3)	246 (68.7)		
30–39	114 (19.0)	25 (21.9)	89 (78.1)	30 (26.3)	89 (73.3)		
40–49	73 (12.2)	9 (12.3)	64 (87.7)	18 (24.7)	55 (75.3)		
≥ 50	53 (8.8)	6 (11.3)	47 (88.7)	8 (15.1)	45 (84.9)		
Marital Status						0.015**	0.132**
Single	328 (54.7)	81 (24.7)	247 (75.3)	95 (29.0)	233 (71.0)		
Married	234 (39.0)	41 (17.5)	193 (82.5)	65 (27.8)	169 (72.2)		
Widowed	33 (5.5)	2 (6.1)	31 (93.9)	5 (15.2)	28 (84.8)		
Divorced	5 (0.8)	0 (0.0)	5 (100.0)	3 (60.0)	2 (40.0)		
Number of Children (N=271)						0.171	0.005
0	29 (10.7)	6 (20.7)	23 (79.3)	10 (34.5.)	19 (65.5)		
1	29 (10.7)	8 (27.6)	21 (72.4)	13 (44.8)	16 (55.2)		
2-3	89 (32.8)	15 (16.9)	74 (83.1)	26 (29.3)	63 (70.8)		
4-6	81(29.9)	9 (11.1)	72 (88.9)	20 (24.7)	61 (75.3)		
≥ 7	43 (15.9)	4 (9.3)	39 (90.7)	3 (7.0)	40 (93.0)		
Number of Siblings						0.962	0.523
< 3	42 (7.0)	10 (23.8)	32 (76.2)	11 (26.2)	31 (73.8)		
3-5	235 (39.2)	48 (20.4)	187 (79.6)	59 (25.2)	176 (74.9)		
6-8	218 (36.3)	45 (20.6)	173 (79.4)	64 (29.4)	154 (70.6)		
≥ 9	105 (17.5)	21 (20)	83 (80)	34 (32.4)	71 (67.6)		

Employment status						0.079	0.670
Employed	161 (26.8)	41 (25.5)	120 (74.5)	54 (33.5)	107 (66.5)		
Unemployed	439 (73.2)	83 (18.9)	356 (81.1)	114 (26.0)	352 (74.0)		
Highest Level of Education Completed						<0.001	<0.001
Illiterate	144 (24.0)	13 (9.0)	131 (91.0)	29 (20.1)	115 (79.9)		
Informally educated	27 (4.5)	6 (22.2)	21 (77.8)	1 (3.70)	26 (96.3)		
Primary	80 (13.3)	11 (13.8)	69 (83.3)	22 (27.5)	58 (72.5)		
Secondary	109 (18.2)	20 (18.3)	89 (81.7)	31 (28.4)	78 (71.6)		
Technical	36 (6.0)	10 (27.8)	26 (72.2)	14 (38.9)	22 (61.1)		
Undergraduate	200 (33.3)	63 (31.5)	137 (68.5)	67 (33.5)	113 (66.5)		
Postgraduate	4 (0.7)	1 (25.0)	3 (75.0)	4 (100.0)	0 (0.0)		
Current residence						<0.001	0.001
Owned/ rented house	300 (50.0)	99 (33.0)	201 (67.0)	103 (34.0)	197 (65.7)		
Tent/ temporary shelter	300 (50.0)	25 (8.3)	275 (91.7)	65 (21.7)	235 (78.3)		
Total	600 (100.0)	124 (20.7)	476 (79.3)	168 (28.0)	432 (72.0)		

*Calculated using the Pearson Chi-Square test

** Calculated using Fisher's Exact test

Table 3. PTSD severity by displacement, duration and exposure to ISIS-related trauma

PTSD (IES-R-A result related to ISIS event)			
	Normal/Mild	Moderate/Severe	Total
	No. (%)	No. (%)	No. (%)
PTSD (IES-R-A result related to ISIS event)			
Displacement due to ISIS events			P-value*
Yes	29 (8.3)	320 (91.7)	349 (100.0)
No	95 (37.8)	156 (62.2)	251 (100.0)
Total	124 (20.0)	476 (79.3)	600 (100.0)
Duration of displacement (months) N=349			
Short-term	4 (8.0)	46 (92.0)	50 (100.0)
Medium-term	0 (0.0)	1(100.0)	1(100.0)
Protracted	25 (8.4)	273 (91.6)	298 (100.0)
Total	29 (8.3)	320 (91.7)	349 (100.0)
ISIS Captivity Experience N=64			
Yes	0 (0.0)	64 (100.0)	64 (100.0)
No	124 (23.1)	412 (76.9)	536 (100.0)
Victim of Physical Violence			
Yes	0 (0.0)	64 (100.0)	64 (100.0)
No	124 (23.1)	412 (76.9)	536 (100.0)
Victim of Sexual Violence			
Yes	0 (0.0)	64 (100.0)	64 (100.0)
No	124 (23.1)	412 (76.9)	536 (100.0)
Total	124 (20.7)	476 (79.3)	600 (100.0)

*Calculated using the Pearson Chi-Square test.

** Calculated using Fisher's Exact test

PTSD severity by pre-ISIS mental health, family history, and psychosocial support received

As presented in Table 4, PTSD symptom severity—measured by IES-R-A (related to ISIS events) and IES-R-B (unrelated to ISIS events)—was assessed across three

factors: pre-existing mental health symptoms, family history of mental illness, and receipt of mental health or wellbeing support. None of these factors were found to be significantly associated with PTSD severity on either scale at 0.05 significance threshold.

Table 4. PTSD severity according to IES-R-A and IES-R-B in relation to pre-ISIS mental health, familyhistory, and psychosocial support received

IES-R-A (PTSD related to ISIS events)			IES-R-B (PTSD unrelated to ISIS events)			P-value IES-A*	P-value IES-B*
Normal/ Mild	Moderate/ Sever	Normal/ Mild	Moderate/ Sever	Total			
No. (%)	No. (%)	No. (%)	No. (%)	No. (%)			
Pre-ISIS mental health symptoms						0.442	0.285
Yes	4 (14.8)	23 (85.2)	10 (37.0)	17 (63.0)	27 (100.0)		
No	120 (20.9)	453 (79.1)	158 (27.6)	432 (72.4)	573 (100.0)		
Family history of mental illness						0.707	0.173
Yes	5 (17.9)	23 (82.1)	11 (39.3)	17 (60.7)	28 (100.0)		
No	119 (20.8)	453 (79.2)	157 (27.4)	415 (72.6)	572 (100.0)		
Mental health/wellbeing support received						0.237	0.406
Yes	18 (16.5)	91 (83.5)	27 (24.8)	82 (75.2)	109 (100.0)		
No	106 (21.6)	385 (78.4)	142 (28.7)	350 (71.3)	491 (100.0)		
Total	124 (20.0)	476 (79.3)	168 (28.0)	432 (72.0)	600 (100.0)		

*Calculated using the Pearson Chi-Square test

Binary logistic regression analysis

Variables that were significantly associated with PTSD at $P < 0.05$ in bivariate analyses (using the Pearson Chi-square and Fisher's exact tests) were entered into two separate binary logistic regression models. The goal was to identify factors predicting symptoms of PTSD related to ISIS trauma (IES-R-A) and those unrelated to ISIS trauma (IES-R-B).

Table 5 presents the results of the binary logistic regression analysis for IES-R-A. Displacement due to ISIS

emerged as a strong and statistically significant predictor. Women who were displaced had 6.41 times higher odds of exhibiting moderate to severe PTSD symptoms related to ISIS trauma ($P = 0.001$; 95% CI: 2.21–18.615). Educational level also showed a significant association. Compared to women with education above secondary level, those who were illiterate or had only informal education had 2.151 times greater odds of experiencing PTSD symptoms ($P = 0.020$; 95% CI: 1.126–4.112).

Table 5. SPSS output of binary logistic regression analysis between IES-R-A (PTSD related to ISIS events) and the studied covariates

	B	P-value	OR	95% C.I. for OR	
				Lower	Upper
Marital status		0.304			
Single (reference)					
Married	0.282	0.267	1.325	0.806	2.178
Divorced/widowed	1.001	0.204	2.720	0.581	12.730
Current residence					
Sharya Complex (reference)					
Sharya IDP Camp	-0.063	0.912	0.939	0.309	2.855
Educational level		0.054			
Illiterate/informal education	0.766	0.020	2.151	1.126	4.112
Primary/secondary education	0.382	0.149	1.466	0.872	2.465
Above secondary (reference)					
Displacement due to ISIS Events	1.858	0.001	6.414	2.210	18.615
Constant	0.110	0.529	1.116		

Table 6 shows the logistic regression results for IES-R-B. Out of all the covariates studied, only the number of children emerged as a significant predictor: women with seven or more

children had 4.721 times greater odds of PTSD symptoms unrelated to ISIS events compared to those with 0–2 children ($P = 0.019$; 95% CI: 1.284–17.360).

Table 6. SPSS output of binary logistic regression analysis between IES-B (PTSD not related to ISIS events) and the studied covariates

	B	P-value	OR	95% C.I. for OR	
				Lower	Upper
Current residence					
Sharya Complex (reference)					
Sharya IDP Camp	0.206	0.687	1.229	0.450	3.360
Educational level					
		0.303			
Illiterate/informal education	0.534	0.194	1.706	0.762	3.819
Primary/secondary education	0.048	0.900	1.049	0.492	2.237
Above secondary (reference)					
Displacement due to ISIS Events					
	0.413	0.409	1.511	0.567	4.026
No. of children					
		0.059			
0-2 (reference)					
3-6	0.110	0.738	1.116	0.586	2.125
7 and more	1.552	0.019	4.721	1.284	17.360
Constant					
	0.226	0.462	1.254		

Discussion

This study revealed persistently high levels of PTSD among Yazidi women, with 88.7% of the ISIS-trauma exposed group and 58.0% of the non-ISIS-trauma exposed group exhibiting severe symptoms. This reflects the long-term psychological consequences of mass violence, displacement, and captivity among Yazidi women, with an overall moderate to severe PTSD prevalence of 79.3% related to ISIS and 72.0% unrelated to ISIS events.

All women who had experienced captivity, including physical or sexual violence (n=64), showed moderate to severe PTSD (Table 3). This aligns with previous findings that 80–90% of formerly enslaved Yazidi women meet diagnostic thresholds (7-9). Notably, 88.7 % of IDP camp residents—many not directly subjected to violence—also reported severe PTSD, as did 58.0% of women in the non-exposed group ($P < 0.001$). High IES-R-B scores among both groups (72.3% and 54.0%, respectively; $P < 0.001$) as shown in Table 1, further highlight the prevalence of significant psychological distress even in the absence of direct violence exposure.

Regression analysis showed that displacement due to ISIS was strongly associated with PTSD symptoms related to ISIS (OR = 6.414, $P = 0.001$; 95% CI: 2.210–18.615) While women residing in tents or temporary shelters showed

significantly higher PTSD severity ($P < 0.001$ for IES-R-A; $P = 0.001$ for IES-R-B), logistic regression analysis showed that current place of residence (Shariya IDP Camp vs. Complex) was not significantly associated with PTSD severity in either model after adjustment. This distinction supports that trauma history, rather than geography, is a more accurate predictor of psychological outcomes. In the Yazidi case, where the violence was not only targeted but communal and identity-based, psychological wounds have likely been propagated. Therefore, elevated symptoms in non-exposed women may reflect vicarious and intergenerational trauma, consistent with literature on Holocaust survivors and other post-genocide populations (11-14), which highlights how trauma can be inherited—horizontally—across the community—and vertically—across generations. Although current residence was not identified as a significant predictor in the regression models, poor living conditions in displacement camps likely exacerbate psychological distress. Studies among Syrian refugees in Turkey have underscored the impact of prolonged displacement, overcrowding, and limited access to basic services (15). Similarly, a study of Syrian refugees residing in a camp within the Duhok Governorate reported a substantial burden of post-traumatic stress symptoms, underscoring that camp-based displacement in this region

carries a considerable mental health toll regardless of the displaced population's origin (27).

Education emerged as a consistent factor: 91% of illiterate women reported severe PTSD symptoms related to ISIS, while better-educated women had significantly lower scores. Logistic regression showed that illiterate or informally educated women had 2.151 times higher odds of PTSD related to ISIS events ($P = 0.020$) compared to those with institute-level or higher education, aligning with findings among displaced Arab populations from around the world (16).

Marital status was significantly associated with PTSD severity in the IES-R-A model ($P = 0.015$ for IES-R-A; not significant for IES-R-B, $P = 0.132$). Widowed and divorced women had notably higher proportions of severe PTSD symptoms, supporting prior literature that suggests spousal loss and marital dissolution compound vulnerability to trauma-related disorders in post-conflict settings (17).

Additionally, in the IES-R-B model, women with seven or more children had 4.721 times higher odds of PTSD symptoms unrelated to ISIS ($P = 0.019$), compared to those with 0–2 children, which may reflect compounded care giving stress and heightened economic burden in displacement settings (18).

While pre-existing mental health symptoms and family history were

reported, neither showed a significant association with PTSD severity—possibly due to the overwhelming psychological impact of the genocide itself.

Access to mental health support was not significantly associated with lower PTSD symptoms (IES-R-A: $P = 0.237$; IES-R-B: $P = 0.406$), despite slightly lower severity among non-recipients. Reported barriers included service unavailability, stigma, and lack of awareness. These findings contrast with studies showing the protective role of support among Congolese survivors (19) and underscore that targeting by location may miss the most vulnerable.

Limited impact of services may stem from cultural misalignment, stigma, and delayed access—issues documented in Iraq and Syria (20, 21) and across other trauma settings (22). Gender-sensitive, confidential, and community-rooted interventions are needed to overcome these barriers.

Persistent PTSD among Yazidi women is closely tied to structural marginalization, prolonged displacement, and the absence of justice. Unlike survivors in Cambodia (23), the Yazidi community has received limited formal recognition or accountability for the atrocities committed against them (2, 24). Addressing this requires a comprehensive, survivor-led approach integrating mental health, education, legal support, and economic inclusion.

Moreover, the unresolved fate of ~2,600 missing persons, including 1,300 abducted children (25) contributes to ambiguous loss—a factor linked to chronic PTSD and delayed recovery (26). Recovery in such contexts demands not only psychosocial care but also social and political transformation.

This study fills a critical gap by examining PTSD among Yazidi women using a large, balanced sample and a comparative design that captures both direct and vicarious trauma. The use of a validated screening tool and multivariate analysis enhances the reliability of the findings.

Among the limitations is the cross-sectional design of the study that limits causal inference and tracking of PTSD over time. Moreover, reliance on self-reported data may introduce bias, and while the IES-R is a validated tool, it remains a screening—not diagnostic—instrument.

Conclusion

Direct exposure to captivity, sexual and physical violence, current residence, marital status, number of children as well as displacement and low educational attainment, were strongly associated with increased PTSD severity. Logistic regression analysis identified displacement due to ISIS and low educational attainment as significant predictors of PTSD related to ISIS events, while the number of children

was the only significant predictor of PTSD unrelated to ISIS trauma.

Notably, even those not directly exposed to ISIS violence exhibited high levels of PTSD symptoms, pointing to the presence of vicarious or community-level trauma. Mental health support had limited impact, likely due to stigma, cultural barriers and poor access.

To address severe PTSD among Yazidi women, sustainable recovery must address the structural, social, and political dimensions underpinning psychological distress. Trauma-informed, culturally sensitive mental health services—preferably female-led—should be embedded in local health and education systems. Stigma-reduction campaigns and trauma training for frontline workers are essential, particularly in rural and conservative areas. Research must include longitudinal studies and survivor input to understand PTSD trajectories and assess interventions. Justice efforts should prioritize legal accountability, genocide recognition, and survivor testimony to support collective healing.

Competing interest

The authors declare that they have no competing interests.

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