


BMJ Open Prevalence of teenage pregnancy and associated factors in Uganda: a meta-analysis and systematic reviews protocol

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ABSTRACT

Introduction Teenage pregnancy is a major public health problem with huge consequences for maternal health and pregnancy outcomes. More than 90% of these live births are estimated to occur in developing countries. The objective of this review is to estimate the prevalence of teenage pregnancy and its associated factors in Uganda.

Methods and analysis This review protocol will be registered with the PROSPERO database and will be designed following the Preferred Reporting Items for Systematic Review and Meta-Analysis Protocols. A literature search will be conducted in PubMed, African Journals OnLine, Science Direct and Google Scholar in December 2023. Observational studies that report the prevalence of teenage pregnancy will be included. Studies will be assessed for the risk of bias in duplicate. The data will be pooled using random-effects models to estimate the prevalence of teenage pregnancy, with a 95% CI and I² statistic capturing heterogeneity.

Ethics and dissemination This review will not require ethical approval. The findings from the data synthesis will be published in relevant peer-reviewed journals and conferences targeting adolescent and reproductive health. **PROSPERO registration number** CRD42023486460

INTRODUCTION

According to the United Nations (UN) Population Fund report, each year, approximately 14 million adolescents between the ages of 15 and 19 give birth globally. It is estimated that more than 90% of these live births occur in developing countries.¹ This highlights a cause for concern and a gap in the potential impact of adolescent programmes in these regions. The global pregnancy rate in 2021 was 42.5 births per 1000 women, with Latin America and sub-Saharan African (SSA) regions having the highest rates of 53.2 and 101 births per 1000 women, respectively.²

In East Africa, almost 10% of young women give birth by age 16.³ In particular, Uganda reports the highest proportion of women giving birth before the age of 20 (63%) and the highest total fertility rate (6.2) in East Africa (Uganda Bureau of Statistics).^{4 5} The

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ The plan to conduct a meta-analysis, subgroup analysis and sensitivity analysis will be a major strength of this review.
- ⇒ A key concern may be linked to the period covered and the English language restriction applied. These factors should be considered in the interpretation of our findings.
- ⇒ Another concern may be that the data extracted were questionnaire-based.
- ⇒ The evidence synthesis could be strengthened by harmonising the survey methodologies conducted on teenage pregnancy and regions in Uganda.
- ⇒ The benefit to policymakers and stakeholders is to improve prevention as well as management strategies for teenage pregnancy.

highest proportion of Uganda's population is young; 48% of the population consists of young people under the age of 15 years.⁶ In addition, 25.7% of the population is adolescents (10–19 years), and 35.2% are young people (10–24).⁷ Although the Uganda Demographic and Health Survey data for 2016 indicate that the total fertility rate in Uganda has declined from 7.4 children per woman in 1988–1989 to 5.4 in 2016, teenage fertility has instead risen.⁸ A systematic review of the literature of primary studies will give a better view of understanding the prevalence of teenage pregnancy, its trends and risk factors across different regions of Uganda.

These high teen pregnancy rates have health impacts—the leading causes of death and disability among Ugandan women 15 to 19 years old are complications of pregnancy, unsafe abortions and childbirth.⁹ Teenage pregnancy can have detrimental socio-economic and psychological outcomes for the teen mother, her child and young siblings, for it is associated with medical complications,

sexually transmitted infections and family planning challenges.¹⁰

Evidence has shown that factors associated with teenage pregnancy include the age of the mother at pregnancy; the mother's educational status, place of residence, employment, contraceptive use, contraceptive non-use and educational status; poverty; breakdown of parental homes; inequality; and poor participation in decision-making, housemaid, monthly income, absence of communication on reproductive health issues with parents, having parental teenage pregnancy, religion, ethnicity, being sexually active before the age of 15 and being married before the age of 18.^{11–13}

Addressing teenage pregnancy in Uganda is key to meeting the UN Sustainable Development Agenda 2030 targets on ensuring healthy lives and well-being at all ages and National Development Plan III, Health Sector Strategic Plans I and II and Vision 2040 for Sustainable Development. Despite the concern about teenage pregnancy in different regions of Uganda, these data have not been summarised using meta-analysis among teenagers in Uganda. A previous review published on teenage pregnancy among teenagers focused on SSA countries, as only a few studies from Uganda were included.¹⁴ The results of this systematic review and meta-analysis may benefit policymakers and stakeholders by improving prevention as well as management strategies for teenage pregnancy.

Given the above background, this study objective will therefore be aimed at pooling the prevalence data and factors associated with teenage pregnancy in Uganda.

The specific objectives of this review are as follows:

- ▶ To provide an estimate of the prevalence of teenage pregnancy among teenagers in Uganda according to existing published studies.
- ▶ To establish the risk factors associated with the prevalence of teenage pregnancy among teenagers in Uganda according to existing published studies.
- ▶ To critically appraise the methodological quality of the prevalence studies and highlight areas for improvement in future research.

METHODS

Systematic review registration and reporting

This review protocol was registered with the PROSPERO database on 5 December 2023 (registration number CRD42023486460) and designed following the Preferred Reporting Items for Systematic Reviews and Meta-Analysis Protocols (PRISMA-P) statement (online supplemental additional file 1); [figure 1](#) shows the PRISMA flowchart summarising the databases to be searched, screening procedure and the eligible studies for inclusion in data synthesis.¹⁵ In the event of an amendment to this protocol, a description of the amendment along with the rationale will be updated in PROSPERO.

Data sources and search strategies

All the primary studies that investigated the prevalence and factors associated with teenage pregnancy in

Uganda will be searched through the following databases: PubMed, the Directory of Open Access Journals search, Google Scholar and African Journal Online. We shall use snowballing methods to examine relevant references cited in the publications. This search will be done by ABA, IBA, NSA, NS, SM, and ASM in December 2023, as shown in the flowchart ([figure 1](#)). The following concept will be captured by keywords and specific key terms: “Prevalence” AND Teenage pregnancy, OR Adolescent pregnancy OR Young maternal pregnancy AND Determinant factors OR Associated factors AND Uganda. The electronic search will be limited to covering one decade, starting in December 2003 (online supplemental additional file 2).

Eligibility criteria and study selection

The study selection will be focused exclusively on English-language peer-reviewed works that quantify the prevalence and risk factors for teenage pregnancy in Uganda. All cross-sectional studies, case-control studies, grey literature and observational studies will be included in this study. Reviews, systematic reviews, commentaries, case studies and case series will be excluded. Studies will be excluded if they were not published in English, were not from Uganda, provided insufficient details on work-related teenage pregnancy and provided insufficient data about the sampling technique. A thorough review of the title, abstract and full paper will be done by four reviewers (ASM, SM, NS and NSA). A full-text analysis of qualifying studies, including the identification of duplicate records, will be conducted by ASM, SM, NS and NSA. Any form of disagreement will be settled by consensus between the three reviewers during the weekly evaluation meetings. The consistency of the selection process and quality assessment across the four reviewers will be ensured by calculating the level of inter-rater agreement.¹⁵

Quality assessment and data extraction

Articles will be screened using their titles, abstracts and full paper reviews before being included in the meta-analysis and will be done by ABA, IBA, ATM and NSA. A data extraction sheet based on Jonna Briggs Institute checklist for critical appraisal of prevalence studies to assess the quality of the studies will be adopted in this systematic review.¹⁶ The tool contains some information on sample representativeness of the target population, participant recruitment, sample size adequacy, description of the study subjects and study setting, data analysis, objective criteria in the measurement of the outcome variable and identification of subpopulation (online supplemental additional file 3). The quality scores of the included studies will be assessed and presented using mean scores to designate as high, medium and low quality. The data extraction tool will capture necessary details from every included article such as first author, year of publication, age, Uganda, number of pregnancies, marital status, educational status and family educational status.

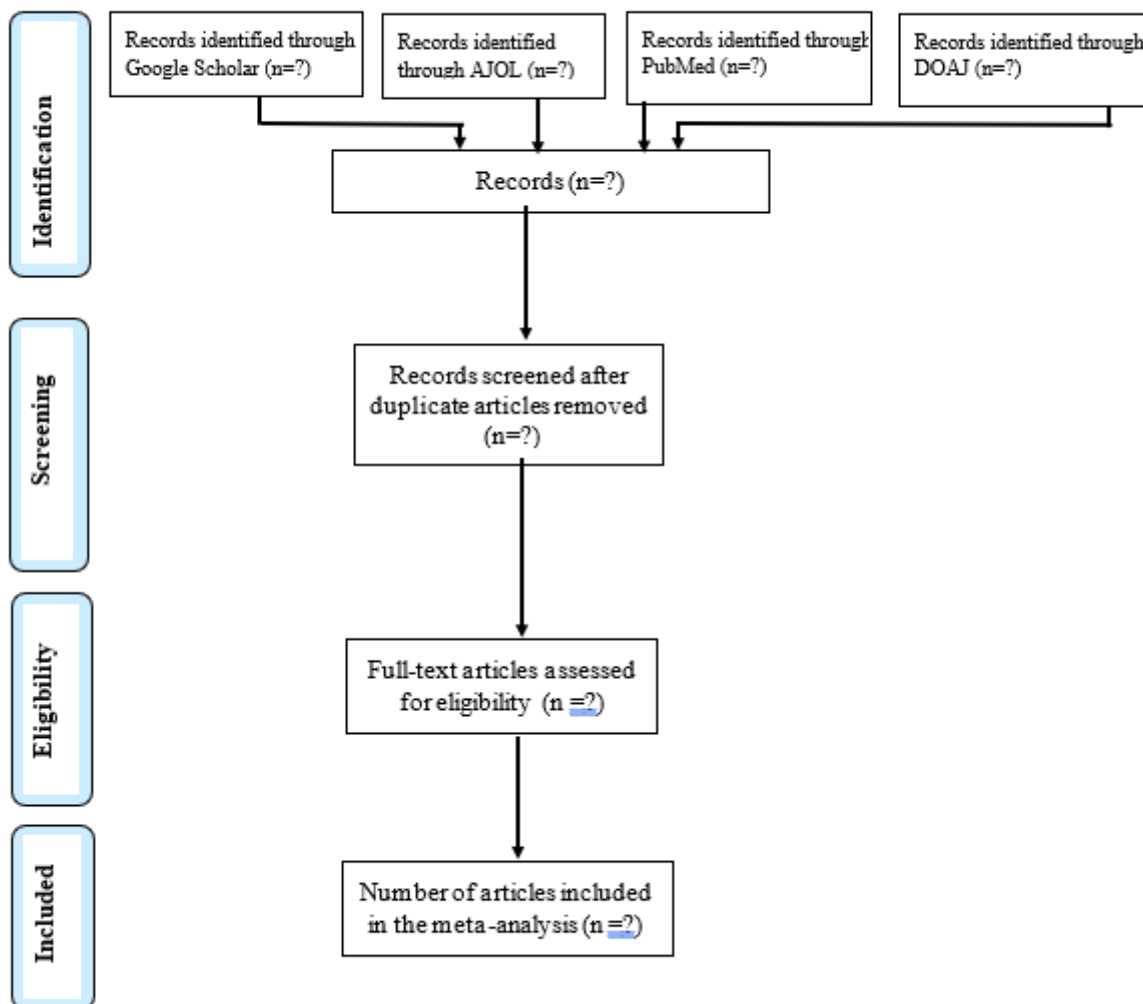


Figure 1 The Preferred Reporting Items for Systematic Review and Meta-Analysis flowchart summarising the databases to be searched, screening procedure and the eligible studies for inclusion in data synthesis. AJOL, African Journals OnLine; DOAJ, Directory of Open Access Journals.

The overall methodological quality assessment will be done by ABA, IBA, ASM, SM, NS and NSA. Each reviewer will assess the quality of the articles independently and any disagreements will be resolved by consensus.

Data synthesis

A descriptive table summarising the key characteristics of each of the included studies will be presented. Meta-analysis will be planned with statistically homogeneous and comparable reported outcomes among studies by pooling data using MedCalc V.19.13.¹⁷ The pooled prevalence estimates of teenage pregnancy in Uganda and associated factors at a 95% CI will be calculated. A random-effects model will be used due to the heterogeneity in the study populations of the included studies. Statistical heterogeneity will be assessed using the I^2 statistic and its 95% CI.

Various subgroups will be identified based on the study and population characteristics. The subgroup analysis will determine the source of heterogeneity attributed to gender, sample size, age of respondents and associated factors. Sensitivity analysis will be performed after excluding each study one by one, and the pooled estimate will be calculated for the remaining studies. The analysis will be performed using the statistical software MedCalc V.19.13

Assessment of publication bias

Potential publication bias will be assessed subjectively using funnel plots, with an asymmetrical funnel indicating publication bias and a symmetrical funnel indicating no publication bias.¹⁸

An objective assessment of publication bias will be performed using Egger's linear regression test, with $p < 0.1$ indicating statistically significant publication bias.¹⁹

Study outcome

This study will highlight the need for integrated and sustained efforts to reduce teenage pregnancy in Uganda and improve the lives of young women.

Patient and public involvement

No patients or members of the public will be directly assessed. Only the data presented in the literature will be used in this study.

DISCUSSION

Teenage pregnancy is a major public health concern with diverse health consequences on adolescents globally with a higher magnitude in developing countries, including Uganda. To our knowledge, this is the first systematic review and meta-analysis that will present a pooled prevalence of teenage pregnancy in Uganda among teenagers using primary studies. This study was prospectively registered and reported according to PRISMA standards.

The findings from this review will provide key insights into addressing teenage pregnancy issues in Uganda meeting the UN Sustainable Development Agenda 2030 targets on ensuring healthy lives and well-being at all ages and National Development Plan III, Health Sector Strategic Plans I and II and Vision 2040 for Sustainable Development. Findings from this review will guide policy-makers in the design and implementation of programmes to reduce teenage pregnancy and enhance adolescent reproductive health interventions in Uganda. The pooled prevalence of teenage pregnancy in Uganda will enhance the provision of evidence on the subject matter in the East African Region.

ETHICS AND DISSEMINATION

This review will not require ethical approval. The findings from the data synthesis will be published in relevant peer-reviewed journals and conferences targeting adolescent and reproductive health. Additionally, the findings will be presented during the monthly academic seminars at the faculty of health sciences, Habib Medical School, Islamic University in Uganda.

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Contributors ABA is the guarantor of this review. ABA is responsible for the overall content and accepts full responsibility for the finished work and the conduct of the study, had access to the data and controlled the decision to publish. ABA participated in the conception of the research idea, literature search, research question, screening of journal articles for meta-analysis, quality score and manuscript writing. IBA contributed to the literature search, screening of journal articles, quality score analysis and review of the manuscript. ABA and NSA supervised the work during the analysis, proofread the manuscript and gave technical guidance. SM, ASM and NS will participate in a literature search in the database and full-text analysis of qualifying studies, including the identification of duplicate records. All authors will read and approve this protocol before it is sent for publication.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

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