



# Prevalence and Risk Factors of Suicidal Ideation among Pregnant Adolescents in Low- and Middle-Income Countries: A Scoping Epidemiological Review

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## *Authors' contributions*

*This work was carried out in collaboration among all authors. Author TG collected the data, performed the methodology, and prepared the original draft of the manuscript. Author SS formatted the first draft, did data analysis, and critically reviewed the manuscript. Author AG did data Analysis, and critically reviewed the manuscript. Author PG helped in conceptualization and critically reviewed the manuscript. All authors read and approved the final manuscript.*

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## **Abstract**

**Background:** Adolescent pregnancy is a major public health concern in low- and middle-income countries (LMICs), with poor maternal and mental health outcomes driven by socioeconomic vulnerability, gender inequality, and limited access to care. Suicidal ideation among pregnant adolescents is underexplored and

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linked to stigma, social isolation, early marriage, and intimate partner violence, but evidence on its prevalence and determinants remains fragmented

**Objectives:**

- To synthesize evidence on the prevalence and risk factors of suicidal ideation among pregnant adolescents in LMICs
- To identify psychosocial, demographic, and health-related correlates
- To analyze regional variations; and to highlight gaps to inform future research and policy.

**Methods:** This study is a scoping review conducted following the Arksey and O'Malley framework and further refined by Levac et al. and the Joanna Briggs Institute (JBI) guidelines. Reporting adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR). A systematic search was performed across PubMed, Scopus, and Google Scholar, along with grey literature from the World Health Organization (WHO), United Nations Children's Fund (UNICEF), and United Nations Population Fund (UNFPA), covering publications from 2000 to 2024.

**Results:** The 40 studies covered 23 LMICs in Sub-Saharan Africa, South Asia, and Latin America. Suicidal ideation ranged from 5.2% to 46.5%, with attempts up to 18%. Key correlates included depression, intimate partner violence, abuse, stigma, poverty, unplanned pregnancy, prior trauma, low education, and poor social support. Most studies were cross-sectional with methodological heterogeneity, limiting causal inference

**Conclusion:** Suicidal ideation among pregnant adolescents in low- and middle-income countries is a significant yet underrecognized burden, with prevalence ranging from 5.2% to 46.5% and suicide attempts up to 18%. Key risk factors include depression, intimate partner violence, unplanned pregnancy, and poor social support. Despite methodological variability, findings consistently indicate multifactorial vulnerability, underscoring the need for standardized screening and integration of mental health care into antenatal services.

*Keywords:* Adolescent pregnancy; suicidal ideation; pregnant adolescents; low- and middle-income countries (LMICs); mental health.

## 1. Introduction

Adolescent pregnancy has emerged as a serious public health concern worldwide, particularly in low- and middle-income countries (LMICs). The World Health Organization estimates that roughly 21 million girls aged 10 to 19 years become pregnant yearly in LMICs, with a significant proportion of these pregnancies being unplanned (World Health Organization, 2024). Adolescent pregnancy is linked to higher chances of obstetric problems, maternal morbidity, educational discontinuance, economic instability, and long-term social disadvantage (World Health Organization, 2024). While global maternal health initiatives have historically focused on obstetric and neonatal outcomes, the mental health aspects of adolescent pregnancy have gotten far less formal attention.

Mental health issues are one of the primary sources of disease burden in adolescents worldwide. According to the World Health Organization (WHO), depression, anxiety, and behavioural problems are substantial contributors to sickness and disability in this age group, and suicide is one of the leading causes of mortality among adolescents worldwide (World Health Organization, 2025). The burden is especially obvious in LMICs, where insufficient mental health infrastructure, workforce shortages, stigma, and underinvestment restrict access to care (World Health Organization, 2014a). Despite global commitments to adolescent mental health, suicide prevention programs are frequently conducted at the population level, with no specific focus on high-risk subgroups such as pregnant adolescents.

Suicidal ideation refers to thoughts, considerations, or planning of self-harm with the intent to end one's life and is considered a critical precursor to suicidal behavior. It differs from a suicide attempt, which involves engagement in potentially self-injurious behavior with at least some intent to die. Suicidal ideation represents an earlier and potentially preventable stage along the suicide continuum (Xiao et al., 2022).

Pregnant adolescents are particularly susceptible group because they face developmental, biological, and socio-structural risks. Adolescence is distinguished by continuous neurodevelopment, emotional regulation maturation, and identity formation. When pregnancy occurs at this time, young women may experience additional stressors such as unwanted pregnancy, intimate partner abuse, school discontinuance, financial dependence, and family or community stigma. The World Health Organization Global strategy for Women's,

Children's, and Adolescents' Health (World Health Organization, 2015; World Health Organization n.d) highlights the necessity of integrated methods to address both physical and mental health determinants. However, mental health screening, particularly suicide risk assessment is still inconsistently integrated into antenatal care services in many LMIC settings (Crooks et al., 2022; Patel et al., 2018).

Although there is a significant literature on prenatal depression and suicide in adult women, adolescent-specific research is fragmented. Reviews of maternal suicide have mostly focused on adult populations or high-income settings, with limited age-disaggregated analysis for adolescents in LMIC contexts. Furthermore, research on suicidal ideation during pregnancy frequently differ in assessment techniques, reporting standards, and contextual focus, limiting comparability. So far, no comprehensive synthesis has comprehensively mapped the prevalence, related risk factors, and methodological aspects of research focusing on suicide ideation and behaviour among pregnant adolescents in LMICs (Lindahl et al., 2005; World Health Organization, 2016).

Addressing this gap is critical for establishing context-sensitive screening techniques, increasing antenatal mental health integration, and harmonizing with the World Health Organization's worldwide suicide prevention targets (World Health Organization, 2014b). Therefore, this scoping review sought to address the following research question: What is the prevalence of suicidal ideation among pregnant adolescents in LMICs, and what psychosocial, demographic, and contextual factors are associated with increased suicide risk in this population?

As a result, the purpose of this scoping review is to systematically map the existing evidence on suicidal ideation and behaviour among pregnant adolescents in low- and middle-income countries (LMICs), summarize reported prevalence estimates, identify associated risk factors, and highlight research and policy gaps to inform future research and public health action.

## 2. Methods

### 2.1 Overview

This scoping review was carried out in compliance with the methodological framework proposed by Arksey and O'Malley (2005) five-stage framework, which was further improved by Levac et al. (2010) and the Joanna Briggs Institute (JBI) guidelines. The reporting is in accordance with the Preferred Reporting Items for Systematic Review and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) checklist.

#### 2.1.1 Identifying the Research Questions

The review was guided by the following research questions:

- What is the reported prevalence of suicidal ideation among pregnant adolescents in LMICs?
- What individual, familial, and contextual risk factors are associated with suicidal ideation in this population?
- How do prevalence and risk factors vary by region or context?
- What are the methodological characteristics, limitations, and gaps in the existing literature?

The purpose of these questions was to gather contextual factors and epidemiological data pertinent to the mental health of pregnant adolescents in LMICs.

#### PCC Framework:

The research question was structured using the PCC framework:

- **Population:** Pregnant adolescents aged 10–19 years
- **Concept:** Suicidal ideation and associated risk factors
- **Context:** Low- and middle-income countries (LMICs)

#### 2.1.2 Identifying Relevant Studies

A structured literature search was conducted across:

- PubMed
- Scopus
- Google Scholar
- WHO, UNICEF, UNFPA repositories for grey literature.

The search included studies published from 2000 and 2024, in English. Using both free-text and database-specific restricted vocabulary (e.g., MeSH in PubMed), keywords merged phrases associated with suicidal ideation, pregnant adolescents, and LMICs. To find more papers, the reference lists of research that qualified were manually searched.

**Table 1. PCC framework applied in study selection**

Component	Description
Population	Pregnant adolescents (10–19 years)
Concept	Suicidal ideation and associated risk factors
Context	Low- and middle-income countries

### 2.1.3 Study Selection

After duplicates were removed, studies were screened in two stages:

- Title and Abstract Screening: Articles were examined for relevance to suicidal ideation in pregnant adolescents from LMICs.
- Full-text Screening: The complete texts of studies that might be eligible were evaluated in light of the inclusion and exclusion criteria.

#### a. Inclusion Criteria:

- Pregnant adolescents aged 10-19 (Adolescent Health, n.d.) [According to the World Health Organization (WHO), in maternal health reporting, pregnancies in females under 20 years (10–19 years) are categorized as adolescent pregnancies.]
- Conducted in LMICs (World Bank Classification)
- Reported prevalence of suicidal ideation and/or associated risk factors
- Quantitative or mixed-method studies with extractable epidemiological data.

#### b. Exclusion Criteria:

- Studies not specific to adolescents.
- Case reports, editorials, reviews, or opinion pieces.

A PRISMA-ScR flow diagram will be used to summarize the selection process, showing how many records were found, screened, eliminated (with justifications), and included.

## 2.2 Search Strategy

**Table 2. Supplementary table example search strategy used in PubMed**

Concept	Search Terms Used
Population	("Adolescent"[Mesh] OR adolescent* OR teen* OR teenage* OR youth*) AND ("Pregnancy"[Mesh] OR pregnant* OR antenatal OR prenatal OR perinatal OR maternal)
Outcome	("Suicidal Ideation"[Mesh] OR "Suicide, Attempted"[Mesh] OR suicide* OR "self-harm" OR "self injury*" OR "suicide attempt*")
Setting	("Developing Countries"[Mesh] OR "Low- and Middle-Income Countries" OR LMIC* OR Africa OR Asia OR Latin America OR specific country names as applicable)
Final Combined Search	(Adolescent terms) AND (Pregnancy terms) AND (Suicide terms) AND (LMIC terms)
Filters Applied	English language; Human studies; Publication years (2000 – 2024)

## 2.3 Charting the Data

Data were extracted using a standardized Google Sheets template, including:

- Author(s), year, country/region
- Study design and sample characteristics (size, age range)
- Screening tools used (e.g., Edinburgh Postnatal Depression Scale (EPDS), Patient Health Questionnaire-9 (PHQ-9), Global School-based Student Health Survey (GSHS), Suicide Behaviors Questionnaire-Revised (SBQ-R))
- Prevalence of Suicidal Ideation
- Reported risk factors (psychosocial, demographic, clinical)
- Limitations and recommendations

Data extraction was performed by the primary reviewer, with periodic cross-checking accuracy.

- **Collating, Summarizing, and Reporting**

Extracted data was narratively synthesized and arranged in tables. Analysis was centered on:

- Prevalence patterns across LMICs
- Categorization of risk factors (psychosocial, economic, environmental, clinical)
- Regional variations and research gaps

No meta-analysis or quality appraisal was conducted, in accordance with scoping review methodology.

- **PRISMA-ScR Checklist and Flow Diagram**

The study selection and extraction process follows the PRISMA-ScR checklist. A PRISMA flow diagram will be included to depict:

- Number of studies retrieved
- Number of duplicates removed
- Studies screened and excluded
- Final included studies (n=40)

## 2.4 Data Synthesis and Reporting

Extracted data were narratively synthesized and summarized in tables according to study characteristics, prevalence estimates, methodological approaches, and reported risk factors. The synthesis focused on:

- Prevalence patterns of suicidal ideation and suicidal behaviour among pregnant adolescents in LMICS
- Psychosocial, interpersonal, socioeconomic, and contextual risk factors
- Regional variations across included studies
- Methodological characteristics and research gaps.

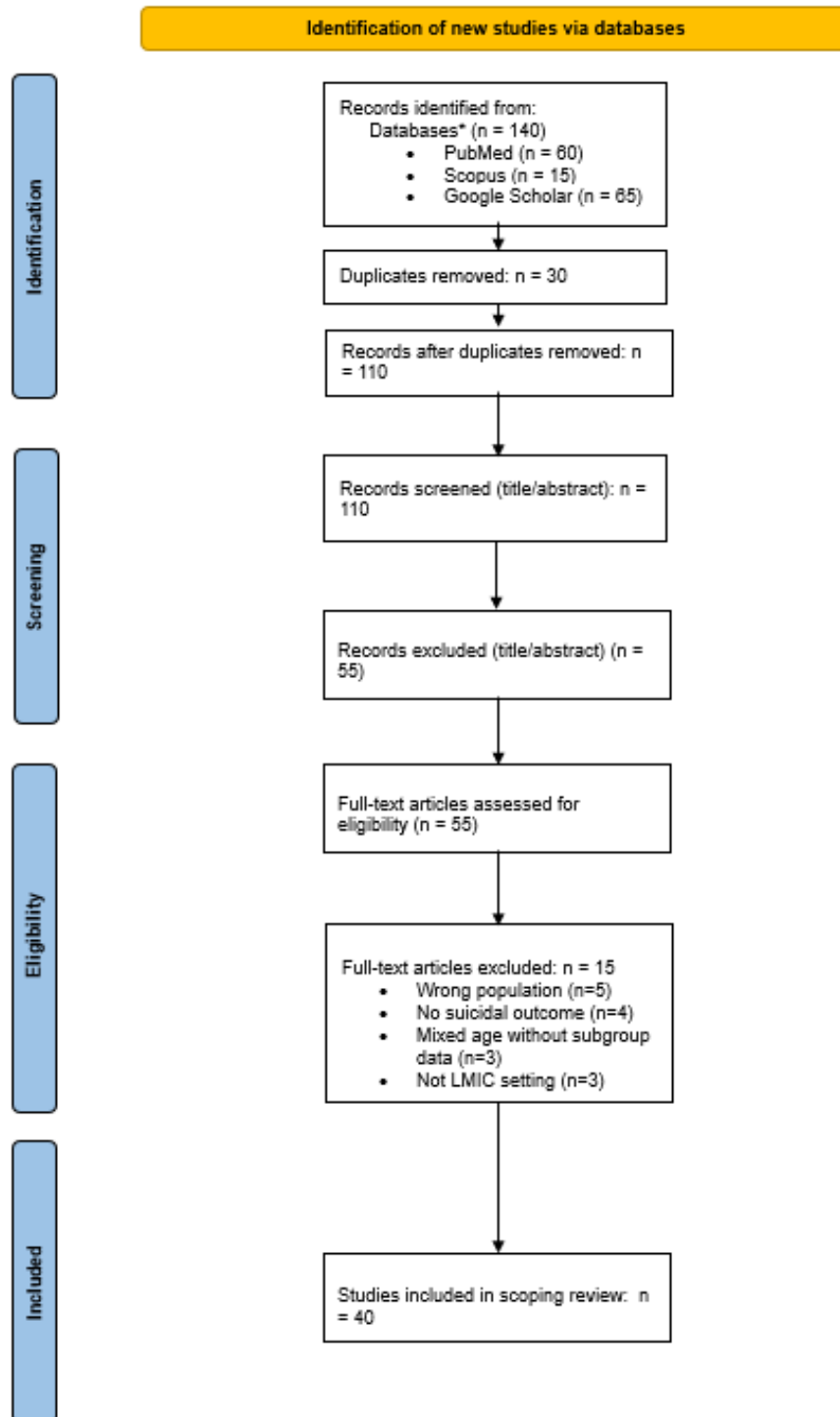
Findings were grouped thematically to facilitate comparison across studies with differing designs and measurement approaches. Due to substantial heterogeneity in study populations, screening instruments, and outcome reporting, a quantitative meta-analysis was not conducted. Consistent with scoping review methodology, formal quality appraisal of included studies was also not performed.

## 3. Results

### 3.1 Study Selection

The study selection process is illustrated in Fig. 1 following the PRISMA-ScR framework. A total of 140 records were identified through database searching, including PubMed (n = 60), Scopus (n = 15), and Google

Scholar (n = 65). After removal of 30 duplicate records, 110 articles underwent title and abstract screening, of which 55 were excluded due to irrelevance to the review objectives. The remaining 55 full-text articles were assessed for eligibility, and 15 studies were further excluded because they involved the wrong population, lacked suicidal outcomes, did not provide adolescent-specific data, or were not conducted in LMIC settings. Ultimately, 40 studies met the inclusion criteria and were included in the final scoping review.



**Fig. 1. PRISMA-ScR flow diagram illustrating the study identification, screening, eligibility assessment, and inclusion process**

*\*Eligibility criteria were applied during database searching and record identification*

### **3.2 Prevalence of Suicidal Ideation and Suicidal Behaviour**

Among studies that statistically evaluated suicidal thoughts or suicide risk in pregnant teenagers, prevalence estimates differed significantly among settings, ranging from about 2% to more than 45%, depending on demographic, assessment technique, and context. Higher prevalence estimates were found in research utilizing self-reported measures or conducted in high-vulnerability settings such as refugee settlements, urban informal settlements, or communities experiencing severe social stigma. Several studies found that pregnant teenagers attempted suicide at rates ranging from 2% to 20%.

### **3.3 Characteristics of Included Studies**

This scoping review encompasses 40 studies published between 2000 and 2024, examining suicidal ideation, suicidal conduct, or closely associated mental health outcomes among adolescent mothers or pregnant adolescents in low-and middle-income countries (LMICs).

#### **3.3.1 Geographic Distribution**

The studies encompassed a diverse spectrum of LMIC settings from Latin America, South Asia, the Caribbean, Southeast Asia, and Sub-Saharan Africa. The majority of studies were carried out in Sub-Saharan Africa, with several conducted in Ghana, Uganda, Kenya, South Africa, Cameroon, and Nigeria. Brazil led a number of Latin American population- and clinic-based studies, whereas the majority of South Asian studies were from Bangladesh, India, Pakistan, and Sri Lanka. There was less research from Malaysia, Thailand, Turkey, and Jamaica, as well as multi-country or international reviews that included data from LMICs.

#### **3.3.2 Study Designs**

The majority of included research (n = 20) used quantitative cross-sectional designs, often using facility- or population-based surveys. A smaller number utilized cohort (n = 1) or case-control designs (n = 2). Qualitative studies (n = 8) used interviews and focus group discussions to investigate adolescent pregnancy, stigma, psychological distress, and suicidal ideation. The review included systematic reviews, meta-analyses, scoping reviews, and narrative reviews (n ≈ 9), providing synthesized evidence on mental health outcomes during adolescent pregnancy. Of the 40 included studies, both primary empirical studies and secondary evidence syntheses were represented. Primary studies comprised cross-sectional, cohort, and qualitative designs, while secondary studies included systematic reviews, meta-analyses, and scoping reviews. However, suicidal ideation was not always a primary or consistently quantified outcome in these reviews.

#### **3.3.3 Study Populations and Sample Sizes**

Sample sizes ranged widely, from small qualitative samples of less than ten individuals to large population-based research with over 3,000 participants. Quantitative primary studies of pregnant adolescents typically involved 100 to 1,000 participants, with one major research in Cameroon included 1,633 adolescent mothers. Participant's ages ranged from 10 to 19 years, while several secondary studies and national surveys included larger reproductive-age samples in which adolescents were not separated.

#### **3.3.4 Measurement of Suicidal Ideation and Related Outcomes**

Suicidal Ideation and suicide risk were assessed using a number of screening and diagnostic devices. Commonly utilized tools were the PHQ-9 (item 9), EPDS (item 10), MINI or MINI-Kid, Suicide Behaviours Questionnaire-Revised (SBQ-R), and structured clinical interviews based on DSM-5 criteria. Several research used self-reported questionnaires or single suicide-related questions included in depression scales, whereas qualitative investigations indirectly reported suicidal ideation through narrative accounts of suffering, hopelessness, or self-harm.

### **3.4 Prevalence of Suicidal Ideation and Suicidal Behaviour**

Among the 40 papers included in this scoping review, prevalence estimates of suicidal thoughts and related suicidal acts among pregnant adolescents differed hugely depending on context, study design, and measuring technique. This heterogeneity precludes quantitative pooling and instead favours a narrative synthesis of prevalent patterns.

**Table 3. Characteristics and key findings of included studies according to the PCC framework**

Author (Year)	Country	Population	Concept	Context	Study Design	Screening Tool	Suicidal Ideation (%)	Suicide Attempt (%)	Key Findings / Risk Factors
Freitas et al. (2008)	Brazil	Adolescent mothers	Suicide attempts	Clinical maternal health setting	Case-control	Not specified	Not reported	20%	Previous trauma, depression, and social stressors contributed to suicide attempts.
Coelho et al. (2014)	Brazil	Pregnant adolescents	Suicidal ideation and psychiatric symptoms	Facility-based maternal health setting	Cross-sectional	Structured psychiatric interview	13.3%	Not reported	Depression and psychosocial vulnerability were associated with suicidal ideation.
Uthaipaisanwong et al. (2015)	Thailand	Pregnant adolescents	Suicide attempts	Hospital record-based maternal health setting	Cross-sectional	Hospital records	Not reported	~1%	Limited psychosocial support and unintended pregnancy were associated with suicide attempts.
Chan et al. (2016)	Sri Lanka	Pregnant adolescents	Suicidal ideation and mental health risk	Hospital-based antenatal setting	Cross-sectional	EPDS clinical assessment	+ 46.5% (self-report); 10.5% (clinical)	Not reported	Stigma, emotional distress, and unintended pregnancy were major correlates.
Kara et al. (2017)	Turkey	Pregnant adolescents	Suicidal ideation and suicidal behaviour	Hospital-based antenatal setting	Cross-sectional	Clinical interview	21.2%	10.6%	Family conflict, depression, and lack of emotional support increased suicide risk.
Soares et al. (2021)	Brazil	Pregnant adolescents and postpartum adolescents	Suicidal ideation	Antenatal and postpartum maternal care settings in LMICs	Cohort study	MINI	12.6%	Not reported	Depression, emotional distress, and poor psychosocial support were associated with suicidal ideation.
Kalra et al. (2021)*	India	Adolescents within broader	Suicidal ideation	Systematic review including	Systematic review	Multiple tools	7.6% (subset)	Not clearly	Depression, social stigma, and poor mental

Author (Year)	Country	Population	Concept	Context	Study Design	Screening Tool	Suicidal Ideation (%)	Suicide Attempt (%)	Key Findings / Risk Factors
		maternal populations		LMIC maternal studies			data)	reported	health support were recurrent risk factors.
Li et al. (2022)	China	Pregnant adolescents	Suicide attempts and psychiatric distress	Community and clinical maternal health settings	Cross-sectional	Structured assessment	Not reported	6.5%	Anxiety, depression, and poor coping strategies were associated with suicidal behaviour.
Xiao et al. (2022)*	China	Adolescents within broader maternal samples	Suicidal ideation	Clinical and psychiatric maternal health settings	Cross-sectional	Psychiatric assessment	~10%	Not reported	Depression and prenatal psychological distress were associated with suicidal ideation.
Faisal-Cury et al. (2022)	Brazil	Pregnant adolescents	Suicidal ideation	Longitudinal maternal health follow-up setting	Longitudinal study	EPDS	3.9%	Not reported	Depressive symptoms and social isolation contributed to suicidal ideation.
Otika et al. (2024)	Kenya	Pregnant adolescents	Suicidal ideation and suicide attempts	Antenatal clinic setting in LMICs	Cross-sectional	PHQ-9	8.6%	2.3%	Depression, poverty, intimate partner violence, and low social support increased suicide risk.
Quarshie et al. (2025)	Ghana	Pregnant adolescents and adolescent mothers	Suicidal ideation and suicide attempts	Community-based and maternal care settings	Cross-sectional	Structured questionnaire	28.5%	18%	Poverty, stigma, intimate partner violence, and inadequate social support were strongly associated with suicidal ideation and suicide attempts.

Abbreviations: EPDS = Edinburgh Postnatal Depression Scale; PHQ-9 = Patient Health Questionnaire-9; MINI = Mini International Neuropsychiatric Interview; LMIC = Low- and middle-income country

\*Includes adolescents within broader maternal samples; adolescent-specific disaggregation was limited

### **3.5 Key Risk Factors Identified**

Suicidal ideation and related behaviours were consistently linked to mental health conditions (particularly depression and anxiety), intimate partner violence, sexual or physical abuse, food insecurity, unplanned or unwanted pregnancy, family rejection, a lack of social support, poverty, and educational disruption. Contextual variables such as refugee status, community stigma, forced marriage, and a lack of access to adolescent-friendly mental health care were frequently mentioned, particularly in qualitative and mixed-methods research.

#### **3.5.1 Individual-Level Factors**

Depressive symptomatology was the most often reported individual-level risk factor, appearing in the vast majority of research assessing mental health outcomes. Pregnant adolescents experiencing moderate to severe depressive symptoms were consistently more likely to report suicidal ideation and some suicide attempts cases. Comorbid anxiety symptoms, mental discomfort, and feelings of hopelessness were all linked to an increased risk of suicide.

Unplanned or unwanted pregnancy was a significant predictor, with multiple studies finding greater risks of suicidal ideation among adolescents who believed their pregnancy was unintended. Adolescents who experienced pregnancy-related stress, fear of disclosure, or a lack of readiness for parenting indicated increased psychological vulnerability.

Substance abuse, including alcohol and illicit drug use, was found as an additional risk factor in a subset of studies, particularly those conducted in urban or socially deprived communities. Adolescents who reported substance use were more likely to have suicidal thoughts, which were commonly linked to depressive symptoms.

#### **3.5.2 Interpersonal and Familial Factors**

Interpersonal relationships played an important role in determining suicide risk. Intimate partner violence (IPV), consisting of physical, emotional, and sexual abuse, was one of the most commonly reported interpersonal risks across regions. Pregnant adolescents exposed to IPV had much higher rates of suicidal ideation and attempts than those in non-violent relationships.

Family-related stressors, such as parental rejection, inadequate family support, and household conflict, were also frequently linked to suicidal ideation. Adolescents who reported challenging family ties, a lack of emotional support, or a fear of stigma in their household were more vulnerable. In contrast, studies on protective dynamics found that adolescents with supportive caregivers or partners had a decreased risk of suicide.

Social isolation and lack of peer support enhanced vulnerability, particularly among adolescents who had left school due to pregnancy or were living apart from their families.

#### **3.5.3 Socioeconomic and Structural Determinants**

Socioeconomic adversity was a common risk factor in the examined research. Poverty, food insecurity, and financial reliance have all been linked to increased suicidal ideation, typically combined with interpersonal stressors and mental health symptoms. Adolescents living in lower-income households reported increased uncertainty about healthcare access, nutrition, and childcare, which contributed to psychological discomfort.

Another frequently mentioned determinant was educational disruption, such as dropping out of school or having inadequate education. Adolescents who were no longer in school reported higher risks of suicidal ideation, indicating a loss of social networks, future goals, and economic potential.

Structural gender-based discrimination, early marriage, and limited autonomy increased the likelihood of suicide in many cultural contexts, especially where adolescent pregnancy was associated with social punishments or decreased decision-making authority.

### **3.5.4 Contextual and Environmental Factors**

Studies carried out in humanitarian circumstances, such as refugee settlements and conflict-affected areas, revealed significantly higher levels of suicidal ideation. Exposure to displacement, trauma and chronic stress enhanced pre-existing adolescent pregnancy risks.

Adolescent-friendly mental health treatments are limited, and mental health screening has not been fully incorporated into antenatal care. Several studies noted that suicidal ideation was often not reported due to stigma, lack of qualified people, and a lack of regular monitoring.

### **3.6 Summary of Major Findings**

Overall, the reviewed evidence demonstrates that suicidal ideation and suicidal behaviour among pregnant adolescents in low- and middle-income countries are shaped by complex and interacting psychological, interpersonal, socioeconomic, and contextual factors. Depression, intimate partner violence, poverty, stigma, family rejection, and limited access to adolescent-responsive mental health services emerged as the most consistently reported correlates across studies. Considerable heterogeneity in prevalence estimates and assessment approaches was observed, reflecting differences in study design, screening instruments, and sociocultural contexts. Despite methodological variability, the findings collectively indicate that pregnant adolescents represent a highly vulnerable population requiring integrated mental health screening and context-sensitive preventive interventions within antenatal care systems.

## **4. Discussion**

This scoping review draws on evidence from 40 studies undertaken in low-and middle-income countries (LMICs) to map the prevalence and risk factors for suicidal ideation among pregnant adolescents. The findings indicate that suicidal ideation is both common and contextually variable in this population, highlighting a significant yet unrecognized public health risk in the maternal and adolescent mental health domains.

The prevalence of suicidal ideation varied widely among the included studies, indicating variation in geographic locations, study settings, and measuring techniques. Higher prevalence estimates were typically reported in studies conducted in Sub-Saharan Africa, whereas rates were lower but still alarming in South Asian and Latin America settings. This discrepancy is likely due to differences in social norms, access to healthcare facilities, levels of stigma, and methodological techniques, rather than true epidemiological disparities.

A recurring theme across the included studies was the complex and multidimensional nature of suicide risk among pregnant adolescents, with suicidal ideation seldom occurring as an isolated phenomenon. The evidence consistently demonstrated strong associations between suicidal thoughts and a range of psychosocial factors, particularly depression, anxiety, emotional distress, hopelessness, and previous traumatic experiences. These observations are consistent with existing literature on adolescent mental health, but pregnancy during adolescence appears to further heighten vulnerability due to the additional emotional, developmental, and social pressures experienced during this stage of life. As adolescents are already undergoing significant psychological and social transitions, the added burden of pregnancy may intensify stress, reduce coping capacity, and increase the likelihood of suicidal ideation and related behaviours.

Broader socioeconomic and structural conditions also played a substantial role in shaping mental health outcomes. Factors such as poverty, food insecurity, inadequate housing, limited educational attainment, and poor access to healthcare services were repeatedly linked with increased suicidal ideation among pregnant adolescents. These findings indicate that suicidal behaviour in this population should not be viewed solely through a clinical lens, but rather as a consequence of deeply rooted social and economic disadvantage. In many low- and middle-income countries, adolescent pregnancy often occurs within environments characterized by deprivation, limited opportunities, and inadequate social support systems. Pregnancy-related school discontinuation may further worsen vulnerability by reducing future educational and economic prospects, increasing dependence, and limiting social participation. Together, these structural disadvantages contribute to cumulative psychological stress and emotional instability.

Interpersonal and family-related stressors were similarly prominent across the reviewed literature. Intimate partner violence, family conflict, social rejection, lack of emotional support, and early or forced marriage were repeatedly identified as major contributors to suicidal ideation and suicide risk. The findings suggest that many pregnant adolescents experience pregnancy within contexts marked by gender inequality, coercion, and diminished autonomy. In several studies, adolescents described experiences of stigma, discrimination, and social isolation following pregnancy, particularly in settings where adolescent pregnancy was culturally condemned or associated with shame. Such experiences may foster feelings of loneliness, helplessness, and worthlessness, thereby increasing vulnerability to suicidal thoughts and behaviours. Overall, the evidence highlights that suicidal ideation among pregnant adolescents is influenced by the interaction of psychological distress, interpersonal adversity, and structural inequality, emphasizing the importance of integrated and context-specific prevention approaches.

In addition to true epidemiological differences, the significant variety in reported prevalence estimates may reflect environmental and methodological factors. Suicidal Ideation among pregnant adolescents in low- and middle-income countries may be underreported due to social desirability bias, stigma associated with both adolescent pregnancy and suicide, and fear of social or familial consequences. Disclosure obstacles are especially prevalent in collectivist or patriarchal settings, where adolescents may be hesitant to express suicidal ideation during interviews or clinical examinations. Furthermore, ethical constraints in studies involving children, such as mandated reporting and parental approval processes, may limit the open revelation of suicidal conduct. These factors are likely to lead to underestimate in some studies, especially those that use face-to-face clinical interviews or facility-based recruiting.

Importantly, several studies highlighted the role of unwanted or unplanned pregnancy as a triggering stressor, especially when associated with stigma and disrupted educational pathways. This emphasizes the need of viewing suicidal ideation not only as an individual mental health outcome, but also as a reaction to cumulative social, emotional, and structural stressors.

Collectively, the major findings reveal that suicidal ideation among pregnant adolescents in low- and middle-income countries is a multifaceted phenomenon influenced by psychological vulnerability, socioeconomic hardship, gender-based disparities, and limited access to adolescent-responsive mental health care. While the evidence base is improving, it is still unevenly distributed and methodologically diverse, emphasizing the importance of enhanced surveillance, context-sensitive screening, and integrated maternal-mental health interventions suited to adolescents.

#### **4.1 Comparison with Existing Literature**

The findings of this scoping review are primarily consistent with previous literature, demonstrating increased mental health vulnerability among adolescents in low- and middle- income countries (LMICs), while also highlighting pregnancy as an additional and compounding risk factor. Earlier research on suicidal ideation among general adolescent populations in LMICs have found significant prevalence rates, generally associated with depression, socioeconomic adversity, and exposure to violence. (McKinnon et al., 2016; Renaud et al., 2022) This current analysis adds to this body of research by revealing that pregnant adolescents are a particularly high-risk subpopulation within this larger population.

Several previous studies and reviews underlined depression and anxiety as the primary determinants of suicidal ideation among adolescents (Abio et al.2022). Consistent with these findings, depressive symptoms were the most commonly reported risk factor across the studies included in this review. However, unlike non-pregnant adolescents, pregnant adolescents face several biological, psychological, and social stressors which could heighten the link between depression and suicidal ideation. (Renaud et al., 2022) This observation coincides with the World Health Organization's emphasis on incorporating mental health into adolescent health services (Health for the World's Adolescents, 2014) and maternal health programs that advocate for systematic detection of prenatal mental illness. (WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience, 2016) However, existing worldwide frameworks frequently treat adolescent mental health and maternal mental health as separate domains, rather than clearly acknowledging pregnant adolescents as a uniquely vulnerable minority at the junction of the two. The findings of this review suggest that pregnancy during adolescence exacerbates existing psychosocial risks—such as depression, stigma, intimate partner violence, and

socioeconomic adversity—highlighting the need for targeted, pregnancy-sensitive screening approaches within adolescent-responsive antenatal care systems (World Mental Health, 2022).

In accordance with past literature on adolescent pregnancy, unplanned or unwanted pregnancy, educational disruption, and stigma were repeatedly related with suicidal ideation in the included studies (Poudel et al., 2022; Chandra-Mouli et al., 2013). Previous study has indicated that early pregnancy can lead to school dropout, social isolation, and reduced future possibilities, particularly in resource-limited countries (Crooks et al., 2022). According to the current synthesis, these stressors commonly co-occur and may jointly increase psychological distress rather than acting individually (Yakubu & Salisu, 2018).

The substantial relationships observed between suicidal ideation and interpersonal factors, such as intimate partner violence, family rejection, and early or forced marriage are consistent with data linking gender-based violence to adverse mental health outcomes among adolescents in low-income countries (Devries et al., 2013). Pregnancy during adolescence may increase reliance on abusive partners or unsupportive familial circumstances, worsening emotional vulnerability and suicide risk.

Socioeconomic disadvantage was also a significant topic, agreeing with previous data that poverty, food insecurity, and insecure housing situations are key structural drivers of poor mental health outcomes among adolescents (Lund et al., 2011). These findings lend support to the broader hypothesis that suicide thoughts among pregnant teenagers cannot be successfully addressed by individual-level interventions alone, but must be understood in the context of larger societal and economic factors (Patel et al., 2018).

While previous reviews on suicidal ideation in LMICs have generally focused on school-attending adolescents or general youth groups, pregnant adolescents have frequently been underrepresented or insufficiently disaggregated in analysis. By combining findings relevant to this demographic, the current review fills a significant gap in the literature and adds new perspectives to worldwide adolescent and maternal mental health studies (Kleinert & Horton, 2016).

#### **4.2 Public Health and Policy Implications**

This scoping review's findings carry significant implications for maternity, adolescent, and mental health policies in LMICs. The observed prevalence of suicidal thoughts (3.9%-46.5%) and suicide attempts (1%-20%) among pregnant teenagers suggests that this population is a high-risk subset that requires focused mental health integration into traditional antenatal care. The current WHO adolescent mental health frameworks prioritize early detection, community-based care, and integration into primary health systems (World Health Organization, 2014b). However, suicide-specific screening during adolescent pregnancy is not regularly adopted across LMIC maternal health platforms.

The WHO Global Strategy for Women's, Children's, and Adolescents' Health (2016-2030) advocates for integrated approaches addressing mental health as a predictor of maternal well-being. However, in many LMIC contexts, antenatal treatments are predominantly focused on obstetric risk identification, with no organized screening for suicide thoughts. Given the interconnected vulnerabilities of adolescent age, unwanted pregnancy, societal stigma, and restricted autonomy, failing to include suicide risk assessment in antenatal treatment may be a major missed prevention opportunity (The Global Strategy for Women's, Children's and Adolescents' Health (2016-2030)).

The diversity observed across measurement methods emphasizes the importance of culturally validated, pregnancy-sensitive screening equipment. Standard depression scales (e.g., EPDS, PHQ-9) include suicide-related items, but they may not account for contextual stressors specific to pregnant adolescents, such as family rejection, intimate partner abuse, or scholastic dropout. Policy frameworks should consequently encourage standardized but contextually flexible screening methods, integrated referral routes, and provider training in adolescent-sensitive communication (Legazpi et al., 2022).

Furthermore, community-level interventions addressing stigma, gender norms, and barriers to disclosure are critical. As stated in WHO suicide prevention methods, upstream preventive measures must target structural variables such as poverty, gender inequity, and limited educational continuity, which have been consistently identified as risk factors in our analysis (World Health Organization, 2015).

### **4.3 Research Gaps and Future Directions**

This review highlighted several major research gaps.

First, there is a significant lack of longitudinal studies addressing the trajectories of suicidal ideation among adolescents during pregnancy and the postpartum period. The majority of included research used cross-sectional designs, which limited causal inference and temporal understanding. Prospective cohort studies are needed to better understand onset patterns, persistence, and the shift from thought to attempt.

Second, geographical representation remains uneven. Evidence clusters in a few middle-income nations (e.g., Brazil, China, Ghana), while vast parts of Sub-Saharan Africa, South Asia, and conflict-affected LMICs are underrepresented. This reduces generalizability and may mask context-specific risk profiles.

Third, measurement heterogeneity presents significant issues. EPDS, PHQ-9, MINI, clinical interviews, and non-standardized questionnaires were some of the techniques used in studies. Few research have validated these tools, particularly among pregnant teenagers in LMIC settings. Future research should prioritize the psychometric validity of suicide-related measures in this population.

Fourth, insufficient disaggregation by age subgroups limits adolescent-specific inferences. Several studies used larger mother samples without separate reporting for teenagers, emphasizing the importance of age-stratified analysis.

Fifth, qualitative research into pregnant adolescents lived experiences with suicide thoughts is scarce. While several qualitative research identified stigma, violence, and social exclusion, further investigation of help-seeking pathways and protective factors is required to inform intervention design.

Finally, intervention research is noticeably absent. There were no studies that examined suicide prevention programs targeted specifically for pregnant adolescents in LMICs. Future research should look into the feasibility and efficacy of integrated antenatal mental health screening programs, peer-support models, and digital therapies in resource-constrained areas.

### **4.4 Strengths and Limitations**

This scoping review offers various strengths. It adhered to recognized methodological guidelines for scoping reviews developed by Arksey & O'Malley (2005) and further refined by (Levac et al., 2010). Reporting followed PRISMA-ScR principles to improve openness and repeatability (Tricco et al., 2018). The review used a structured search strategy across multiple databases, with clear inclusion criteria that focused on low- and middle-income countries and pregnant adolescents. By incorporating both primary and secondary research, this review provides a comprehensive mapping of the existing evidence base.

However, limitations must be addressed. First, the review relied on published, English-language studies, potentially introducing language and publication bias. Second, heterogeneity in study designs, measurement tools, and reporting practices hampered quantitative synthesis and prevented meta-analysis. Third, studies in which adolescent data were integrated inside larger maternal samples may have reduced age-specific precision. Fourth, variations in disclosure contexts, such as social desirability bias, stigma, and ethical constraints related to research with minors, may have contributed to underreporting of suicidal ideation in certain settings. Fifth, as a scoping review, the methodological quality of included studies was not officially rated, in accordance with scoping methodology guidelines (Arksey & O'Malley, 2005).

Despite these limitations, the review provides an important synthesis of a fragmented and underexplored field, emphasizing both the prevalence of suicidal ideation among pregnant adolescents in low- and middle-income countries and the urgent need for context-sensitive policy and research interventions.

### **5. Conclusion**

This scoping study indicates that suicide ideation and behaviour among pregnant adolescents in LMICs are a serious but underrecognized public health concern. The reported prevalence estimates range greatly, suggesting

both contextual variability and methodological heterogeneity. Nonetheless, evidence repeatedly shows that pregnant teenagers face intersecting vulnerabilities, such as social shame, economic difficulty, relationship instability, and limited access to adolescent-sensitive mental health treatments, all of which may increase their risk of suicide.

Despite global recognition of adolescent mental health as a priority, suicide prevention measures have not been routinely included into antenatal care platforms for pregnant adolescents in many low- and middle-income countries. Strengthening routine mental health screening, establishing culturally relevant diagnostic tools, training frontline maternal health workers, and embedding referral channels within primary care systems are critical steps toward lowering unnecessary morbidity and mortality in this population.

Future research should focus on longitudinal designs, age-disaggregated reporting, psychometrically validated screening methods, and intervention trials suited to adolescent pregnancy settings. Pregnant adolescents must be recognized as a distinct high-risk mental health population in need of integrated, developmentally informed, and contextually sensitive suicide prevention methods.

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### Disclaimer (Artificial Intelligence)

Author(s) hereby declare that NO generative AI technologies such as Large Language Models (ChatGPT, COPILOT, etc.) and text-to-image generators have been used during writing or editing of this manuscript.

### Competing Interests

Authors have declared that no competing interests exist.

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