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Psychological scars of genocide: a systematic review of post-traumatic outcomes in Kurdish Anfal survivors

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Abstract

The Anfal genocide, including the infamous Halabja chemical attack, has imprinted deep scars on the Kurdish community in Iraq that lasted for decades. Despite significant historical documentation, the enduring psychological impact on survivors is less examined. This systematic review synthesizes existing research to address this gap. Adhering to the PRISMA guidelines, this review systematically searched databases for scholarly articles examining the mental health of Kurdish survivors following the 1988 Anfal genocide, with a focus on PTSD, depression, and anxiety. Of the initial 201 articles identified, seven met the inclusion criteria. These studies were subjected to a thorough data extraction and qualitative synthesis, and their quality was appraised using the Mixed Methods Appraisal Tool (MMAT). The selected studies encompassed a combined sample of 760 participants, ranging in age from 7 to 92 years. The findings revealed high prevalence rates of PTSD, particularly in children, with a prevalence rate of 87%. In adults, PTSD and depression prevalence rates in unselected samples were estimated at 86.2% and 49%, respectively. Qualitative findings from survivors reveal a complex interplay of depression, intrusive memories, and societal isolation, compounded by poverty and discrimination, with health concerns like respiratory and ocular problems further exacerbating psychological distress. However, non-representative samples and absence of control groups limit result generalization. The literature reviewed indicates substantial psychological distress among the Anfal genocide survivors, underscoring an urgent need for targeted mental health interventions. Future research needs representative samples and validated tools for precise prevalence assessment and comprehensive impact understanding.

Keywords Anfal genocide · Kurdish survivors · PTSD · Depression · Mental Health interventions

Introduction

Psychological trauma and the global perspective on genocides

Throughout history, atrocities like genocides and chemical warfare have deeply harmed survivors' mental well-being. Although some studies have documented the lasting impact of mass atrocities in survivors of the Holocaust (Horáčková et al., 2020; Harel et al., 1988), the Rwandan genocide (De Jong et al., 2001; Roth et al., 2014), and the genocide against the Yazidi people (Ibrahim et al., 2018; Ahmed & Heun, 2023), research exploring the psychological effects of mass atrocities is still limited, possibly due to the complex nature of mental health and its subtler effects compared to physical harm (Silove et al., 2008; Ng & Norwood, 2000). Acknowledging the historical magnitude of these events, it is imperative to focus on their lasting psychological ramifications. While this review incorporates necessary historical context to understand the extent of the Anfal genocide, the primary objective is to synthesize current research findings on the psychological impact this historical atrocity continues to have on Kurdish survivors.

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Kurdish populations in Iraq during the Anfal campaign

The Kurdish population in Iraq suffered severe human rights violations during the Anfal genocide, also referred to as the Al-Anfal Campaign, from February to September 1988 under Saddam Hussein's regime. This campaign unfolded in eight distinct phases, with each phase witnessing major military operations against the Kurds (Shorsh, 2007). Among these operations, the chemical attack on Halabja stands out as the most infamous, causing an estimated 5,000 deaths and injuring over 10,000 in just a few hours (Black et al., 1994). Overall, between 50,000 and 100,000 Kurdish individuals are believed to have been killed during the Anfal campaign (Hiltermann, 2007). This campaign led to the destruction of around 4,000 Kurdish villages and the displacement of up to a million individuals (Human Rights Watch, 1993). To date, some of those affected remain unaccounted for, casting persistent uncertainty over their families (Montgomery & Hennerbichler, 2020).

Such catastrophic events are likely to have profound and lasting psychological effects on the survivors. Experiences of severe trauma and loss and combined with the uprooting from familiar environments, contribute to a potentially complex and challenging pattern of mental health conditions (Al Shawi & Hassen, 2022). Furthermore, the psychological outcomes of such widespread and systemic violence and disruption are possibly exacerbated by ongoing sociopolitical difficulties, such as protracted displacement and persistent insecurity (Porter & Haslam, 2005). These additional stressors and adversities can compound the psychological toll of the original traumas and contribute to a range of negative mental health outcomes (Mahmood et al., 2022b; Mahmood, 2023), potentially resembling complex PTSD, a condition often associated with prolonged and repeated trauma (Cloitre et al., 2009).

The need for a systematic review

Research on genocide survivors, including those from the Yazidi community (Denkinger et al., 2021; Ahmed & Heun, 2023), Rohingya refugees (Hossain et al., 2021), and Rwandan genocide (Munyandamutsa et al., 2012; Rieder & Elbert, 2013; Rugema et al., 2015; Schaal et al., 2009), consistently underscore the profound and persistent mental health challenges faced by these groups. Post-conflict studies on genocide survivors in Iraq indicate that survivors present with high rates of post-traumatic stress disorder (PTSD), depression, and anxiety disorders (Al Shawi & Hassen, 2022). Yet, only a few studies have specifically focused on the mental health of Kurdish Anfal survivors. A systematic review is essential to thoroughly examine the limited data available, assess its quality, pinpoint existing knowledge gaps, and lay a substantial groundwork for future scholarly inquiries, policy development, and the design of therapeutic measures. The limited research available impedes the development of specialized mental health programs and highlights the prevailing inequities in healthcare services (Miller & Rasmussen, 2010).

Objective, scope, and prospective impact of the current review

Using the PRISMA guidelines from Page et al. (2021), the current review aims to critically analyze and synthesize empirical studies on the psychological outcomes among Kurdish survivors of the Anfal genocide, documenting the observed prevalence of conditions such as PTSD, depression, and anxiety. It critically evaluates the methodological approaches of the included studies, highlighting the limitations due to non-representative sampling and underscoring the necessity for methodologically sound future research to determine accurate prevalence rates and establish a clearer understanding of the genocide's psychosocial consequences. Through meticulous examination of existing literature, the review seeks to offer a comprehensive understanding of the current state of knowledge, emphasizing the unique challenges faced by these survivors. The review aims to delineate the observed mental health conditions and inform the need for methodologically robust research.

Method

Study Design

This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guideline (Page et al., 2021). The systematic review was conducted following the PRISMA guidelines, ensuring a comprehensive and reproducible approach to identifying, screening, and synthesizing the relevant literature on the psychological aftermath of the Anfal genocide among survivors. The research questions of this systematic review are designed to synthesize the existing findings on mental health conditions in survivors of the Anfal Genocide. The scope includes assessing the reported prevalence rates and outcomes of these conditions, while acknowledging the constraints posed by non-representative sampling and the methodologies of the included studies.

Search strategy

A comprehensive and exhaustive search was performed across three major electronic databases: PubMed, Scopus, and Google Scholar. Our search strategy employed a combination of specific keywords, Medical Subject Headings (MeSH) terms, and Boolean operators for the identification of pertinent articles. The terms used for search included: "Anfal", "Genocide", "Halabja", "Chemical attacks", "Kurdish", "Kurdistan", "Iraq", "trauma", "mental health", "PTSD", "Depression", "Anxiety", "Violence", "survivors", "victims". The search was restricted to English language articles published from 1988 up until September 20, 2023. In addition, the reference lists of included articles were also hand-searched for additional relevant articles. To ensure a comprehensive review, the scope of our search strategy was both broad and precise. Our literature search and selection criteria were meticulously designed to capture the most contemporary and relevant research, with an emphasis on findings that directly address the post-traumatic outcomes experienced by the survivors.

Eligibility criteria

Inclusion criteria

Studies qualified for inclusion in the systematic review if they met the following conditions: (1) were conducted on Kurdish populations who were exposed to the Anfal genocide campaign from February to September 1988; (2) evaluated mental health conditions such as PTSD, depression, anxiety, and related disorders in individuals affected by Anfal campaign; and (3) were peer-reviewed, English language studies published between 1988 and September 2023.

Exclusion criteria

Studies were excluded if they: (1) focused on non-Kurdish populations; (2) did not assess mental health outcomes linked to the Anfal genocide and the Halabja chemical attack; (3) solely investigated physical health outcomes; or (4) were not peer-reviewed and published in English.

Data extraction and synthesis

Data extraction was conducted independently by two reviewers (DRA & HNM) using a standardized form. Discrepancies between reviewers were infrequent and resolved through discussion and consensus, ensuring a reliable synthesis of the data. The extracted information included study characteristics (author, publication year), participant demographics, evaluated mental health outcomes, measurement instruments, and key findings. The included studies' findings were qualitatively synthesized, summarizing the main themes and trends related to trauma and mental health in the Kurdish population affected by the Anfal genocide and the Halabja chemical attack.

Quality assessment

The quality of the included studies was assessed using the Mixed Methods Appraisal Tool (MMAT), designed for appraising the methodological quality of qualitative, quantitative, and mixed methods studies (Hong et al., 2019). Each study was evaluated based on five criteria: clear research question/objectives, adequate data collection, contextual consideration in data interpretation, appropriateness of data analysis, and minimization of bias. Each criterion was scored as either 'Yes' (1 point) or 'No/Can't tell' (0 points), for a maximum possible MMAT score of 5 (indicating the highest quality) per study. The quality assessment was conducted independently by two researchers (HNM and DRA). In cases of initial disagreement on MMAT scores, the researchers engaged in a structured discussion to reconcile differences. Following this, the average of their reconciled scores was used to calculate the final score for each study, as presented in Table 1. While assessing methodological quality using MMAT, studies were also evaluated for the extent to which they addressed instrument validity, especially concerning cultural sensitivity and diagnostic utility within the Kurdish population. This process ensured a consistent and accurate evaluation of the studies, reflected by the calculated interrater reliability. The interrater reliability, as measured by Cohen's Kappa, was 0.78, indicating a substantial level of agreement between the two researchers.

Results

Selection process

The search across the three databases yielded a total of 201 articles. After removing 47 duplicates, 154 unique articles remained for screening. During the screening process, we excluded 115 articles were excluded based on their abstracts as they did not align with our research question. This left us with 39 articles for potential inclusion. Thus, the remaining articles underwent a comprehensive full-text assessment to determine their eligibility. Out of these, we excluded 32 articles based on our predefined eligibility criteria: nine were not peer-reviewed, ten focused on physical health outcomes, and thirteen were narrative stories. Consequently, we included seven articles in the final systematic review, see Fig. 1.

Table 1 Quality assessment of included studies using Mixed Methods Appraisal Tool (MMAT)

N	Studies	Clear Objectives? [a]	Adequate Data Collection? [a]	Context Considered in Interpretation? [a]	Appropriate Data Analysis? [a]	Bias Minimized? [a]	Total MMAT Score [b]	Average Score by Researchers [c]
1.	Ahmad et al., 2000	1 (1)	1 (0)	1 (1)	0 (0)	1 (1)	4 (3)	3.5
2.	Dworkin et al., 2008	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	5 (5)	5
3.	Taha & Abdurrahman, 2020	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	5 (5)	5
4.	Moradi et al., 2022	1 (1)	1 (1)	1 (1)	1 (0)	0 (1)	4 (4)	4
5.	Neldner et al., 2023	1 (1)	1 (1)	1 (1)	1 (1)	1 (1)	5 (5)	5
6.	Bolton et al., 2013	1 (1)	0 (0)	1 (1)	1 (0)	0 (1)	3 (3)	3
7.	Moradi et al., 2019	1 (1)	1 (1)	0 (1)	1 (1)	1 (0)	4 (4)	4

[a] A score of 1 indicates the criterion was met, while 0 indicates the criterion was not met or is unclear. The scores outside the parentheses correspond to the Researcher 1, while scores inside the parentheses correspond to Researcher 2. [b] The total MMAT score can range from 0 (lowest quality) to 5 (highest quality) [c]The presented score is an average of the scores from both researchers

Study designs

Four studies, conducted by Ahmad et al. (2000), Dworkin et al. (2008), Taha and Abdurrahman (2020), and Neldner et al. (2023), employed a cross-sectional design. Moradi et al. (2022) utilized a case-control approach. Bolton et al. (2013) adopted a qualitative methodology, specifically using a grounded theory approach, and Moradi et al. (2019) applied a qualitative design with semi-structured interviews based on the WHO's definition of general health and quality of life (QOL) domains. Detailed studies characteristics can be found in Table 2.

Participants

The studies encompassed a total of 760 participants, comprising 423 males and 337 females. Participant's age ranged from 7 to 92 years. The smallest study sample had 16 participants (Moradi et al., 2019), while the largest included 291 participants (Dworkin et al., 2008). Table 2 shows more details about the participants of all included studies.

Diagnostic measurements

Different instruments were utilized across the studies to assess mental health issues. These tools included the Harvard Trauma Questionnaire (HTQ), Posttraumatic Stress Disorder Reaction Index (PTSD-RI), PTSD Symptom Checklist-Civilian (PTSS-C), Montgomery-Åsberg Depression Rating Scale-Self Report (MADRS-S), RAND Short Form 36 (SF-36), War and Adversity Exposure Checklist (WAEC), PTSD Checklist for DSM-5 (PCL-5), Derogatis Hopkins Symptom Checklist-25 (D-HSCL-25), and Social Acknowledgment Scale (SAS). Bolton et al. (2013) utilized free list interviews, while Moradi et al. (2019) implemented a semi-structured interview guide based on the WHO's definition of general health and quality of life (QOL) domains.

Results of quantitative studies

Ahmad et al. (2000): Focused on the PTSD impact on children affected by the military operation "Anfal" in Iraqi Kurdistan. A prevalence rate of 87% was observed among children. It's noteworthy that female children (95%) exhibited a higher prevalence rate than male children (79%). Interestingly, among the children, those aged between 7 and 12 years reported a higher prevalence (94%) compared to their older counterparts aged 13–17 years (80%). Caregivers, particularly female caregivers (96%), exhibited a higher PTSD prevalence than their male counterparts (24%), with those aged 18–41 years showing a 68% prevalence compared to 52% in the 42–91 age group.

Dworkin et al. (2008) assessed the psychosocial effects of the Halabja chemical attack, finding variations in PTS scores across demographics, with women exhibiting a mean PTS score of 1.97 and men 1.83. Age influenced PTS scores, with the 46–55 age group having the highest mean score of 2.04. Further, the study by Taha and Abdurrahman (2020) surveyed Anfal survivors, revealing a PTSD prevalence of 86.2%. Notably, females reported higher PTSD symptom scores (mean = 3.4) than males (mean = 2.9). The analysis indicated that age did not significantly predict PTSD diagnosis.

Moradi et al. (2022) explored the long-term depressive symptoms in survivors who were exposed to sulfur mustard (SM) during the Halabja chemical attack, observed an overall mean score of 22.9 within the exposed group, indicative of moderate depression. While the study did not find significant gender differences in depression scores, it did report that female survivors had a slightly higher overall mean MADRS-S score (24.3) compared to male survivors (21.4).

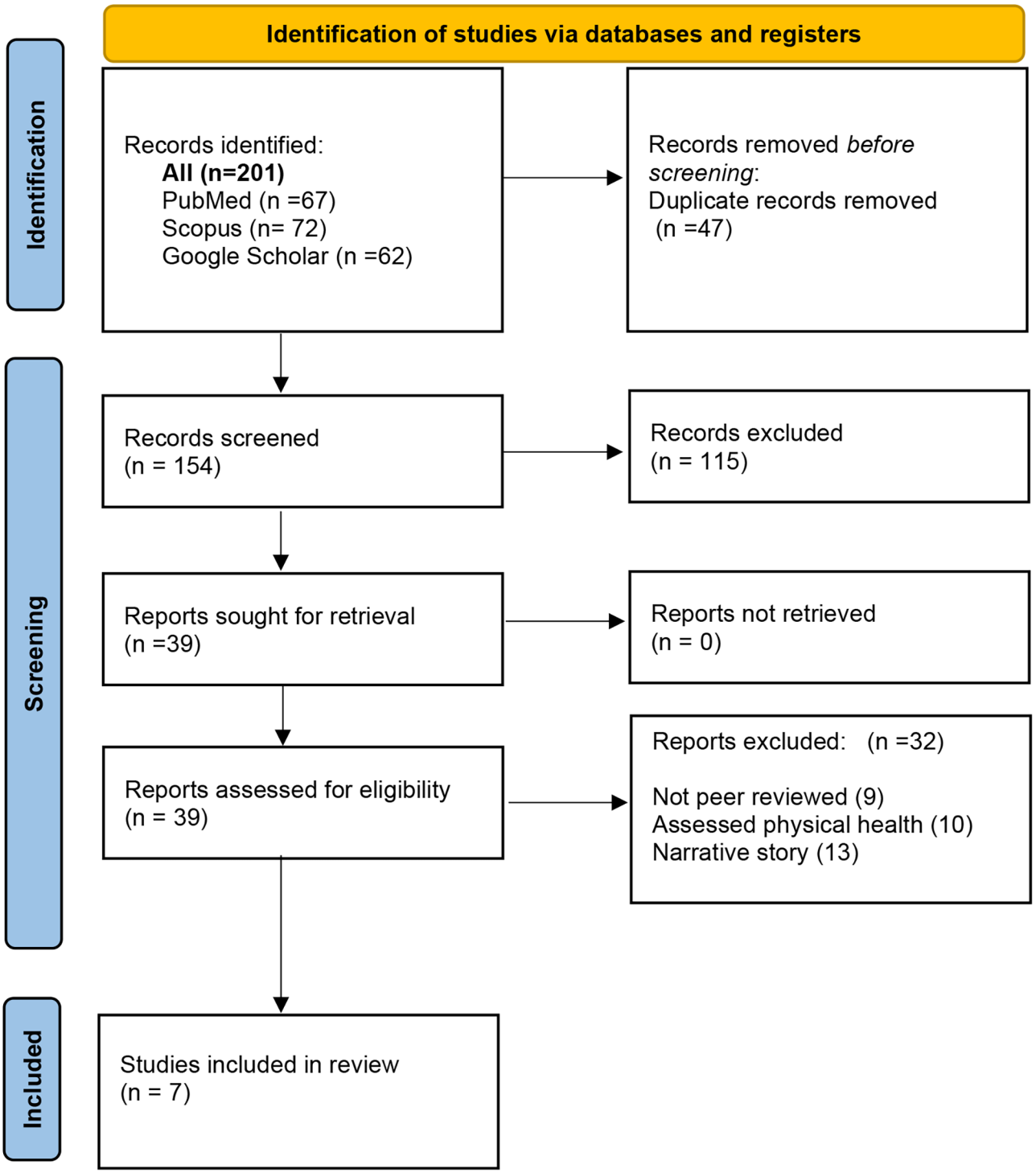

Fig. 1 PRISMA flow diagram

Using culturally validated instruments, Neldner et al. (2023) conducted a comprehensive study on survivors of the Halabja chemical attack in 1988, documenting the traumatic impact and associated mental health outcomes. On average, participants reported experiencing 5.07 types of traumatic events related to the genocide. The study found that 51.7% of the survivors met the criteria for PTSD and 49.0% for depression. For a more detailed and structured elucidation of all quantitative revelations, see Table 3.

Table 2 Characteristics of included studies

Author/ Year publication	Study design	Study population	Sample size	Gender	Age range of participation	Participants' age range during the ANFAL operation in 1988	The diagnostic criteria and instrument
Ahmad et al., 2000	Cross-sectional	Survivors of military operation Anfal	*N* = 90 (45 children and 45 caregivers)	Male= 46 Female = 44	7–91	2–86	PTSD-RI & PTSS-C & HTQ
Dworkin et al., 2008	Cross-sectional	Survivors of Halabja chemical attack	*N* = 291	Male = 190 Female = 101	26–56+	8–26+	HTQ
Taha & Abdurrahman, 2020	Cross-sectional	Survivors of military operation Anfal	*N* = 130	Male = 67 Female = 63	37–70	13–46	HTQ
Moradi et al., 2022	Case-control study	Survivors of Halabja chemical attack	*N* = 48	Male = 25 Female = 23	32–67	2–37	MADRS-S & RAND SF-36
Neldner et al., 2023	Cross-sectional	Survivors of Halabja chemical attack	*N* = 143	Male = 57 Female = 86	36–92	5–61	WAEC, PCL-5, D-HSCL-25, SAS
Bolton et al., 2013	Qualitative/ grounded theory approach	Survivors of military operation Anfal	*N* = 42	Male = 32 Female = 10	35–60	10–35	Free list interviews
Moradi et al., 2019	Qualitative study using semi-structured interviews	Survivors of Halabja chemical attack	*N* = 16	Male = 6 Female = 10	35–67	6–39	Semi-structured interview guide based on the WHO's definition of general health and QOL

Results of qualitative studies

Bolton et al. (2013) examined the mental health and psychosocial issues of Kurdish survivors of torture and genocide using grounded theory. Key themes identified include ongoing trauma-related issues, current life challenges, and social perception/treatment issues. It highlighted that survivors suffer from problems such as depression, intrusive memories, isolation, and societal treatment, and these issues are compounded by current stressors like poverty and discrimination.

The study by Moradi et al. (2019) explores the major health concerns of civilians in Halabja who survived SM exposure with long-term respiratory symptoms. The qualitative study reveals a significant deterioration in physical and psychological health due to SM exposure. Predominant issues include respiratory symptoms, fatigue, sleeping disorders, ocular problems, depressive symptoms, anxiety, and limitations in daily life activities. Access to healthcare was notably poor, with a lack of financial resources to obtain treatment.

Quality assessment of included studies

The methodological quality of the included studies, assessed using MMAT, varied, with total scores ranging from 3 to 5 out of a maximum possible score of 5. The mean quality score among all studies was 4.2. This average score indicates the overall methodological robustness of the studies considered in this review, while the range illustrates the variability in quality. The MMAT scores for each study are summarized in Table 1. Although the MMAT scores denote a level of methodological quality, they are insufficient to evaluate crucial methodological criteria, in particular instrument validity in the specific context, as well as representativeness' of the sample. Although the studies generally reported findings from samples that were not help-seeking and seemingly unselected, none of the studies could ascertain representativeness of their sample.

Discussion

The primary objective of this systematic review was to explore potential associations between the Anfal genocide and mental health outcomes among Kurdish survivors of the Anfal campaign of 1988. Seven pertinent studies were scrutinized, providing both quantitative and qualitative insights. This section delves into the findings and contrasts them with other seminal works in the field.

One of the most striking findings from this review is the prevalence of psychopathological outcomes. A dominant theme in the quantitative studies is the strikingly high prevalence of PTSD and related disorders among the populations

Table 3 Detailed psychopathological outcomes across quantitative studies

Author/ Year publication	Primary Mental related- disorder outcome	Overall Prevalence/ Mean Score (N)	Prevalence/ Mean Score of Male and Female (N)	Prevalence/ Mean Score of Age groups	Key Observations/Additional outcome
Ahmad et al., 2000	PTSD (children)	87% ($n=45$)	Male ($n=24$) = 79% Female ($n=21$) = 95%	7–12 ($n=22$) = 94% 13–17 ($n=23$) = 80%	**PTSD Prevalence**: Children: Higher than caregivers (with older children more likely).Caregivers: Women > Men. **PTSD Symptom Correlation**: Strong between children and caregivers.Significant between PTSD-specific symptom scores and trauma scores in both groups. **Gender & PTSD Reporting**:Children: No gender difference.Caregivers: Women more affected. **Most Traumatic Experiences**: Children: Violence against significant persons (92%).Adults: Personal violence exposure (87%) **Childhood PTSD Predictors**: Duration of captivity and child trauma score.
	PTSD (caregivers)	60% ($n=45$)	Male ($n=22$) = 24% Female ($n=23$) = 96%	18–41 ($n=22$) = 68% 42–91 ($n=23$) = 52%	
Dworkin et al., 2008	PTS	Mean ($n=291$) = 1.9	Male ($n=190$) = 1.83 Female ($n=101$) = 1.97	26–35 years: 1.87 36–45 years: 1.77 46–55 years: 2.04 56 + years: 1.92	**PTS & SPF Prevalence**: High prevalence 18 years post Halabja chemical attack. **Demographic Impact on PTS & SPF**: Women recorded Higher PTS and SPF scores than men. Age: Older individuals show elevated PTS and SPF scores. **Trauma Exposure's Effect on PTS & SPF**: Direct Personal Trauma: Increases in both PTS and SPF scores. Direct Shocking Event: Elevated PTS and SPF scores. Trauma to a Loved One: Boosted PTS and SPF scores. **Cumulative Trauma Impact**: Multiple trauma exposures lead to additive increase in PTS scores.
Taha & Abdurrahman, 2020	PTSD	86.2% ($n=130$)	Male mean ($n=52$) = 2.9 Female mean ($n=60$) = 3.4	age < 40 year. ($n=10$) = 86.2% age 40–64 year. ($n=100$) = 86.2% age > = 65 year.($n=10$) = 86.2%	**Common Traumas**: Deprivation: No shelter, food, water. **Health & Property**: Lack of medical care, property violations. Violent Encounters: Shelling, torture, chemical attacks. (Majority faced over 10 traumatic events.) **Most Hurtful Event**: Witnessing murder (39.3%). **Factors Impacting PTSD: Age**: Not significant. **Gender**: Females at higher risk (OR: 6.27).
Moradi et al., 2022	Depression	Mean of SM-exposed survivors ($n=18$) = 22.9 Mean of non SM-exposed survivors ($n=30$) = 9.1	Male Mean of SM-exposed Survivors ($n=9$): Depression Score = 21.4 Female Mean of SM-exposed Survivors ($n=9$): Depression -S Score = 24.3	Not analysed	**Mental Health**: The depression level of SM-exposed individuals was moderate (M = 22.9) that linked with suicidal ideation and sleep disturbances. **Quality of Life (QoL)**: Reduced in SM-exposed survivors even decades post-exposure. **Brain Changes**: SM exposure correlates with structural and functional alterations. **Sleep Issues**: Associated with reduced serum melatonin levels in SM-exposed individuals.
Neldner et al., 2023	PTSD Depression	PTSD ($n=143$) = 51.7% Depression ($n=143$) = 49%	Not analysed	Not analysed	**Trauma Exposure**: Survivors experienced an average of 5.07 traumatic events due to the genocide and an average of 10.34 traumatic events throughout their lives. **Worst Event**: For 93% of survivors, the chemical attack was their worst-ever traumatic experience. **Psychopathology Connection**: Genocide-related trauma's connection with psychopathology was partially mediated by perceived social acknowledgment.

under study. For instance, Ahmad et al. (2000) identified a PTSD prevalence of 87% among children impacted by the Anfal military operation. This prevalence is consistent with findings from other studies on war-impacted children (Derluyn et al., 2004; Betancourt et al., 2013). The disparities evident across age groups and genders are consistent with previous research that suggests certain demographics might be more predisposed to PTSD (Tolin & Foa, 2006). While discussing the prevalence rates, it is crucial to remember that these are derived from non-representative studies.

Consequently, these rates should not be generalized to the entire population of Kurdish survivors of the Anfal Genocide. The findings highlight the need for more comprehensive, representative research to accurately determine the prevalence of mental health conditions in this population.

Regarding depression, Neldner et al. (2023) conducted a cross-sectional study and found that almost half of their study participants were diagnosed with depression. On the other hand, Moradi et al. (2022) utilized a case-control approach, highlighting the significant psychological effects on those exposed to chemical warfare. Their case-control research revealed that survivors exposed to SM had notably high levels of depression, a finding in line with other studies on the mental health impacts of chemical warfare (Ghaedi et al., 2012). Moradi et al. (2022) further found a connection between depression, thoughts of suicide, and sleep problems. While the case-control design provides valuable comparative data, it's important to note that additional factors in the survivors' current life situations may also contribute to the high depression scores reported, a nuance that is supported by the broader literature on trauma (Ribeiro et al., 2012).

In addition to the statistical findings, our review highlighted deeper, qualitative insights. The studies by Bolton et al. (2013) and Moradi et al. (2019) provide a closer look into the personal experiences of trauma survivors. Their stories are similar to findings from other trauma studies (Ford et al., 2015), where survivors describe ongoing memories, feelings of being rejected by society, and a deep sense of abandonment. These results emphasize the wide range of challenges survivors face. It shows that the effects of trauma are not just psychological but also influence how they are viewed in society and their overall quality of life.

Gender, age, and Trauma

The studies reviewed consistently showed significant gender differences in PTSD prevalence, with females frequently exhibiting greater vulnerability to trauma-related disorders, a finding supported by Ahmad et al. (2000) and Taha and Abdurrahman (2020), and consistent with broader research suggesting women may have an increased risk for such conditions (Olff et al., 2017; Mahmood et al., 2019, 2022a). The underlying causes could be multifaceted, encompassing biological, environmental, and societal factors. Age, while a determinant in trauma reactions, presented variable influences across studies. Some research suggests that younger individuals might display more resilience due to fewer life responsibilities and more adaptive coping mechanisms (Cherewick et al., 2016), whereas other studies indicate that the vulnerability could increase with age due to cumulative stress and decreased physiological resilience (Ogle et al., 2014). Surprisingly, Taha and Abdurrahman (2020) reported instances where the severity of the traumatic experience had a more pronounced impact than the typically expected age-related resilience, indicating that the contextual intensity of trauma can sometimes override age-related coping capacities. This observation aligns with Ditlevsen and Elklit (2010), who noted significant disparities in the lifespan distribution of PTSD symptoms, suggesting that both gender and age, alongside the nature and context of the traumatic event, are crucial determinants of PTSD occurrence.

Cumulative and enduring impact of Trauma

Taha and Abdurrahman (2020) and Neldner et al. (2023) highlighted the compounded psychological impact of enduring multiple traumatic events over time. Given the continued instability in the region, it is likely that Anfal survivors have encountered additional traumas following the genocide, which could exacerbate their psychological distress. This is consistent with patterns observed in survivors from various conflict zones (Neuner et al., 2004), where the accumulation of traumatic experiences significantly worsens psychological outcomes. Similarly, Dworkin et al. (2008) underscored that the detrimental effects of trauma are enduring and do not simply diminish over time. Long-term studies corroborate this, illustrating that the consequences of trauma can persist for many years post-event (Cooper et al., 2019; Blackmore et al., 2020; Mahmood et al., 2022b).

In light of these persistent effects, and the shared societal and healthcare ramifications, the following considerations are imperative. These findings not only highlight the enduring impact of the Anfal genocide but also point to a broader societal responsibility. The synthesis of the current literature underscores a pressing need for culturally informed mental health interventions that are sensitive to the unique experiences of Kurdish Anfal survivors. This review serves as a call to action for policymakers and healthcare providers to allocate resources and develop programs tailored to this population.

Quality of included studies

The methodological quality of the studies included in this review varied, as indicated by their MMAT scores. While many studies had clear objectives and reliable data collection methods, some encountered design issues, which were reflected in lower MMAT scores. Overall, most studies were of moderate to high quality, supporting the credibility of the review's findings. However, it is essential to contextualize the methodological robustness with the understanding that MMAT scores do not necessarily reflect the validation of assessment instruments. The lack of direct evidence on

cultural sensitivity and diagnostic reliability of these instruments within the Kurdish population suggests a need for further investigation, which is crucial for substantiating the reported prevalence rates of mental health conditions among genocide survivors.

Limitations and future directions

This systematic review has unveiled crucial insights into the mental health implications of the Anfal genocide on Kurdish communities, revealing a need for more extensive research. The existing studies—limited in number and with small cohorts—highlight a gap in high-quality research, particularly in the prevalence of conditions such as anxiety alongside PTSD and depression. Both lack of control groups from unaffected population with similar socio-historical backgrounds and the non-representativeness of the samples undermines our ability to extrapolate these findings to the broader population. Future studies should prioritize methodological rigor, using validated tools and larger, more diverse samples. Such research is essential not only for a comprehensive understanding of the genocide's impact but also for developing robust mental health interventions that can foster resilience and well-being in the face of past and ongoing adversities.

The scarcity of research on the Anfal genocide is a significant limitation, especially given the importance of quality research in top-tier journals. This gap affects our complete understanding of the genocide's impact on Kurdish mental health and questions the existing research's applicability. Future studies must address this, emphasizing methodological rigor, larger samples, and thorough peer reviews. Such commitment will strengthen the evidence base and help design appropriate mental health interventions.

Such research is essential not only for a comprehensive understanding of the genocide's impact but also for developing robust mental health interventions that can foster resilience and well-being in the face of past and ongoing adversities. Recognizing these gaps, this review serves as a clarion call for further research, more informed policy formulation, and enhanced guidance for mental health professionals. Highlighting significant mental health challenges within the Kurdish community, it aims to lay the groundwork for future scholarly efforts, policy development, and therapeutic strategies that are culturally sensitive and responsive to the needs of the survivors and their families.

Conclusion

The Kurdish Anfal genocide has inflicted lasting psychological trauma on survivors, an issue that this study has highlighted with great concern. It underscores the vital need for mental health strategies that are both culturally responsive and trauma-informed, aiming to enhance the resilience and psychological well-being of those affected. Despite shedding new light on these issues, our research is limited by the narrow range of existing studies and their inherent methodological constraints. Therefore, there is an imperative for future research to comprehensively explore the psychological impact of these events to develop effective interventions for survivors and their families. Additionally, the healing process is closely linked to the acknowledgement and memorialization of their ordeals, reinforcing the role of historical recognition in psychological recovery. In light of our findings, we advocate for a significant increase in international research collaboration and the establishment of mental health programs. These initiatives must prioritize ongoing, empathetic support, which is crucial for the long-term healing of Anfal genocide survivors.

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Data availability This article is a systematic review and synthesizes findings from previously published literature. Information on the data analyzed during the current study is available from the corresponding author on reasonable request.

Declarations

The scope of this review is confined to the examination of existing literature, and as such, it does not involve any new empirical research involving human and/or animal participants. Consequently, there was no requirement for the procurement of informed consent. This study adheres strictly to the ethical standards in academic research, ensuring the integrity and ethical compliance of the scholarly work presented.

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

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