Factors Determining the Occurrence of Pregnancy in Adolescents

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ABSTRACT

Adolescent pregnancy remains a major reproductive health problem worldwide and is associated with substantial health and social consequences for both mother and child. Globally, a considerable proportion of girls give birth before the age of 18, and Indonesia continues to report relatively high rates. This study aimed to analyze the determinants and consequences of adolescent pregnancy based on evidence from recent studies. This study used a literature review design. Articles were retrieved from PubMed, ScienceDirect, and Google Scholar using Boolean search strategies. Publications from 2021–2025 were screened using predetermined inclusion and exclusion criteria, resulting in eligible studies for synthesis. The findings indicate that adolescent pregnancy is influenced by multiple interacting factors, including low education, limited reproductive health knowledge, poor socioeconomic conditions, early marriage, family and peer influence, media exposure, and risky behaviors such as substance use. Adolescent pregnancy is also associated with adverse outcomes, including maternal complications, low birth weight, prematurity, and increased risk of stunting, as well as social consequences such as school dropout.

In conclusion, adolescent pregnancy is shaped by complex structural and behavioral determinants. Comprehensive prevention strategies involving early reproductive health education, youth-friendly health services, family and school involvement, and policies addressing education and social protection are essential to reduce its incidence.

Keywords: adolescent pregnancy; determinants; reproductive health; adolescent

INTRODUCTION

Adolescence is a transitional phase between childhood and adulthood, characterized by rapid and multidimensional development [1-3]. During this period, individuals undergo substantial physical, psychological, emotional, and social changes that shape their identity and future life trajectory. One of the most prominent transformations in adolescence is physical maturation, particularly the onset of puberty, which involves hormonal changes, sexual maturation, and the development of secondary sexual characteristics. These biological changes are often accompanied by increasing curiosity about sexuality, the emergence of romantic interests, and the strengthening of sexual drives. Without adequate guidance, supervision, and access to appropriate reproductive health information, these developmental processes may lead adolescents to engage in risky behaviors, including early sexual activity, which in turn may result in unintended pregnancy [4].

Adolescent pregnancy refers to pregnancy occurring among girls aged 10–19 years, a period in which reproductive organs may not yet have reached full physiological maturity to support pregnancy safely. In many cases, adolescent mothers face higher biological risks because their bodies are still developing, which may compromise both maternal and fetal health. In Indonesia, early marriage remains one of the important contributors to adolescent pregnancy. Data from the Central Bureau of Statistics indicate that approximately 2.52% of adolescents in Indonesia marry before the age of 16, and out of every 100 adolescent girls, six give birth before reaching the age of 16 [5]. These figures highlight that adolescent pregnancy is not merely an individual issue but a demographic and public health concern that requires comprehensive attention.

Beyond its demographic implications, adolescent pregnancy poses serious health risks. Young mothers are more vulnerable to complications during pregnancy, childbirth, and the postpartum period. These complications may include anemia, obstructed labor, hypertensive disorders, and increased likelihood of cesarean delivery. Furthermore, pregnancies in very young mothers are often associated with poor antenatal care utilization, inadequate nutritional intake, and limited access to health services. As a consequence, infants born to adolescent mothers face elevated risks of adverse outcomes, including low birth weight, prematurity, developmental problems, and even neonatal mortality. One of the most frequently reported consequences among infants of mothers under 20 years of age is stunting, which is closely linked to low birth weight and preterm birth. Stunting not only affects physical growth but also long-term cognitive development, educational attainment, and productivity in adulthood [6].

The occurrence of adolescent pregnancy is influenced by a complex interaction of multiple determinants. Individual factors include limited knowledge of reproductive health, low self-control, early puberty, and psychological vulnerability. Social determinants such as peer influence, family environment, exposure to sexual content in media, and weak parental supervision also play substantial roles. In addition, structural determinants contribute significantly, including poverty, limited educational opportunities, gender inequality, and restricted access to youth-friendly health services. Cultural norms and traditions that support early marriage further exacerbate the problem in certain communities. Low educational attainment, in particular, is consistently associated with higher rates of adolescent pregnancy [7], as schooling often functions as a protective factor by delaying marriage, improving knowledge, and expanding future aspirations.

Considering the multidimensional nature of adolescent pregnancy and its wide-ranging health and social consequences, it is essential to understand both its determinants and impacts in a comprehensive manner. A deeper analysis of these factors is necessary not only to strengthen prevention strategies but also to inform policy development, reproductive health education, and community-based interventions aimed at protecting adolescents from early pregnancy and its long-term effects. Therefore, this study aims to analyze the determinants and consequences of adolescent pregnancy in order to provide a broader understanding of its risk factors and public health implications.

METHODS

This study employed a literature review design to synthesize existing evidence on adolescent pregnancy. The data used in this study were derived from previously published studies [7-10], which provided empirical findings and theoretical discussions relevant to the topic. A literature-based approach was selected because it enables a comprehensive understanding of patterns, determinants, and consequences of adolescent pregnancy by integrating results from multiple contexts and populations. Through this method, the study seeks to identify consistent findings, highlight variations across settings, and generate a broader conceptual interpretation of the issue.

The literature search was conducted using several major electronic databases, namely PubMed, ScienceDirect, and Google Scholar. These databases were selected because they index a wide range of international peer-reviewed publications in the fields of public health, reproductive health, social sciences, and medical research. The search process applied a structured article retrieval strategy using Boolean operators (AND, OR, and

NOT) to combine relevant keywords related to adolescent pregnancy, its determinants, and its outcomes. The use of Boolean logic allowed the search process to be systematic, transparent, and reproducible, thereby improving the reliability of the article selection process [11].

To ensure the relevance and timeliness of the included evidence, article selection was limited to publications issued between 2021 and 2025. This time restriction was applied to capture the most recent scientific developments, policy discussions, and epidemiological patterns related to adolescent pregnancy. All retrieved articles were first screened to remove duplicates so that each study appeared only once in the dataset. After this initial screening, the remaining articles underwent a second-stage selection process based on predetermined inclusion and exclusion criteria. This step was conducted to ensure that only studies meeting the methodological and topical requirements were included in the final analysis.

The inclusion criteria consisted of several requirements. First, the articles had to be written in English to ensure clarity and consistency in interpretation. Second, the articles had to be published within the last five years (2021–2025) to maintain the currency of the evidence. Third, the articles were required to contain complete structural components, including abstract, introduction, methods, results, and discussion sections, so that the data could be critically examined. Finally, the titles and contents of the articles had to explicitly address adolescent pregnancy, either by discussing its determinants, risk factors, prevalence, impacts, or prevention strategies.

Meanwhile, the exclusion criteria were established to avoid redundancy and maintain analytical focus. Articles in the form of review papers—such as systematic reviews, meta-analyses, and literature studies—were excluded because this study aimed to synthesize findings from primary studies rather than secondary analyses. Academic theses and dissertations were also excluded to ensure consistency in publication standards and peer-review quality. In addition, articles that were not open access were excluded to guarantee full-text availability, allowing thorough evaluation of study design, methodology, and findings. Through this systematic and structured selection process, the study ultimately identified a set of eligible articles that were suitable for in-depth analysis and synthesis. These articles formed the evidentiary basis for examining the determinants and consequences of adolescent pregnancy from multiple disciplinary perspectives.

RESULTS

Based on Table 1, the studies summarized in the table consistently indicate that adolescent pregnancy is influenced by a complex interaction of demographic, socioeconomic, educational, and behavioral factors across different regions. Increasing age within adolescence, early marriage or cohabitation, early sexual initiation, and being out of school were repeatedly identified as strong predictors of adolescent pregnancy in multiple settings. Low educational attainment and poverty emerged as the most consistent structural determinants, showing strong associations with higher pregnancy risk in Africa, South Asia, and other low- and middle-income contexts. Family and social environments also played an important role, including parental separation, extended family structure, lack of parental or partner support, and limited exposure to information sources such as media or social platforms.

In contrast, several protective factors were observed across studies, particularly higher levels of education, better household economic status, and access to information through media exposure. Although knowledge of contraception appeared in some studies as a risk correlate rather than a protective factor, this likely reflects reverse causality or differences in sexual activity patterns among adolescents. Overall, the findings suggest that adolescent pregnancy is not solely a matter of individual behavior but is strongly shaped by broader social inequalities, educational opportunities, and access to reproductive health resources. These patterns underline the need for comprehensive, multisectoral interventions that address both structural and behavioral determinants in order to effectively reduce adolescent pregnancy rates.

Table 1. Synthesis of findings from included studies on adolescent pregnancy

No	Article Title	Authors	Year	Method	Sample	Findings
1	Prevalence and associated factors of adolescent pregnancy (15–19 years) in East Africa: a multilevel analysis [12]	Worku, Misganaw Gebrie et al.	2021	Cross-sectional	17,234	The study reported that the prevalence of adolescent pregnancy in East Africa was 54.6%. Factors increasing the likelihood included age 18–19 years (AOR = 3.06; 95% CI: 2.83, 3.31), contraceptive use (AOR = 1.41; 95% CI: 1.28, 1.55), employment (AOR = 1.11; 95% CI: 1.03, 1.19), being married (AOR = 1.62; 95% CI: 1.45, 1.82), and high community contraceptive utilization (AOR = 1.10; 95% CI: 1.02, 1.19). Protective factors included secondary or higher education (AOR = 0.78; 95% CI: 0.68, 0.91), sexual initiation at ages 15–17 (AOR = 0.69; 95% CI: 0.63, 0.75) and 18–19 (AOR = 0.31; 95% CI: 0.27, 0.35), being unmarried (AOR = 0.25; 95% CI: 0.23, 0.28), media exposure (AOR = 0.85; 95% CI: 0.78, 0.92), and wealthy household status (AOR = 0.64; 95% CI: 0.58, 0.71).
2	Socio-economic factors associated with adolescent pregnancy and motherhood: Analysis of the 2017 Ghana maternal health Survey [13]	Senkyire, Ephraim Kumi et al.	2022	Cross-sectional	4,785	The study found that 14.6% of adolescents reported pregnancy, while 11.8% had given birth. Significant associated factors included geographic zone, household wealth index, age, marital status, and education level. The likelihood was higher in the Middle and Coastal zones and among older adolescents, but lower among adolescents from wealthier households.
3	Prevalence of first adolescent pregnancy and its associated factors in sub-Saharan Africa: A multi-country analysis [14]	Ahinkorah, Bright Opoku et al.	2021	Cross-sectional	40,272	Congo had the highest prevalence of first adolescent pregnancy (44.3%), while Rwanda had the lowest (7.2%). Among sexually active adolescents, prevalence ranged from 36.5% in Rwanda to 75.6% in Chad. Risk factors included older age, employment, marriage or cohabitation, low education, early sexual initiation, contraceptive knowledge, and poor economic status. Lower risk was found among rural adolescents and those in West Africa.
4	Adolescent pregnancy in Sao Tome and Principe: a cross-sectional hospital-based study [15]	Vasconcelos, Alexandra et al.	2022	Cross-sectional	518	The study showed that 20.1% of mothers were adolescents, with 7.7% experiencing very early pregnancy (≤15 years). Associated factors included being unmarried, short relationship duration with the baby's father, lack of paternal support, and non-use of contraception. Very young adolescents were far less likely to have used contraception compared with older adolescents.
5	Factors associated with adolescent pregnancy among Chepang women and their health-seeking behavior in Ichchhakamana rural municipality of Chitwan district [16]	Pant, Smriti et al.	2024	Cross-sectional	217	The study reported a current prevalence of 8.3%, while 25% had previously experienced adolescent pregnancy. Significant factors included lack of education, living in extended families, inadequate antenatal visits, and insufficient iron tablet intake. Low education and extended family structure were key risks, along with poor reproductive health-seeking behavior.
6	Prevalence, Trends in and Determinants of Teenage Pregnancies in Rwanda: Analysis of Rwanda Demographic and Health Survey (2010 to 2020) [17]	Ndahimana, Raphael et al.	2023	Cross-sectional	9,050	Predictors included residence in the Eastern Province (AOR = 1.55; 95% CI: 1.078–2.24), not attending school (AOR = 2.90; 95% CI: 1.22–6.89), primary education only (AOR = 1.67; 95% CI: 1.25–2.24), and lowest socioeconomic status (AOR = 2.02; 95% CI: 1.27–3.12). Contraceptive knowledge was associated with higher likelihood (AOR = 8.70; 95% CI: 3.34–23.01). Sexually active unmarried girls and lack of social media access also increased risk, while larger family size was protective.
7	Determinants of change in the inequality and associated predictors of teenage pregnancy in Uganda for the period 2006–2016: analysis of the Uganda Demographic and Health Surveys [18]	Wasswa, Ronald et al.	2021	Cross-sectional	8,248	Adolescent pregnancy prevalence remained high and relatively constant between 2006 and 2016, with increasing inequality affecting poorer populations. Major predictors included household wealth index, years of education, early sexual debut, and early marriage.

8	The prevalence of teenage pregnancy and early motherhood and its associated factors among late adolescent (15–19) years girls in the Gambia: based on 2019/20 Gambian demographic and health survey data [19]	Terefe, Bewuketu	2022	Cross-sectional	2,633	Pregnancy and early motherhood occurred in 13.42% of late adolescents. Each additional year of age increased the likelihood (aOR = 2.15; 95% CI: 1.93–2.39). Knowledge of ovulation also increased risk (aOR = 1.99; 95% CI: 1.23–3.22), and large family size raised risk. Protective factors included better economic status and higher education levels.
9	Prevalence and predictors of teenage pregnancy in Pakistan: a trend analysis from Pakistan Demographic and Health Survey datasets from 1990 to 2018 [20]	Ali, Anna et al.	2021	Cross-sectional	40,076	Women in the poorest group had higher risk (aPR = 1.26; 95% CI: 1.17–1.35). Education showed a strong relationship, with uneducated women nearly four times more likely to experience adolescent pregnancy (aPR = 3.93; 95% CI: 3.53–4.38). Non-working women had slightly lower prevalence than working women.
10	Teenage Pregnancy and Its Associated Factors in Eastern Ethiopia: A Community-Based Study [21]	Mezmur, Haymanot et al.	2021	Cross-sectional	2,258	Older adolescent age, being out of school, lack of education, marriage, parental divorce, having a sister with adolescent pregnancy history, and lack of knowledge about the fertile period were all independently associated with increased risk of adolescent pregnancy.

DISCUSSION

Adolescent pregnancy rates in Indonesia

Adolescence is a developmental stage marking the transition from childhood to adulthood, typically occurring between the ages of 10 and 19, during which puberty leads to reproductive maturity. Currently, there are approximately 1.2 billion young people worldwide, with about 90% living in developing countries. Adolescent pregnancy is defined as pregnancy occurring before the age of 20 and is associated with increased risks of medical complications for both the mother and the infant. Maternal morbidity and mortality are closely linked to pregnancy at relatively young ages. Evidence shows that girls aged 10–14 years are about five times more likely to die from pregnancy or childbirth than women aged 20–35 years, and this risk remains elevated among girls aged 15–19 years.

In Indonesia, the adolescent birth rate was estimated at 20.49 per 1,000 women of reproductive age based on the Age-Specific Fertility Rate (ASFR) for girls aged 15–19 in 2021. However, this figure increased to 26.64 per 1,000 in 2022. According to the Indonesian Central Statistics Agency (BPS) survey in 2019, pregnancies among girls aged 15–19 accounted for 47 per 100 pregnancies. Data from the National Population and Family Planning Board (BKKBN) in 2018 further indicate that adolescent pregnancies outside marriage were attributed to rape (2.3%), consensual relationships (8.5%), multiple partners (18.3%), and unintended circumstances (39%) [22].

Causes of adolescent pregnancy

Educational factors

Educational status influences adolescents' self-confidence and decision-making capacity. Education plays a crucial role in shaping knowledge, attitudes, beliefs, and values related to sexual behavior. Adolescent pregnancy is often associated with insufficient or poor knowledge of reproductive and sexual health, condom use, and pregnancy risks. Conversely, adequate knowledge contributes to delaying sexual initiation and postponing marriage age [6].

Economic Factors

Low socioeconomic status and residence in disadvantaged communities increase the likelihood of adolescent pregnancy. Individuals from higher economic backgrounds tend to have better access to information and resources, which improves knowledge and supports healthier personal and family outcomes [6].

Parental Influence

Parents play a critical role in adolescent reproductive outcomes. Adolescents who do not communicate reproductive health issues with their parents, those from divorced families, or those whose parents show permissive attitudes toward early pregnancy are more likely to experience adolescent pregnancy. Parents are the primary source of education and guidance, and successful child development is often linked to parents' ability to understand their children as unique individuals [6].

Peer Influence

Peers significantly shape adolescent behavior. Negative peer influence—such as encouragement of sexual activity or having peers who cohabit with partners—raises the risk of pregnancy compared with adolescents surrounded by positive peer environments. Strong peer pressure increases the likelihood of risky sexual behavior, which in turn elevates pregnancy risk [6].

Substance Use

Alcohol consumption, smoking, and drug use may influence sexual behavior and adolescent pregnancy. Even small amounts of alcohol can reduce inhibitions, indirectly increasing sexual activity. However, the effect depends not only on the amount consumed but also on mental, emotional, physical, and situational factors [6].

Access to Information Media

In the modern digital era, adolescents have easy access to information through print media, online platforms, television, and radio. While this accessibility offers educational benefits, it also exposes adolescents to risks such as pornography and harmful content. Such exposure may stimulate early sexual behavior, contribute to early marriage, and increase the likelihood of adolescent pregnancy [23].

Epidemiology of adolescent pregnancy globally and in Indonesia

Globally, in 2021, approximately 14%—or nearly one in six—adolescent girls gave birth before the age of 18 during the period 2015–2021. Adolescent pregnancy is associated with numerous adverse outcomes, including disrupted education due to stigma, reduced employment prospects, family rejection, and social marginalization. Adolescents are particularly vulnerable to health complications because their bodies are often not fully mature physically or mentally. Common health problems include obstetric fistula, eclampsia, puerperal endometritis, and systemic infections. Globally, fewer adolescent mothers receive skilled antenatal, delivery, and postnatal care compared with adult women [24, 25].

Worldwide, the adolescent birth rate in 2021 was about 2 births per 1,000 girls aged 10–14 and 43 births per 1,000 girls aged 15–19, with the highest rates in Sub-Saharan Africa. West and Central Africa reported the highest regional levels, reaching 10 births per 1,000 among girls aged 10–14 and 107 births per 1,000 among those aged 15–19. In contrast, Western Europe, Eastern Europe, Central Asia, and North America recorded the lowest rates, with nearly zero births among girls aged 10–14 and about 15 births per 1,000 among those aged 15–19.

Globally, adolescent birth rates declined by approximately 27%, yet further progress is needed to reduce the burden of adolescent pregnancy and childbirth. According to Indonesia's National Socioeconomic Survey (Susenas) in 2019, the prevalence of pregnancy among girls under 18 years reached 46.1%.

Prevention of adolescent pregnancy

Adolescent pregnancy is closely linked to unintended pregnancy. Among women aged 15–44, unintended pregnancy accounts for about 30% of abortions. Younger women are more likely to experience unintended pregnancy, partly because younger age is associated with lower marriage rates [25]. Adolescence is a transitional period requiring guidance in physical, psychological, and sexual development. Determinants of adolescent reproductive health include socioeconomic conditions (poverty, education, remote residence), cultural and environmental factors (traditional practices and myths), psychological aspects (family disharmony, hormonal imbalance leading to depression), and biological conditions (congenital anomalies or reproductive tract disorders). Media exposure may also encourage harmful behaviors such as smoking, substance abuse, and early sexual initiation, all of which increase the risk of unintended pregnancy [26, 27].

According to WHO, causes of unintended pregnancy among adolescents include sexual violence, contraceptive failure, severe fetal anomalies, maternal health conditions, career constraints, incest, premarital sexual relations combined with low reproductive health knowledge, psychological and economic unpreparedness, and misconceptions about pregnancy risk. Adolescent pregnancy contributes to maternal mortality due to health complications, economic strain, and psychological trauma. Adolescents experiencing unintended pregnancy often face stigma, lack of social support, and school dropout, resulting in psychological stress. Health risks include anemia, preeclampsia, and increased likelihood of postpartum depression within one year after childbirth [28, 29].

Unintended adolescent pregnancy also contributes to child mortality, partly because affected adolescents often receive inadequate prenatal care, live in poverty, have limited education, and engage in unhealthy behaviors such as smoking and alcohol consumption [29]. Given the wide range of physical, psychological, and social consequences, preventive interventions are essential. Improving comprehensive reproductive health education is particularly important, as limited information remains a major contributing factor. Key preventive measures include empowering adolescent girls, reducing gender inequality, respecting human rights, and alleviating poverty [27].

These measures are closely linked to women's reproductive rights, which include the right to life, freedom and security, equality and non-discrimination, privacy, personal autonomy, access to information and education, the right to marry or not marry and plan a family, the right to decide whether and when to have children, access to health services, the right to benefit from scientific progress, freedom of assembly and political participation, and protection from violence or degrading treatment [30, 31].

Policy actions to prevent adolescent pregnancy include early preventive interventions for girls aged 10–14, eliminating child marriage, preventing sexual violence, ensuring optimal female health, protecting rights to education and security, promoting girls' education, involving men as part of the solution, providing youth-friendly sexual education and health services, and promoting equitable development [27]. In addition to prevention, safe abortion services are necessary in cases of unintended pregnancy, particularly for rape survivors. Indonesian Law No. 36 of 2009 on Health states that abortion is generally illegal but allows exceptions for pregnancies resulting from rape that may cause psychological trauma. With comprehensive education, accessible reproductive health services, and safe abortion access where legally permitted, it is expected that unintended adolescent pregnancy rates—and consequently maternal and infant mortality—can be reduced.

CONCLUSION

Adolescent pregnancy remains a global reproductive health concern. In 2021, UNICEF reported that 14% of girls worldwide gave birth before age 18, while Indonesia's 2019 Susenas recorded a rate of 46.1%. Contributing factors include low education and knowledge, economic constraints, parental and peer influence, media exposure, and substance use. Prevention requires comprehensive strategies such as early adolescent interventions, prevention of child marriage, protection of educational and health rights, youth-friendly health services, and involvement of families, schools, and communities. Strengthening youth reproductive health education and optimizing adolescent-friendly services, including counseling centers, are essential to reduce adolescent pregnancy.

Ethical consideration, competing interest and source of funding

- literature review does not require ethical clearance because it utilizes secondary data derived from previously published studies and does not involve direct interaction with human participants or access to identifiable personal data. Therefore, ethical approval was not required for this study.
-There is no conflict of interest related to this publication.
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REFERENCES

1. Sawyer SM, Azzopardi PS, Wickremarathne D, Patton GC. The age of adolescence. The Lancet Child & Adolescent Health. 2018 Mar 1;2(3):223-228.
2. Mastorci F, Lazzeri MF, Vassalle C, Pingitore A. The transition from childhood to adolescence: Between health and vulnerability. Children. 2024 Aug 14;11(8):989.
3. Anil MA, Bhat JS. Transitional changes in cognitive-communicative abilities in adolescents: A literature review. Journal of Natural Science, Biology, and Medicine. 2020 Jul 1;11(2):85.
4. Alley J, Jenkins V, Everett B, Diamond LM. Understanding the link between adolescent same-gender contact and unintended pregnancy: The role of early adversity and sexual risk behavior. Archives of Sexual Behavior. 2022 May;51(4):1839-55.
5. Ningrum DN, Gumiarti, Toyibah A. Literature Review: Faktor Kehamilan Remaja. Media Kesehatan Politeknik Kesehatan Makassar. 2021 Dec 2;16(2):362–8.
6. Soliman A, De Sanctis V, Alaaraj N, Ahmed S, Alyafei F, Hamed N, Soliman N. Early and long-term consequences of nutritional stunting: From childhood to adulthood. Acta Bio Medica: Atenei Parmensis. 2021 Feb 16;92(1):e2021168.
7. Acob JR, Nugroho HS. Writing the literature review. AloHA International Journal of Multidisciplinary Advancement (AIJMU). 2019 Jan 1;1(1):8-11.
8. Mamun AA, Hapsari RNW, Nugroho HSW. Opening space for non-research articles: supporting diversity and balance in scientific health publications. Health Dynamics. 2024 Jan 27;1(1):01-2.
9. Nugroho HSW. Literature review as the final scientific project for health students. Health Notions. 2023;7(1):1-3.
10. Acob JR, Nugroho HS, Auta TT. Publication opportunities of non-research articles in health. Health Notions. 2021 Jan 21;5(01):38-40.
11. Gusenbauer M, Haddaway NR. Which academic search systems are suitable for systematic reviews or meta-analyses? Evaluating retrieval qualities of Google Scholar, PubMed, and 26 other resources. Research Synthesis Methods. 2020 Mar;11(2):181-217.

12. Worku MG, Tessema ZT, Teshale AB, Tesema GA, Yeshaw Y. Prevalence and associated factors of adolescent pregnancy (15–19 years) in East Africa: a multilevel analysis. BMC Pregnancy Childbirth. 2021 Dec 1;21(1):102-112.
13. Senkyire EK, Boateng D, Boakye FO, Logo DD, Ohaja M. Socio-economic factors associated with adolescent pregnancy and motherhood: Analysis of the 2017 Ghana maternal health survey. PLoS One. 2022 Dec 1;17(12):92-98.
14. Ahinkorah BO, Kang M, Perry L, Brooks F, Hayen A. Prevalence of first adolescent pregnancy and its associated factors in sub-Saharan Africa: A multi-country analysis. PLoS One. 2021 Feb 1;16(2):32-42.
15. Vasconcelos A, Bandeira N, Sousa S, Pereira F, Machado M do C. Adolescent pregnancy in Sao Tome and Principe: A cross-sectional hospital-based study. BMC Pregnancy Childbirth. 2022 Dec 1;22(1):992-998.
16. Pant S, Koirala S, Acharya AP, Pradhan PMS. Factors associated with adolescent pregnancy among Chepang women and their health-seeking behavior in Ichchhakamana rural municipality of Chitwan district. PLoS One. 2024 Mar 1;19(3):132-138.
17. Ndahimana R, Umutoni NJ, Nteziryayo JP, Semafara S, Binayisa G, Ishimwe J, et al. Prevalence, trends in and determinants of teenage pregnancies in rwanda: analysis of Rwanda Demographic and Health Survey (2010 to 2020). Journal of Biomedical Research & Environmental Sciences. 2023 Oct;4(10):1425–1434.
18. Wasswa R, Kabagenyi A, Kananura RM, Jehopio J, Rutaremwa G. Determinants of change in the inequality and associated predictors of teenage pregnancy in Uganda for the period 2006–2016: analysis of the Uganda Demographic and Health Surveys. BMJ Open. 2021 Nov;11(11):e053264.
19. Terefe B. The prevalence of teenage pregnancy and early motherhood and its associated factors among late adolescent (15–19) years girls in the Gambia: based on 2019/20 Gambian demographic and health survey data. BMC Public Health. 2022 Dec 1;22(1).
20. Ali A, Khaliq A, Lokeesan L, Meherali S, Lassi ZS. Prevalence and predictors of teenage pregnancy in Pakistan: a trend analysis from Pakistan Demographic and Health Survey datasets from 1990 to 2018. Int Health. 2022 Mar 2;14(2):176–82.
21. Mezmur H, Assefa N, Alemayehu T. Teenage pregnancy and its associated factors in Eastern Ethiopia: A community-based study. Int J Womens Health. 2021;13(1):267–78.
22. Nursari S, Putri. Faktor-faktor yang berhubungan dengan kehamilan usia remaja di wilayah kerja Puskesmas Rantau Pandan. Journal of Healtcare Technology and Medicine. 2022 Apr 1;8(1):100–110.
23. Sari D. Faktor-faktor yang berhubungan dengan kehamilan pada usia remaja di Puskesmas Ciputat Kota Tangerang Selatan Tahun 2014. Arkesmas. 2016;1(1):4–17.
24. Temmerman M. Adolescent mothers: too young to be neglected. The Lancet Child & Adolescent Health. 2017 Nov 1;1(3):164-6.
25. Owolabi OO, Wong KL, Dennis ML, Radovich E, Cavallaro FL, Lynch CA, Fatusi A, Sombie I, Benova L. Comparing the use and content of antenatal care in adolescent and older first-time mothers in 13 countries of west Africa: a cross-sectional analysis of Demographic and Health Surveys. The Lancet Child & Adolescent Health. 2017 Nov 1;1(3):203-12.
26. Lin WH, Liu CH, Yi CC. Exposure to sexually explicit media in early adolescence is related to risky sexual behavior in emerging adulthood. PloS one. 2020 Apr 10;15(4):e0230242.
27. Widman L, Nesi J, Kamke K, Choukas-Bradley S, Stewart JL. Technology-based interventions to reduce sexually transmitted infections and unintended pregnancy among youth. Journal of Adolescent Health. 2018 Jun 1;62(6):651-60.
28. Azami M, Badfar G, Khalighi Z, Qasemi P, Shohani M, Soleymani A, Abbasalizadeh S. The association between anemia and postpartum depression: A systematic review and meta-analysis. Caspian Journal of Internal Medicine. 2019;10(2):115.
29. Tian Q, Chen S, Jiang D. Effects of anemia during the third trimester of pregnancy on postpartum depression and pregnancy outcomes in pregnant women older than 35 years: a retrospective cohort study. Annals of Palliative Medicine. 2022 Mar;11(3):1048057-1057.
30. Engel DM, Paul M, Chalasani S, Gonsalves L, Ross DA, Chandra-Mouli V, Cole CB, de Carvalho Eriksson C, Hayes B, Philipose A, Beadle S. A package of sexual and reproductive health and rights interventions—what does it mean for adolescents?. Journal of Adolescent Health. 2019 Dec 1;65(6):S41-50.
31. Chandra-Mouli V, Akwara E, Engel D, Plessons M, Asnake M, Mehra S, Dick B, Ferguson J. Progress in adolescent sexual and reproductive health and rights globally between 1990 and 2016: what progress has been made, what contributed to this, and what are the implications for the future?. Sexual and Reproductive Health Matters. 2020 Jan 1;28(1):1741495.