

Review Article



Risk factors for suicide among children and adolescents in Arab countries: A systematic review and meta-analysis

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ARTICLE INFO

Keywords:

Suicide
Children
Adolescents
Risk factors
Prevalence
Arab countries
Meta-analysis

ABSTRACT

Objective: To investigate the risk factors associated with suicide among children and adolescents in Arab countries.

Study design: A systematic review and meta-analysis.

Methods: A literature search of PubMed, Scopus, Cochrane Library, and Web of Science was conducted till May 2025. Using STATA version 18, a meta-analysis of proportions was conducted to estimate pooled prevalence rates with 95 % confidence intervals (CIs), using a random-effects model.

Results: A total of 21 studies conducted across various Arab countries were included, the majority of which were cross-sectional. The most prevalent risk factors were low self-esteem (49 %), family conflict (31 %), psychiatric disorders (28 %), bullying (24 %), and psychosocial problems (24 %). The pooled prevalence of suicidal ideation and attempts was 22 % and 10 %, respectively. Self-poisoning (58 %) and hanging (38 %) were the most common suicide methods. Substantial heterogeneity was observed across analyses.

Conclusions: Suicide among Arab youth represents a significant and underrecognized public health challenge, driven by psychological, familial, and social stressors. Strengthening culturally tailored mental health services and school-based prevention strategies is urgently needed to address this growing crisis.

1. Introduction

Suicide accounts for more than 720,000 deaths every year, constituting one of the major global public health challenges.¹ It is now one of the leading causes of death in children and adolescents, being the second for ages 10–14 and third for ages 15–19.^{2–4} The Arab world is not exempt from this crisis. The Arab world faces similar challenges, with a recent study showing 78.9 % of Arab youth reported suicidal thoughts or attempts.⁵ Despite limited and underreported data due to stigma, evidence points to a rising burden of suicide and suicidal behavior among young people in the region.^{6–8}

The Arab region faces unique youth suicide risks due to political instability, socioeconomic disparities, conflict, and limited access to

mental health services.⁹ In countries affected by war, such as Syria, Iraq, Palestine, Sudan, and Yemen, children and adolescents are exposed to trauma, poverty, displacement, and family separation, all of which contribute to poor mental health and increased rates of depression, post-traumatic stress disorder (PTSD), and suicidal ideation.^{10,11} Even in more stable Arab countries, academic pressure, gender-based restrictions, bullying, and lack of psychosocial support can increase suicide risk.¹² Stigma and social pressures around mental illness, along with underreporting driven by legal, religious, and systemic barriers, obscure the true extent of the problem.¹³ Early identification of risk factors like depression, anxiety, violence exposure, and substance use is essential for effective prevention and policy reform.¹⁴

Despite the global emphasis on mental health promotion, there

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<https://doi.org/10.1016/j.puhe.2025.106038>

Received 9 July 2025; Received in revised form 21 October 2025; Accepted 26 October 2025

Available online 10 November 2025

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remains a significant research gap regarding suicide in the younger populations of Arab countries. While some studies have addressed mental health challenges in refugee or war-affected youth, few have systematically examined suicide-specific outcomes across the region.^{15,16} This systematic review and meta-analysis seek to compile the existing literature regarding the risk factors, prevalence and common methods, and reasons for suicide in Arab countries. By identifying the most consistent contributors and highlighting gaps in current knowledge, the review seeks to inform culturally sensitive prevention strategies and guide future research priorities.

2. Methods

2.1. Study design

This systematic review and meta-analysis was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines.¹⁷

2.2. Search strategy

A comprehensive search was conducted in PubMed, Scopus, The Cochrane Library, and WOS up to May 5, 2025. Details of search strategies and search results across the four databases are demonstrated in Table S1. Grey literature sources were also explored, including Google Scholar and relevant organizational websites. Manual screening of the reference lists of included studies was performed to identify additional eligible articles. No language restrictions were applied during the search to minimize bias and ensure comprehensive inclusion. The retrieved records were imported into EndNote, and duplicates were removed. Three independent reviewers screened titles and abstracts for relevance based on predefined inclusion and exclusion criteria. Full-text articles of potentially eligible studies were then assessed for final inclusion. Any discrepancies between reviewers were resolved through discussion, with a third reviewer consulted if necessary.

2.3. Eligibility criteria

We included any original study that investigated the risk factors associated with suicide among children or adolescents, typically defined as individuals aged 0–19 years according to the World Health Organization (WHO),¹⁸ within Arab countries. Studies were eligible if they specifically reported data from one or more Arab League member states and examined suicide-related risk factors in this age group. We excluded studies not focused on Arab populations, those targeting adults aged 20 and above, studies without a clear focus on suicidal risk factors, review articles, editorials, commentaries, and conference abstracts without full data.

2.4. Data extraction and quality assessment

Three reviewers independently extracted data from all included studies using a standardized data collection form. Extracted data included: year of publication, country, study design, sample size, age range, gender distribution, period of data collection, presence of mental or psychological problems, main results, and the primary risk factors associated with suicide. The primary outcome of interest was the prevalence of identified suicide risk factors such as academic failure, abuse, bullying, family conflict, financial hardship, relationship issues, low self-esteem, mourning, psychiatric disorders, psychosocial issues, and substance use disorders. Secondary outcomes included the prevalence of suicidal ideation and suicide attempts, as well as the reported methods of suicide, including drowning, hanging, jumping from heights, self-burning (immolation), self-poisoning, and the use of sharp objects. The methodological quality of the included studies was assessed using the Newcastle Ottawa Scale (NOS) for cohort and cross-sectional

studies.¹⁹

2.5. Statistical analysis

All statistical analyses were performed using STATA version 18. A meta-analysis of proportions was conducted to estimate the pooled prevalence of each outcome, using a random-effects model to account for expected heterogeneity across studies in terms of populations, settings, and measurement methods. Pooled proportions were reported with 95 % confidence intervals (CIs). All the studies included were analyzed for risk factor prevalence, as this constituted the primary objective of our review. However, for the secondary outcomes, prevalence of suicide ideation and attempt, we excluded studies that focused exclusively on populations already exhibiting suicidal ideation or behavior, or those deemed at very high risk (e.g., psychiatric inpatients), in order to avoid overestimation of the true prevalence. Heterogeneity across studies was assessed using the I^2 statistic, with values > 50 % and a two-tailed p-value < 0.1 from Cochran's Q test indicating substantial heterogeneity.²⁰ Given the variability and limited comparability of study characteristics, no subgroup analyses were performed. However, leave-one-out sensitivity analyses were conducted to assess the stability of pooled estimates. Additionally, a funnel plot was generated to visually assess potential publication bias.²¹

3. Results

3.1. Search results

The database search yielded a total of 3767 records. After removing duplicates, 3004 records remained. Following the title and abstract screening, 47 full-text articles were assessed for eligibility based on the inclusion criteria. Finally, 21 studies were included in this systematic review.^{6–8,12,15,16,22–36} The PRISMA flowchart is demonstrated in Fig. 1.

3.2. Study characteristics

This systematic review included 21 studies conducted across various Arab countries, including Egypt, Lebanon, Palestine, Jordan, Tunisia, Algeria, Saudi Arabia, Libya, Qatar, and Iraq. Of these, 20 were cross-sectional studies, and 1 was a cohort study.³¹ The studies were published between 2003 and 2025, reflecting two decades of data on suicide-related outcomes among children and adolescents. Sample sizes varied widely, ranging from fewer than 100 participants to over 5000. The majority of studies focused on school-based or community-based populations, with only a few addressing clinical or high-risk groups. The details are demonstrated in Table S2.

3.3. Quality assessment

Of the 20 cross-sectional studies assessed (Table S3), 14 were rated as *good* quality, demonstrating adequate sampling, outcome measurement, and clarity in reporting. Six studies received a *fair* rating due to limitations in sample representativeness, response rate, or statistical reporting. The single cohort study included³¹ was rated as *poor* quality, primarily due to deficiencies in exposure ascertainment, follow-up adequacy, and comparability (Table S4). Overall, the majority of included studies were of acceptable quality.

3.4. Meta-analysis

A summary of all identified suicide risk factors, suicidal behaviors, and methods of suicide among children and adolescents in Arab countries, ranked in descending order of pooled prevalence, is presented in Table 1.

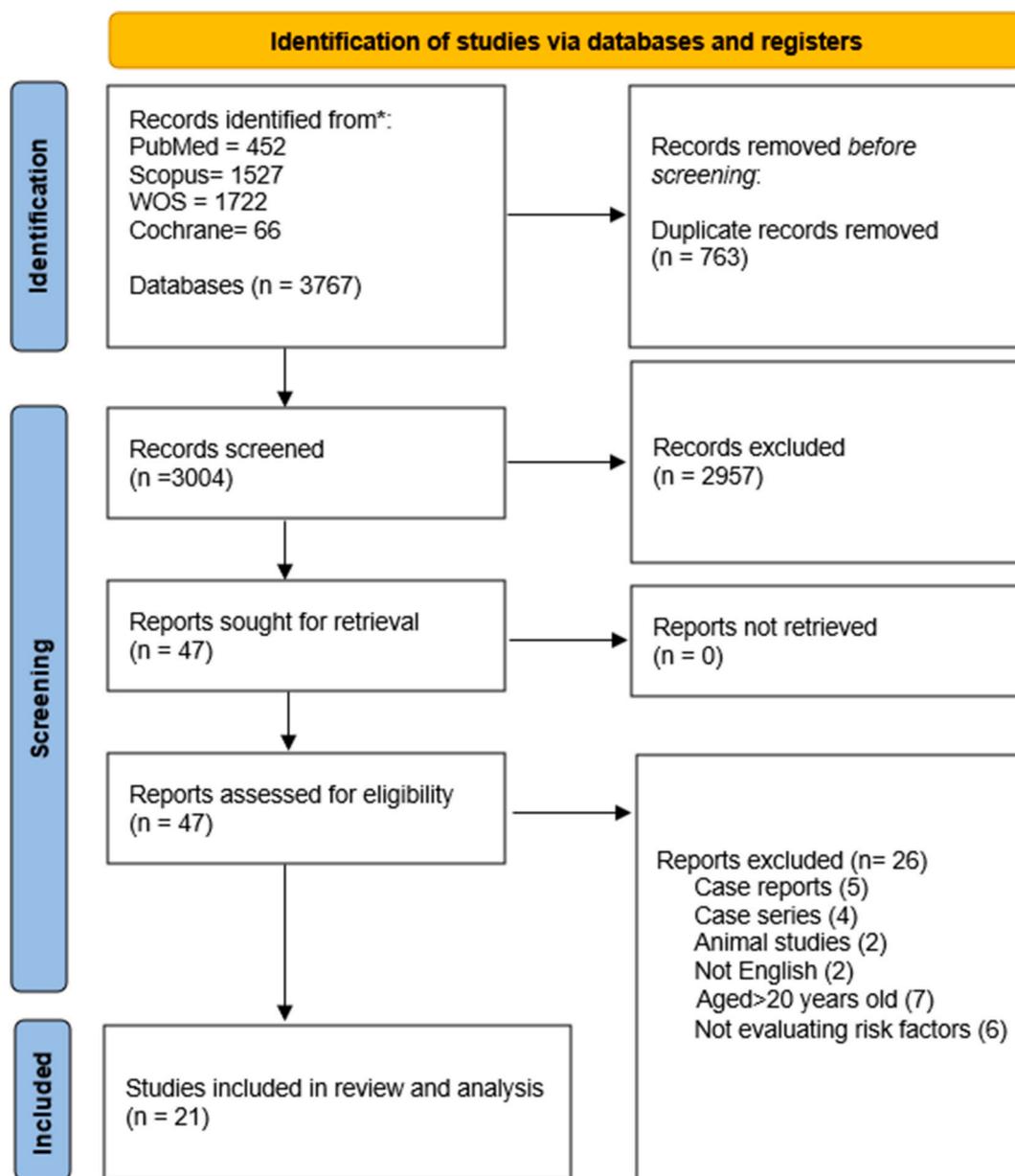


Fig. 1. The PRISMA flowchart.

3.4.1. Identified risk factors for suicide

Low self-esteem was the most commonly reported psychological factor, affecting 49 % of individuals (95 % CI: 20 %–77 %; $I^2 = 99.30$ %) (Fig. 2). Family conflict was reported in 31 % of the cases (95 % CI: 21 %–40 %; $I^2 = 99.29$ %) (Fig. 3). Psychiatric disorders were reported in 28 % of cases (95 % CI: 19 %–36 %; $I^2 = 99.56$ %) (Fig. 4). Psychosocial problems were observed in 24 % of individuals (95 % CI: 10 %–38 %; $I^2 = 99.87$ %) (Fig. S1). Bullying emerged as a notable factor in 24 % of participants (95 % CI: 15 %–32 %; $I^2 = 99.26$ %) (Fig. S2). Financial hardship was noted in 23 % of the studied population (95 % CI: 6 %–39 %; $I^2 = 99.73$ %) (Fig. S3). Relationship issues were cited in 19 % of the sample (95 % CI: 1 %–37 %; $I^2 = 99.2$ %) (Fig. S4). Abuse—including physical, emotional, or sexual abuse—was reported in 16 % of cases (95 % CI: 8 %–24 %; $I^2 = 99.5$ %) (Fig. S5). Academic failure was identified as a contributing risk factor in 15 % of the cases across the included studies (95 % CI: 7 %–22 %; $I^2 = 98.43$ %) (Fig. S6). Mourning the loss of a loved one, such as a parent, sibling, or close friend, was reported in 13 % of participants (95 % CI: 7 %–32 %; $I^2 = 99.65$ %) (Fig. S7). Finally, substance use disorders were reported in 8 % of cases (95 % CI: 4 %–12

%; $I^2 = 97.84$ %) (Fig. S8).

As shown in Fig. S9–S19, funnel plots demonstrated a largely symmetrical distribution for most of the assessed suicide risk factors, suggesting a low risk of publication bias. However, noticeable asymmetry was observed in the plots for bullying, low self-esteem, and relationship issues, indicating potential publication bias in these specific domains.

3.4.2. Pooled prevalence of suicide ideation and attempt

Pooling data from 16 studies, the prevalence of suicidal ideation was estimated at 22 % (95 % CI: 16 %–28 %; $I^2 = 99.09$ %) (Fig. S20). The funnel plot demonstrated a symmetrical distribution, indicating a low risk of publication bias (Fig. S21). For suicide attempts, data from 8 studies yielded a prevalence of 10 % (95 % CI: 2 %–18 %; $I^2 = 99.46$ %) (Fig. S22). The corresponding funnel plot showed an asymmetrical distribution, suggesting potential publication bias (Fig. S23).

3.4.3. Methods of suicide

Self-poisoning was the most commonly reported method, with a pooled prevalence of 58 % (95 % CI: 29 %–87 %; $I^2 = 99.75$ %)

Table 1

Summary of identified suicide risk factors, suicidal behaviors, and methods of suicide among children and adolescents in arab countries, ranked by pooled prevalence (highest to lowest).

Category	Item	Pooled Prevalence (95 % CI)	
Risk Factors	Low self-esteem	49 % (20 %–77 %)	
	Family conflict	31 % (21 %–40 %)	
	Psychiatric disorders	28 % (19 %–36 %)	
	Bullying	24 % (15 %–32 %)	
	Psychosocial problems	24 % (10 %–38 %)	
	Financial hardship	23 % (6 %–39 %)	
	Relationship issues	19 % (1 %–37 %)	
	Abuse	16 % (8 %–24 %)	
	Academic failure	15 % (7 %–22 %)	
	Mourning	13 % (7 %–32 %)	
	Substance use disorders	8 % (4 %–12 %)	
	Suicidal Behaviors	Suicidal ideation	22 % (16 %–28 %)
		Suicide attempt	10 % (2 %–18 %)
Methods of Suicide	Self-poisoning	58 % (29 %–87 %)	
	Hanging	38 % (9 %–66 %)	
	Self-burning (immolation)	6 % (1 %–11 %)	
	Drowning	5 % (1 %–9 %)	
	Jumping from heights	4 % (1 %–7 %)	
	Use of sharp objects	3 % (1 %–7 %)	

(Fig. S24). This was followed by hanging at 38 % (95 % CI: 9 %–66 %; $I^2 = 98.36$ %) (Fig. S25), self-burning (immolation) at 6 % (95 % CI: 1 %–11 %; $I^2 = 77.42$ %) (Fig. S26), drowning at 5 % (95 % CI: 1 %–9 %; $I^2 = 57.93$ %) (Fig. S27), jumping from heights at 4 % (95 % CI: 1 %–7 %; $I^2 = 63.98$ %) (Fig. S28), and the use of sharp objects at 3 % (95 % CI: 1 %–7 %; $I^2 = 92.28$ %) (Fig. S29). All funnel plots corresponding to the methods of suicide (Fig. S30–S35) demonstrated visible asymmetry, suggesting the presence of publication bias across the included studies.

4. Discussion

This systematic review and meta-analysis synthesized evidence from 21 studies assessing the prevalence and risk factors of suicide among children and adolescents in Arab countries. The findings reveal an urgent and underrecognized public health concern, reflecting not only epidemiologic trends but also deeper structural and sociocultural determinants of mental health in this population. The findings demonstrated the substantial burden of mental health with the pooled prevalence rates of suicidal ideation at 22 % and suicide attempt at 10 %. These results highlight that suicidal behavior in Arab youth is the outcome of cumulative psychological, familial, and social pressures within environments where open discussion of mental distress remains stigmatized.

Low self-esteem emerged as the most frequently reported

psychological risk factor, followed by family conflict and psychiatric disorders. In Arab adolescents, low self-esteem likely reflects the interplay between academic pressure, social conformity, and limited emotional expression within family systems. Bullying and psychosocial difficulties were also prevalent, along with financial hardship and relationship problems. Recurrent cases of abuse were noted, whereas academic failure and mourning were reported less frequently. Substance use disorders constituted the least commonly identified risk factor. Although less common than in Western settings due to cultural and religious norms, substance use in Arab adolescents may represent a maladaptive coping mechanism when emotional support systems fail. Findings indicate a complex interaction of psychological, familial, and social stressors that lead to suicide behaviors in at-risk children and adolescents in the Arab region.

The primary objective of this study was to pool the prevalence of identified suicide risk factors associated with suicidal behaviors among children and adolescents in Arab countries. In this meta-analysis, low self-esteem emerged presented in nearly 50 % of cases across the included studies. Cherif et al. reported low self-esteem in 83.3 % of individuals exhibiting suicidal behavior, compared to only 42.85 % in the control group.²⁷ Low self-esteem can severely impact a young person’s ability to manage external pressures, cope with academic demands, and maintain emotional balance, thus increasing their susceptibility to psychological distress and suicidal ideation.³⁷ In the sociocultural context of Arab societies, these psychological vulnerabilities are compounded by stigma surrounding mental illness and limited accessibility of child and adolescent psychiatric services, delaying both recognition and intervention.

Family conflict, reported in approximately one-third of cases, was the second most frequently reported risk factor. Adolescents exposed to dysfunctional family environments are at greater risk for suicidal thoughts and behaviors.³⁸ Given the strong interdependence of family units in Arab culture, conflict or breakdown within this system removes one of the most powerful protective buffers against distress. A meta-analysis by Pu et al. found that family dysfunction significantly increases the risk of suicide-related outcomes compared to adolescents from stable, supportive family environments.³⁸ Psychiatric disorders were the third most commonly reported risk factor. The elevated rates of suicidal ideation and attempts identified in this review likely reflect the substantial burden of mental health conditions in the region, particularly depression, anxiety, and post-traumatic stress disorder (PTSD). These disorders are often underdiagnosed and undertreated in Arab countries due to cultural stigma, limited mental health literacy, and insufficient access to youth-focused mental health services. Emotional distress is frequently overlooked or misinterpreted, contributing to delays in diagnosis and intervention.³⁹ This suggests the need for systemic

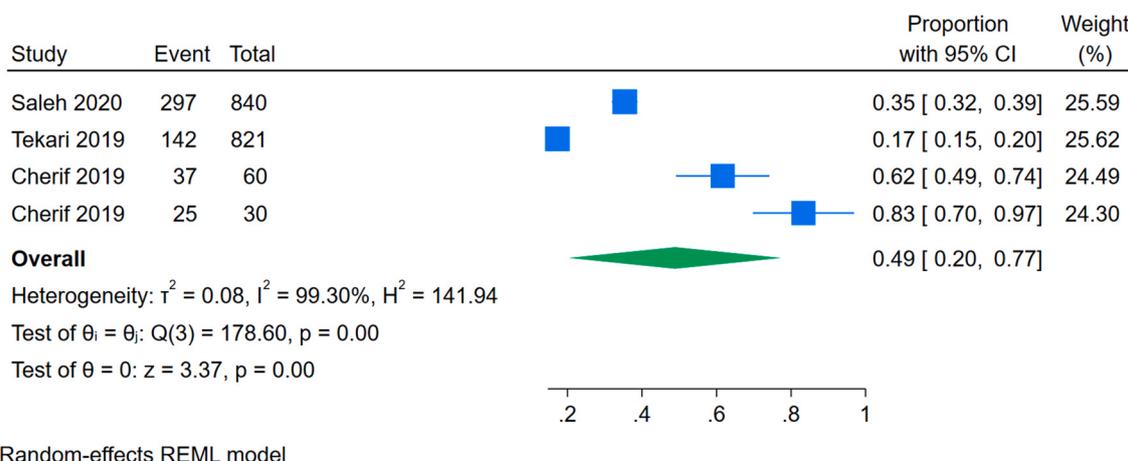
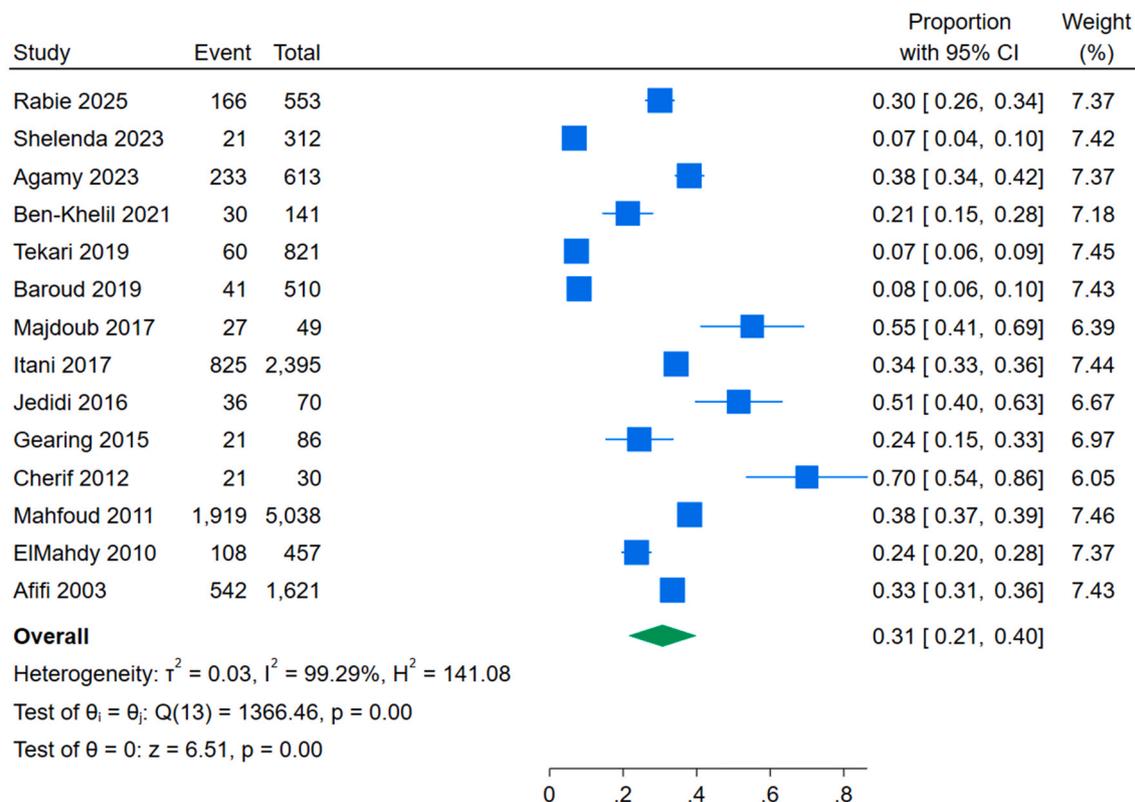


Fig. 2. Forest plot showing the pooled prevalence of low self-esteem as a reported risk factor for suicide among children and adolescents.



Random-effects REML model

Fig. 3. Forest plot showing the pooled prevalence of family conflict as reported suicide risk factors among children and adolescents.

reform that integrates youth mental health screening into primary care and school health programs.

Bullying, whether physical, verbal, or cyber in nature, can profoundly damage a young person’s psychological well-being, fostering feelings of isolation, helplessness, and despair—each of which can trigger suicidal thoughts or behaviors.⁴⁰ The influence of social media and digital communication amplifies this risk, especially in cultural contexts where preserving social image and honor carries deep emotional weight. Lastly, Substance use was reported in 8 % of cases—lower than rates in Western countries (over 50 %) but still a significant concern.⁴¹ In Arab societies, the relatively low prevalence may reflect cultural, religious, or legal constraints; however, its impact on impaired judgment and the exacerbation of underlying mental health conditions remains significant. A recent systematic review and meta-analysis by Li et al. identified key risk factors associated with adolescent suicide and confirmed the effectiveness of suicide risk prediction models in accurately identifying at-risk individuals.⁴²

Additional factors, though unexamined in the included studies, involve rising internet access and social media use among Arab adolescents, which may heighten suicide risk. Several studies have identified a potential association between excessive screen time, cyberbullying, and online harassment with increased risk of suicidal tendencies.⁴³ While digital platforms can provide important opportunities for connection and self-expression, they may also intensify feelings of inadequacy, social isolation, and peer rejection. Global data indicate that adolescents who experience cyberbullying often suffer in silence due to shame or fear of retaliation, which further deepens their mental distress and vulnerability to suicidal behaviors.^{44–46}

The pooled prevalence estimates of suicidal ideation and attempts in this meta-analysis are substantial; however, they exhibited considerable heterogeneity, resulting in wide confidence intervals and variability across studies. This heterogeneity likely reflects genuine contextual diversity rather than methodological inconsistency, given variations in

socioeconomic status, political stability, and access to education and healthcare among Arab states. Azzam et al. reported the highest rate of suicidal ideation (50 %) among Jordanian high school students.²⁴ Vally et al. similarly documented suicidal ideation and attempt rates of 37 % and 30 %, respectively, among adolescents in the United Arab Emirates.¹² Ghrayeb et al. observed notably high figures for suicidal ideation (24.58 %) and attempts (25.28 %) in Palestinian adolescents, with males exhibiting a significantly elevated risk.¹⁶ Our prevalence estimates are higher than those reported in some Asian populations and other global studies^{47–49} and are more comparable to figures observed in high-income countries such as the United States.⁵⁰ The variation observed both within our included studies and between regions may be attributed to differences in political stability, socioeconomic conditions, cultural attitudes toward mental health, access to care, and the degree of stigma surrounding suicide. Methodological differences—such as study setting (e.g., school-based vs. clinical populations), age groups examined, and assessment tools used—also likely contribute to the observed heterogeneity. These contextual and methodological factors help explain the discrepancies between our findings and those from other regions. Nonetheless, all reported estimates are meaningful and should inform targeted prevention and intervention efforts. These findings emphasize the necessity of context-sensitive suicide prevention approaches rather than direct adoption of Western models.

In the Arab region, the most commonly reported methods of suicide among children and adolescents were self-poisoning and hanging. This partially aligns with global trends, where hanging is the predominant method among youth.⁵¹ Firearms, frequently reported in Western contexts, were rarely documented in the included Arab studies,⁵² highlighting the role of cultural, legal, and environmental factors in shaping method selection and emphasizing the need for region-specific prevention strategies. From a public health perspective, these results point to critical intervention points: controlling access to household poisons, integrating school-based screening, and fostering community resilience

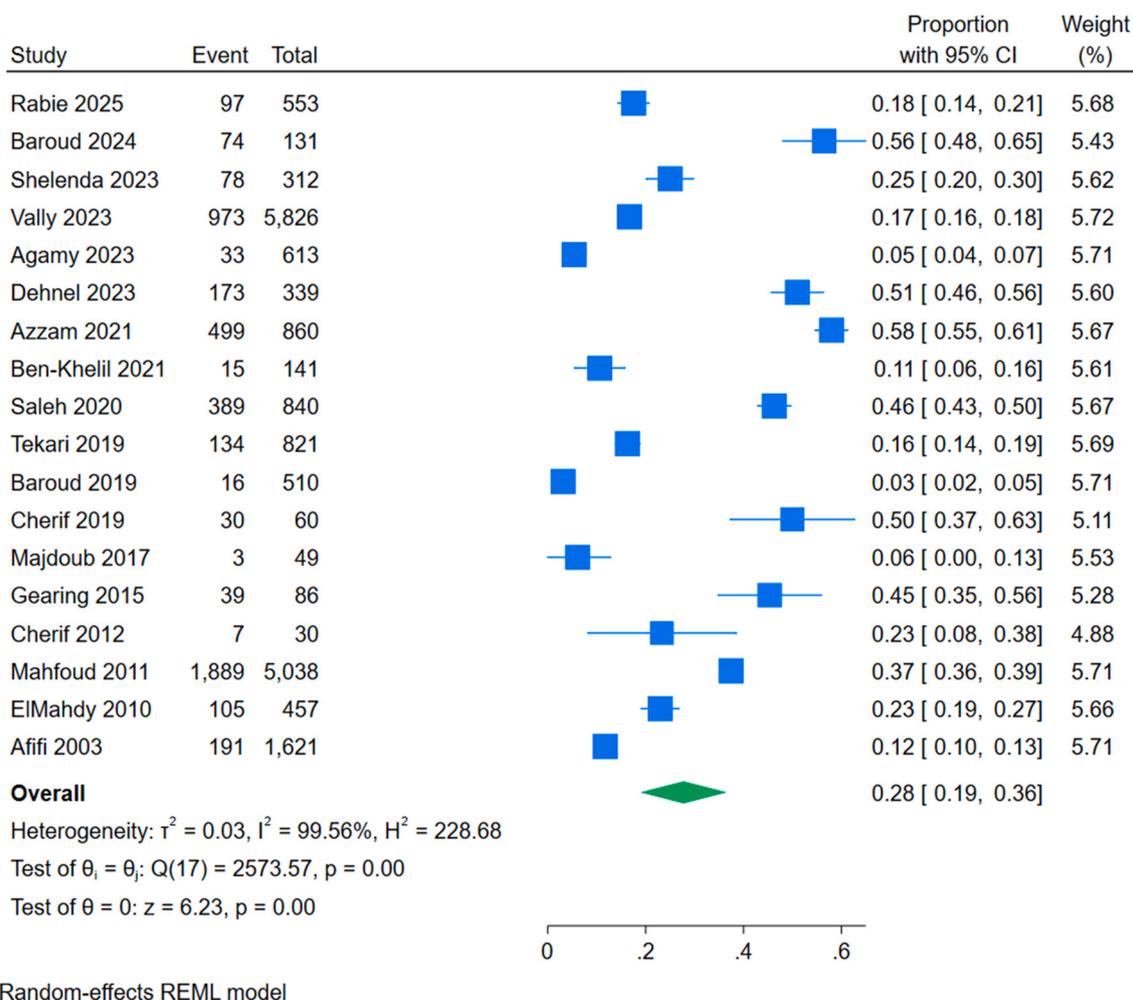


Fig. 4. Forest plot showing the pooled prevalence of psychiatric disorders as a reported suicide risk factor among children and adolescents.

through religious, familial, and educational networks.

Despite the alarming rise of suicidal behavior, various protective factors were identified that may mitigate these risks in Arab countries. An increase in family cohesion, religious or spiritual coping, or having access to peers or educators who offer support to individuals, all lower suicidal ideation.⁵³ These culturally embedded protective mechanisms can be leveraged through faith-based and family-centered prevention initiatives. Augmenting these protecting factors would decrease the burden of mental health problems and subsequent suicide behaviors. Similarly, interventions aimed at boosting self-esteem and coping skills. Given that schools are a primary point of contact with children and adolescents, integrating mental health promotion and suicide prevention strategies into educational systems represents a feasible and impactful approach.⁵⁴ Developing school-based life skills programs and embedding trained counselors into educational institutions could facilitate early recognition of distress. Such programs should be adapted to the cultural and religious values of Arab societies to enhance acceptability and effectiveness.⁵⁵ Certain Arab countries affected by prolonged conflict and displacement—such as Syria, Palestine, Yemen, and Iraq—bear a disproportionate burden of mental health disorders. Sustained exposure to violence, poverty, loss, and unstable living conditions significantly increases vulnerability to PTSD, depression, and suicidal thoughts and behaviors.^{15,56–58} This underscores the importance of integrating psychosocial support into humanitarian and refugee-response frameworks, as well as prioritizing youth mental health in post-conflict reconstruction policies.

Moreover, adolescents in conflict-affected regions often lack access

to mental health care due to the collapse of local health systems. Regional collaboration through the Arab League and WHO EMRO could help establish standardized suicide surveillance systems, improve training of primary care workers, and ensure consistent data collection to guide policy.⁵⁶

4.1. Strength and limitations

This comprehensive systematic review and meta-analysis provides the most up-to-date and region-specific evidence on suicide risk factors and behaviors among Arab children and adolescents. It reflects the current mental health landscape in the Arab region and offers critical insights to guide future research, prevention strategies, and policy development. However, several limitations should be acknowledged. First, the cross-sectional design of most included studies limits causal inference. Second, heterogeneity in study tools and definitions of suicidal ideation or attempt may have affected prevalence estimates. Third, the statistical heterogeneity observed across all analyses reflects the wide variation in prevalence rates, differing significantly from country to country and from one population to another. Fourth, publication bias cannot be excluded, as studies reporting higher prevalence rates may be more likely to be published. Fifth, data gaps from several Arab countries—particularly those with limited research infrastructure or ongoing conflict—limit the region-wide applicability of findings. Finally, since all included studies were conducted in Arab countries, the generalizability of our findings to other regions or cultural contexts is limited.

4.2. Conclusion

This systematic review highlights a substantial and multifaceted burden of suicide risk factors among children and adolescents in Arab countries, with psychological issues like low self-esteem, family conflict, and psychiatric disorders playing predominant roles. The results emphasize the urgent need for coordinated national and regional mental health policies that integrate culturally sensitive prevention models, family engagement, and school-based mental health promotion. Given the complex interplay of sociocultural, familial, and mental health stressors exacerbated by regional instability and stigma, culturally sensitive and context-specific prevention strategies are urgently needed. Future initiatives should focus on capacity-building for mental health professionals, community awareness campaigns, and research networks across Arab states to ensure sustainability and cultural appropriateness.

Author statements

Ethical approval

Ethical approval was not required for this study, as it is a systematic review and meta-analysis based solely on data extracted from previously published studies. No new data were collected from human participants or animals.

Acknowledgments

The publication of this article was funded by the Qatar National Library.

Competing interests

The authors declare no competing interests related to this work.

Author contributions

A.N.A.: conceptualization, methodology, quality assessment, analysis, writing original draft. M.S.Z.: conceptualization, methodology, analysis, writing original draft. K.S.: data collection, writing original draft. I.T.: data collection, quality assessment. M.F.A.: data collection, data extraction. A.A.E.: methodology, data extraction. S.H.: data extraction, quality assessment. All authors reviewed the manuscript and approved it for publication.

Availability of data

The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.puhe.2025.106038>.

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