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REVIEW ARTICLE OPEN ACCESS

Prevalence, Risk and Protective Factors and Risk Assessment Tools for Adolescent Suicidal Ideation in low-and middle-income countries: A Scoping Review

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Abstract

Background: Suicidal ideation among adolescents constitutes an urgent public-health problem owing to its prevalence, the potential progression to suicidal behaviour, and the vulnerability of the adolescent developmental period. Measurement inconsistency, cultural constraints on disclosure, and heterogeneity in risk and protective factors complicate surveillance and prevention, especially in low- and middle-income countries. This scoping review synthesises evidence on prevalence, multilevel risk and protective factors, and the psychometric performance of common adolescent suicidal ideation instruments, drawing principally from a recent doctoral dissertation examining in-school adolescents in Ogun State, Nigeria, and from contemporary international literature.

Main body: The review first situates the Ogun State empirical estimate, a point prevalence of 3.9% for suicidal ideation among 1,444 in-school adolescents, within global and regional trends, noting heterogeneity in pooled estimates across systematic reviews and meta-analyses. The synthesis organises determinants using a socio-ecological framework, identifying robust individual-level correlates (depression, prior attempt, sleep disturbance), interpersonal drivers (family instability, childhood abuse, parental substance misuse), and societal factors (socioeconomic stressors, stigma and legal sanctions). Protective factors repeatedly documented include strong social support and connectedness, higher self-esteem, purpose in life and adaptive coping strategies. The review evaluates three measurement instruments deployed and psychometrically tested within the same adolescent sample, the Suicidal Ideation Attributes Scale (SIDAS), the Positive and Negative Suicide Ideation Inventory (PANSI) and the Suicide Ideation Scale (SIS), and finds that SIDAS and the PANSI negative subscale display the most favourable structural validity for school-based screening in similar contexts, while SIS demonstrates excellent internal consistency but requires latent-structure reappraisal.

Conclusion: For school-based screening in LMIC settings similar to Ogun State, a pragmatic approach combines brief validated severity measures (SIDAS) with risk-focused subscales (PANSI-NSI) to detect high-risk adolescents efficiently, paired with robust referral pathways. Research priorities include wider cross-national validation of instruments, longitudinal studies for temporal risk modelling, and trials of context-adapted preventive interventions.

Keywords: Adolescent, Suicidal ideation, Prevalence, Risk factors, Assessment tools

Background

Suicide is among the leading causes of death in adolescents and young people worldwide, with suicidal ideation constituting a critical early marker in the suicidal continuum (1, 2). Suicidal ideation encompasses thoughts of engaging in

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behaviour intended to end one's life, varying in frequency, intensity and associated distress (3). While not all adolescents who experience suicidal ideation progress to suicide attempts, the presence of such thoughts substantially increases future risk, making early identification a cornerstone of prevention strategies (4).

Global estimates of adolescent suicidal ideation vary widely. Systematic reviews and meta-analyses report prevalence ranging from single-digit percentages to over one-quarter of adolescents in some settings, depending on recall period, study design and population characteristics (5, 6, 7, 8). This heterogeneity is particularly pronounced in LMICs, where underreporting is influenced by stigma, cultural norms and, in some countries, criminalisation of suicidal behaviour (5, 9). In Nigeria, available studies among adolescents report prevalence estimates that differ markedly across regions and study populations, underscoring the need for context-specific data and validated assessment tools (10, 11, 12).

Beyond prevalence, the aetiology of adolescent suicidal ideation is complex and multidimensional. Empirical evidence consistently implicates mental disorders, especially depression and anxiety, as central risk factors, while family dysfunction, exposure to violence, peer problems and socioeconomic adversity further compound vulnerability (13, 14, 15). Conversely, protective factors such as supportive relationships, self-esteem, resilience and a sense of purpose have been shown to buffer against suicidal thoughts (16, 17, 18).

Reliable measurement of suicidal ideation is essential for surveillance, research and clinical practice. However, many instruments were developed and validated in adult or Western populations, raising questions about their applicability and psychometric performance in adolescent and LMIC contexts (19, 20). This scoping review, therefore, integrates epidemiological evidence with an appraisal of commonly used assessment tools, informed by recent empirical validation among Nigerian adolescents.

Despite growing recognition of adolescent mental health as a global priority, significant gaps persist in understanding suicidal ideation within low- and middle-income country (LMIC) contexts. These include a scarcity of context-specific prevalence data, limited validation of assessment tools outside Western settings, and insufficient synthesis of multi-level determinants to inform locally relevant interventions. This scoping review is therefore timely and necessary to: (1) consolidate the heterogeneous global evidence on adolescent suicidal ideation, (2) critically appraise the cross-cultural applicability of common measurement tools, and (3) integrate a detailed LMIC case study, the Ogun State, Nigeria dissertation, with the international literature to generate insights that are both globally informed and locally grounded.

Methods

This scoping review was conducted following the methodological framework for scoping studies outlined by Arksey and O'Malley (21) and later enhanced by the Joanna Briggs Institute (JBI) guidelines for scoping reviews. The process adhered to the following stages: (1) identifying the research question, (2) identifying relevant studies, (3) study selection, (4) charting the data, and (5) collating, summarising, and reporting the results. Reporting follows the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.

Search Strategy and Information Sources

The evidence synthesis was structured in two complementary phases to ensure both depth and contextual relevance. First, to provide a robust, context-specific foundation, a comprehensive doctoral dissertation completed in 2025, which included a systematic narrative review and original empirical data from Ogun State, Nigeria, served as the primary anchor source (12). This dissertation provided a detailed, pre-synthesised evidence map on the topic. Second, to contextualise these findings within the broader global literature and ensure comprehensiveness, supplemental searches were conducted in PubMed, PsycINFO, and Google Scholar for key international literature published between 2000 and 2024. Search terms included combinations of: ("adolescen" OR "youth" OR "teen") AND ("suicidal ideation" OR "suicide thought") AND ("prevalence" OR "risk factor" OR "protective factor") AND ("assessment" OR "scale" OR "psychometric").

Eligibility Criteria and Study Selection

Studies were eligible for inclusion if they (a) focused on adolescent populations (ages 10-19), (b) reported quantitative data on prevalence, risk/protective factors, or psychometric properties of instruments measuring suicidal ideation, and (c) were published in English. Editorials, commentaries, and studies without accessible full texts were excluded. The study selection process from the supplemental search is summarised in the PRISMA-ScR flow diagram (Figure 1).

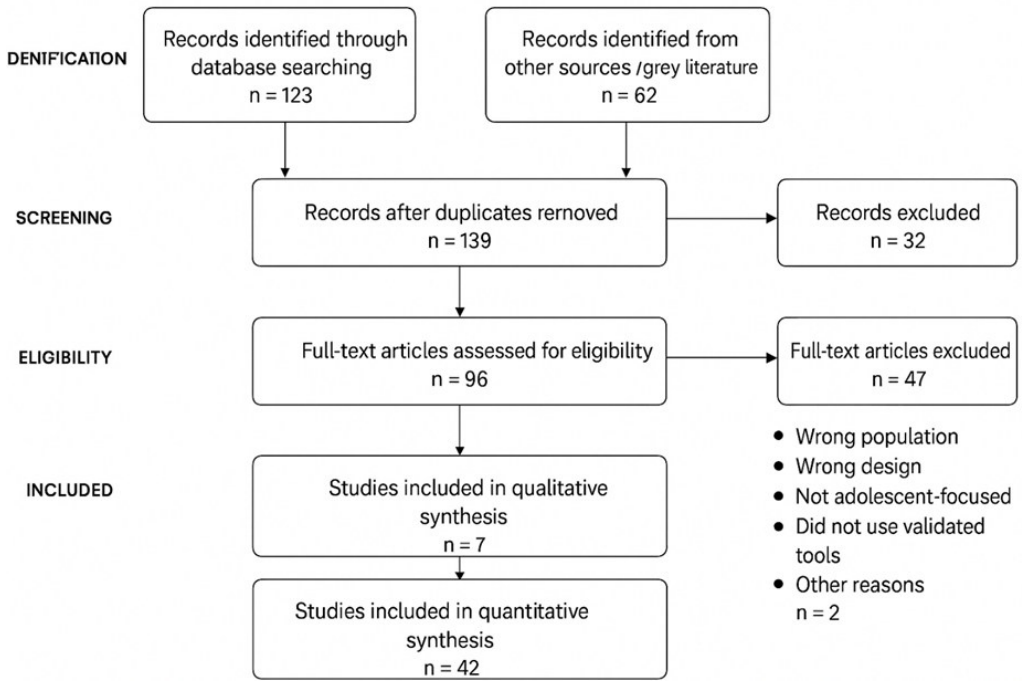

Figure 1: Flow Diagram for Literature Review

Data Extraction and Synthesis

Data from the anchor dissertation and supplemental literature were charted using a standardised template to capture author/year, country, study design, population, prevalence estimates, key risk/protective factors, instrument names, and psychometric properties (e.g., Cronbach's α, validity indices). A narrative synthesis approach was employed. Findings were organised thematically (prevalence, determinants, assessment tools) and analytically framed using a socio-ecological model (22) to categorise determinants across individual, interpersonal, and societal levels.

Role and Justification of the Anchor Dissertation

This review employed a dual-strategy approach to ensure both comprehensive breadth and contextual depth. First, a systematic search of international literature was conducted independently to map the global evidence. Second, the doctoral dissertation was incorporated as a deep-context anchor source for three primary reasons: (1) it provided a rigorously conducted, localized empirical estimate from an under-researched LMIC setting (Ogun State, Nigeria); (2) it contained a detailed, pre-synthesized narrative review of relevant literature; and (3) it included unique, original psychometric data on three key assessment tools within the target population. This anchor was not used in isolation but was critically triangulated with the broader evidence base. Consequently, the dissertation's findings were integrated as a critical case study within the systematically gathered literature, ensuring the synthesis was both grounded in a specific LMIC context and sufficiently broad for meaningful global comparison

Results

Prevalence of adolescent suicidal ideation

The dissertation-based study conducted among 1,444 in-school adolescents in Ogun State reported a point prevalence of suicidal ideation of 3.9%, with a 95% confidence interval of 3.0–5.1%. While this estimate is lower than figures reported in some Nigerian and international studies, it aligns with evidence that school-based samples may underestimate the true burden of suicidal ideation, particularly in settings where out-of-school youth experience heightened vulnerability (11, 23).

Table 1 demonstrates substantial heterogeneity in adolescent suicidal ideation prevalence across countries, study designs and recall periods. School-based Nigerian estimates, including the Ogun State study, tend to be lower than pooled global estimates, likely due to methodological differences, underreporting, and the exclusion of higher-risk out-of-school adolescents (6, 7, 8, 11, 12).

Table 1. Selected prevalence estimates of suicidal ideation among adolescents across regions and study designs

Author(s), Year	Country / Region	Study Design & Population	Age Range (Years)	Recall Period	Instrument Used	Reported Prevalence (%)
Abiodun OA, 2025 (12)	Nigeria (Ogun State)	Cross-sectional; In-school adolescents (n=1,444)	10–19	Point	SIS / SIDAS	3.9 (95% CI: 3.0–5.1)
Omigbodun OO & Gureje O, 2003 (11)	Nigeria	Cross-sectional; Secondary school students, urban	12–18	Lifetime	Self-report questionnaire	6–14 (varied by sex/age)
Adewuya AO et al., 2006 (10)	Nigeria	Cross-sectional; University undergraduates	16–24	Lifetime	Structured questionnaire	~10
Nock MK et al., 2013 (8)	USA (National)	Survey: National Comorbidity Survey–Adolescent Supplement	13–18	Lifetime	CIDI-based assessment	12.1
Biswas T et al., 2020 (7)	Global (67 countries)	Meta-analysis; Adolescents from 67 countries	12–17	Lifetime	Mixed instruments	14.2 (pooled)
Geoffroy MC et al., 2022 (6)	Global	Meta-analysis; Children and adolescents	≤19	Mixed	Mixed instruments	Wide range (5–25+)
Patton GC et al., 2009 (23)	Global	Epidemiological synthesis: Adolescents and young adults	10–24	Not specified	Epidemiological synthesis	Context-dependent

Internationally, pooled prevalence estimates from systematic reviews indicate substantial variability. A large meta-analysis of children and adolescents reported lifetime prevalence estimates exceeding 15% in some regions, while point or 12-month prevalence figures were generally lower but highly heterogeneous (6, 7). Methodological differences, including recall period and instrument choice, contribute significantly to this variability.

Risk factors

At the individual level, depressive symptoms, anxiety disorders, sleep disturbances and a history of suicide attempt consistently emerge as strong predictors of suicidal ideation (13, 14, 24). The Ogun State study identified prior suicide attempt as the most potent predictor, with an adjusted odds ratio exceeding 10, underscoring the importance of secondary prevention.

Interpersonal and family-level risk factors include parental absence, family conflict, exposure to physical or sexual abuse, and parental substance misuse (15, 25). Peer-related factors such as bullying, social isolation and poor school connectedness further elevate risk (26). At the societal level, poverty, economic shocks, stigma surrounding mental illness and suicide, and restrictive legal environments shape both risk exposure and help-seeking behaviour (9, 27).

Protective factors

Protective factors identified across studies include strong social support from family and peers, positive school climate, self-esteem, adaptive coping skills and a sense of meaning or purpose in life (16, 17, 18, 28). Religious and cultural beliefs may also confer protection in some contexts, although their influence is complex and context-dependent (29).

The determinants of adolescent suicidal ideation identified in this review cluster across multiple levels of influence, consistent with socio-ecological models of health behaviour. At the individual level, psychiatric morbidity, particularly depressive and anxiety disorders, alongside sleep disturbance and a prior history of suicide attempts, represent the most proximal and potent predictors of suicidal ideation. These factors operate through cognitive, emotional and neurobiological pathways that heighten vulnerability during adolescence. Conversely, intrapersonal assets such as self-esteem, adaptive coping strategies and a sense of meaning in life appear to buffer the impact of stressors and reduce suicidal thoughts.

At the interpersonal level, family and peer contexts exert a substantial influence. Family instability, parental absence and exposure to abuse or neglect increase risk, whereas supportive parenting, family cohesion and open communication function as protective factors.

Peer relationships and school environments further modulate risk; bullying and social exclusion are consistently associated with higher suicidal ideation, while school connectedness and supportive teacher–student relationships are protective.

At the community and societal levels, broader structural determinants shape both exposure to risk and access to support. Socioeconomic adversity, stigma surrounding mental illness and suicide, and punitive legal frameworks contribute to underreporting and delayed help-seeking, particularly in LMIC settings. In contrast, community mental health literacy, social protection mechanisms and culturally embedded protective norms may mitigate risk. These multi-level determinants are summarised in Table 2, highlighting the need for integrated prevention strategies that extend beyond individual-level interventions.

Table 2: Socio-ecological distribution of risk and protective factors for adolescent suicidal ideation

Socio-ecological level	Risk factors	Protective factors	Key references
Individual	Depression, anxiety disorders, sleep disturbance, prior suicide attempt, substance use, impulsivity	Self-esteem, emotional regulation, coping skills, purpose in life, grit	(4, 13, 14, 16, 17, 18, 24)
Family / interpersonal	Parental absence, family conflict, childhood physical or sexual abuse, parental substance misuse	Parental support, family cohesion, and positive communication	(15, 25, 27)
Peer/school	Bullying, social isolation, academic stress, and poor school connectedness	Peer support, school belonging, teacher mentorship	(26, 28)
Community / societal	Poverty, economic shocks, stigma, criminalisation of suicide, and limited access to care	Social safety nets, mental health literacy, and culturally protective norms	(5, 9, 27, 29)

Assessment tools

The Suicidal Ideation Attributes Scale (SIDAS) demonstrated excellent construct validity and acceptable internal consistency in the adolescent sample, supporting its use as a brief severity measure (19). The Positive and Negative Suicide Ideation Inventory (PANSI) showed strong reliability for the negative ideation subscale, with more modest performance for the positive subscale, consistent with previous validation studies (20, 30). The Suicide Ideation Scale (SIS) exhibited high internal consistency but weaker structural validity, suggesting caution in its use for latent construct modelling among adolescents (31).

Table 3 indicates that while all three instruments demonstrate acceptable to excellent internal consistency, the SIDAS and PANSI negative subscales show superior structural validity and conceptual clarity for adolescent school-based screening in LMIC contexts. The SIS, despite strong reliability, may require re-specification or cautious interpretation when used for latent construct modelling in adolescents (19, 20, 30, 31).

Table 3: Summary of psychometric properties of suicidal ideation assessment tools evaluated in adolescent populations

Instrument (Subscale)	Primary Construct Measured	Target Population (Original Validation)	Number of Items	Reliability (Cronbach's α)	Construct Validity / Model Fit	Key Strengths	Key Limitations
SIDAS (19)	Severity & attributes of SI (frequency, controllability, distress, etc.)	Community adults (Australia); used in adolescents	5	0.77 (Ogun sample); ≥0.80 (original)	Excellent CFA fit (RMSEA ≈ 0.01; CFI/TLI ≈ 1.00)	Brief; strong structural validity; suitable for screening & severity monitoring	Limited adolescent-specific cut-off validation; moderate internal consistency in adolescents
PANSI–Negative Subscale	Risk-oriented suicidal ideation	Adolescents & adults (psychiatric/community samples)	8	0.93 (Ogun sample);	Acceptable two-factor model;	Strong reliability; clear risk	Does not measure severity

(PANSI-NSI) (20, 30)				0.90+ (prior studies)	AVE ≈ 0.62	focus; well-suited for school screening	attributes (e.g., controllability, distress)
PANSI–Positive Subscale (PANSI-PI) (20)	Protective cognitions (reasons for living)	Adolescents & adults (psychiatric/community samples)	6	0.79 (Ogun sample)	Lower convergent validity (AVE ≈ 0.43)	Captures protective factors; complements risk screening	Weaker construct convergence; culturally sensitive items
Suicide Ideation Scale (SIS) (31)	General suicidal ideation	Adults (psychiatric populations)	10	0.91 (Ogun sample)	Poor one-factor CFA fit (RMSEA ≈ 0.17)	High internal consistency; historically widely used	Structural validity concerns in adolescents; less parsimonious

Discussion

By integrating a systematically mapped body of global evidence with a deep-focused LMIC case study, this review provides a unique synthesis that balances generalizability with contextual specificity. The findings from the Ogun State dissertation serve not as the narrative backbone but as a crucial lens through which the applicability of broader trends, in prevalence, determinants, and instrument performance, can be examined in a resource-constrained setting. This approach mitigates the risk of Western-centric bias and ensures that recommendations are informed by both global consensus and local reality

This scoping review synthesises contemporary evidence on the prevalence, determinants, and measurement of suicidal ideation (SI) among adolescents, with deliberate focus on evidence from and implications for low- and middle-income country (LMIC) contexts. The principal findings indicate that adolescent SI is a significant, albeit heterogeneously measured, public health concern. Its aetiology is best understood through a socio-ecological lens, encompassing individual psychopathology, relational dynamics, and societal stressors (13, 15, 27). Furthermore, the psychometric evaluation of common assessment tools reveals that their utility in LMIC settings is not uniform, necessitating careful selection and local validation (19, 20, 30).

Interpretation of Prevalence in Context

The point prevalence of 3.9% identified among in-school adolescents in Ogun State, Nigeria (12), sits at the lower end of the global spectrum. This should not be interpreted as indicative of lower risk but rather understood within a framework of potential underestimation. Compared to higher pooled estimates from recent global meta-analyses (6, 7), this figure likely reflects the compounding effects of stigma, cultural proscriptions, and the criminalisation of suicidal behaviour in some settings, which suppress disclosure (5, 9). Furthermore, school-based sampling systematically excludes out-of-school youth, a population often facing heightened vulnerabilities (23). Therefore, this estimate underscores a critical challenge for surveillance in LMICs: reported figures may capture only the visible portion of the burden, necessitating complementary data from community and clinical settings.

Synthesis of the Socio-Ecological Model and Intervention Design

The consistent clustering of risk and protective factors across individual, interpersonal, and societal levels (Table 2) provides the most salient takeaway for intervention design: effective prevention cannot be anchored solely in individual-level strategies. While treating depression and enhancing coping skills are crucial (13, 16), these efforts are undermined if an adolescent faces a dysfunctional family environment (15, 25), a bullying school climate (26), or a community with high stigma and limited services (9, 27). The key implication is the imperative for integrated, multi-level interventions. School-based programs must simultaneously build individual resilience, foster positive peer connections, and train teachers in identification. Public health policies must work to decriminalize suicide, reduce stigma through literacy campaigns, and strengthen community-based support systems (5, 29).

Implications of Instrument Performance for LMIC Research and Practice

The variability in psychometric performance of the reviewed instruments carries direct implications. For researchers and clinicians in LMICs, our findings recommend the Suicidal Ideation Attributes Scale (SIDAS) for its brevity and strong structural validity in measuring severity (19), and the PANSI Negative Subscale

(PANSI-NSI) for its reliable focus on risk-oriented ideation (20, 30). These tools are pragmatically suited for school-based screening. However, this endorsement comes with critical caveats. First, local validation is non-negotiable; factor structures can shift across cultures (19, 31). Second, tools like the Suicide Ideation Scale (SIS), despite historical use and high internal consistency, demonstrated poor structural validity in the adolescent sample and should be applied cautiously (12, 31). Third, incorporating strength-based measures like the PANSI Positive Subscale (PANSI-PI) is essential to align assessment with resilience-focused prevention paradigms (20). Ultimately, instrument choice must be guided by purpose, feasibility, and locally established validity.

Limitations of this Scoping Review

Several limitations of this review must be acknowledged. First, while anchored by a comprehensive doctoral dissertation and supplemented by targeted searches, the methodology does not constitute a full systematic review with exhaustive database searches and dual independent screening. This was a strategic choice to enable deep integration of a rich, context-specific dataset (12), but it may have omitted some relevant literature. Second, the psychometric findings, though illuminating, are primarily drawn from a single Nigerian adolescent sample and require replication across diverse LMIC contexts to establish generalizability. Finally, the review's focus on SI, while clinically crucial, limits direct insights into the pathways to suicide attempts or deaths, which are influenced by additional factors like access to means.

Recommendations for Future Research, Policy, and Practice

Based on this synthesis, we propose the following actionable recommendations:

Research: Prioritise longitudinal studies in LMICs to model temporal risk pathways (4, 14). Future research must intentionally include out-of-school and other marginalised adolescent populations. Methodological work should focus on cross-cultural adaptation and validation of brief assessment tools (19, 20).

Clinical Practice: In LMIC settings, implement tiered screening approaches using validated tools like SIDAS or PANSI-NSI, ensuring they are embedded within clear, functional referral pathways to avoid identification without provision of care.

Policy: Governments, particularly in LMICs, should repeal laws criminalising suicidal behaviour (9), invest in training non-specialist frontline workers in mental health first aid, and integrate adolescent mental health into national health and educational policies.

Intervention Development: Fund and evaluate multi-component interventions that concurrently target individual adolescents, their interpersonal environments, and their communities, as supported by socio-ecological models (22, 27).

Conclusion

This scoping review demonstrates that adolescent suicidal ideation is a complex and multifactorial phenomenon, characterised by marked epidemiological heterogeneity and shaped by interacting influences across individual, interpersonal, community and societal levels. Reported prevalence varies widely across regions and study designs, with generally lower estimates observed in school-based studies from low- and middle-income countries. These differences are likely driven by methodological variation, underrepresentation of high-risk populations, and contextual factors such as stigma and criminalisation, underscoring the need for cautious interpretation and locally grounded surveillance.

The synthesis of risk and protective factors within a socio-ecological framework highlights that suicidal ideation in adolescence cannot be adequately understood or addressed through individual-level psychopathology alone. While depressive and anxiety symptoms, substance use and prior suicidal behaviour represent proximal risks, family dynamics, peer relationships, school environments and broader structural determinants substantially shape vulnerability and resilience. Protective factors, including supportive family relationships, school connectedness and adaptive coping capacities, offer critical leverage points for prevention.

The review further underscores the importance of appropriate measurement in adolescent populations. Brief, psychometrically robust instruments such as the SIDAS and the PANSI negative subscale show promise for screening and risk stratification, particularly in school and community settings. However, variability in construct validity across contexts highlights the necessity of local validation and culturally sensitive application, especially in LMIC settings.

Collectively, these findings support a paradigm shift toward integrated, multi-level suicide prevention strategies that combine individual screening with family-, school- and community-based interventions, supported by enabling policy environments. Strengthening adolescent mental health systems, improving mental health literacy, and addressing structural barriers to care are essential components of effective prevention. Future research should prioritise longitudinal designs, inclusion of marginalised adolescent

populations, and refinement of culturally responsive assessment tools to better inform policy and practice.

List of Abbreviations

SI: Suicidal ideation
SIDAS: Suicidal Ideation Attributes Scale
PANSI: Positive and Negative Suicide Ideation Inventory
SIS: Suicide Ideation Scale
LMIC: Low- and middle-income countries

Declarations

Ethics approval and consent to participate

The primary data and ethics approvals referenced in this review are those of the original dissertation (OGHREC/467/2025/546/APP).

Data availability

The scoping review synthesises findings from the uploaded dissertation and supplementary publicly available literature. Requests for the dissertation dataset should be directed to the corresponding author.

Competing interests

The authors declare no competing interests.

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Author contributions

Conceptualisation: AOA, MLW, and AIE; Methodology (scoping synthesis): AOA, MLW, TC, and AIE; Investigation and data extraction: AOA; Formal analysis: AOA; Validation and interpretation: AOA, MLW, TC, and AIE; Writing (original draft): AOA; Writing (review & editing): MLW, TC and Agbor IE; Supervision: MLW and AIE. All authors read and approved the final manuscript.

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