

The role of schools in reducing teenage pregnancy: Policies and programs that work – a narrative synthesis

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ABSTRACT

The issue of adolescent pregnancy is still a major health and social concern, especially among the low- and middle-income population, where disparities in education, service access, and gender inequality continue to exist. Curriculum, service linkages, and institutional climate are unique opportunities in schools to impact adolescent reproductive outcomes, but often the evidence is found to be scattered across all these areas. The proposed study will utilize a structured narrative synthesis to focus on school-based policies and programs related to the decrease in teenage pregnancy or the factors that cause it, using the principles of PRISMA 2020. They were systematically searched in PubMed and ERIC on March 12, 2026, to identify English-language studies that were published in the years 2005 to 2026. They were analyzed and synthesized using thematic synthesis with thirteen studies and reviews that met the inclusion criteria. The findings fulfill a triangulation of three areas, which include comprehensive sexuality education (CSE), reproductive health service access, and school connectedness and retention. The use of skills-based CSE of high quality has been found to consistently enhance the use of contraceptives, delay sexual initiation, and reduce sexual risk behavior when compared to those in abstinence-only and information-based approaches. School-related health services promote the use of effective contraception, especially among vulnerable groups. The institutional characteristics of connectedness, attendance, and persistence of enrollment are related to decreased risk behavior and break the two-way contact between school dropout and early pregnancy. Although the direct pregnancy outcomes are less commonly measured, the proximal outcomes have shown consistent improvements, which facilitate the effectiveness of the school-based interventions. The evidence indicates that there is no one intervention that is enough. Schools are best placed to lower teen pregnancy when they have coordinated multicomponent strategies that incorporate comprehensive curricula, confidential access to services, and institutional environments that are supportive. The policy action must thus shift to being more systemic rather than focused on individual solutions, which bring together the educational, health, and retention policies.

Keywords: Comprehensive Sexuality Education, Narrative Synthesis, School-Based Health Services, School Connectedness, Teenage Pregnancy

I. INTRODUCTION

Teen pregnancy is one of the chronic social and health disparities that continue to be a problem in low-and middle-income nations. The World Health Organization claims that around 21 million girls aged 15-19 years get pregnant annually, and about half of the pregnancies are unintended (World Health Organization, 2024). It is not well-distributed as it is concentrated among adolescents who have educational disadvantages, who live in poverty, who are gender-inequal, and those who have limited access to sexual and reproductive health information and services (World Health Organization, 2024, 2025). Such inequalities in the structure indicate that the fact of adolescent pregnancy is not merely an individual-level event but a symptom of social and institutional circumstances.

In this respect, schools take the central position. Not only are they academic teaching places, but they are also places where social norms are influenced, the future goals are realized, and access to information and services may be provided. The schools' impact on adolescent behavior occurs in various ways, such as curriculum, the relationship with the trusted adults, peer settings, and connections to health services. They, therefore, form an imperative institutional platform of pregnancy prevention. Nevertheless, the policy responses have tended to act at the school level; they have utilized isolated interventions like single-course sexual education, abstinence messages, or administration regulations that are not related to service access and climate in schools. Such an uneven treatment is not in line with the evidence base of larger scale, which is increasingly indicating that the causes of adolescent pregnancy are rather interactive educational, social, and service-related than due to one intervention.

This paper discusses ways in which schools can better help in curbing the issue of teenage pregnancy by understanding them as multi-layered institutions. It integrates evidence on school-based policies and programs in three areas, including comprehensive sexuality education, access to reproductive health services, and school connectedness and retention to determine what works, when it works, and why. It is hoped that it offers a policy-relevant synthesis that

does not simply look at individual interventions but rather tries to offer a more unified picture of school-based pregnancy prevention.

1.1 Statement of the Problem

There is large-scale scientific evidence on the topic of adolescent pregnancy prevention, especially with reference to comprehensive sex education, school-based health services, and behavioral outcomes, including contraceptive use and delayed sexual initiation. Program reviews and systematic reviews indicate that systematic interventions targeting schools can have an impact on important proximal factors of pregnancy risk. Nevertheless, this evidence base is still fragmented in the area that is frequently investigated and assigned an interpretation.

The majority of the current reviews concentrate on one of the elements, which is usually sexuality education, without sufficiently incorporating the evidence on service access, school connectedness, and retention. However, these elements interact in the real-life school context. Consequently, policymakers have been continually offered incomplete results that are not representative of the way school systems operate as organic systems. Secondly, proximal outcomes are often stressed over the literature, neglecting the fact that observed rates of pregnancy have been confirmed, which may result in a misleading conclusion that school-based interventions are inefficient or inconclusive, when they, in fact, have an effect on the behavioral precursors of pregnancy. A policy-oriented synthesis of curricular, clinical, and institutional aspects of schooling in one analytical picture is thus necessary. This paper fills that gap by incorporating evidence in these areas to explain the interactions that exist between various school-based mechanisms, in what situations they are effective, and what this means when designing coherent, multicomponent pregnancy prevention policies.

1.2 Research Objective(s)

The aim of this article is three-fold; first, to generalize evidence on school policies and programs related to a lower rate of teenage pregnancy or its direct antecedents; second, to find how schools contribute to the reproductive outcomes of adolescents; and third, to draw the practical policy implications of this work to schools, ministries, and school systems interested in effective pregnancy-prevention programs.

1.3 Research Hypothesis

Since this paper is a documented narrative synthesis rather than an initial empirical investigation, it does not test a single statistical hypothesis. It is, however, informed by the analytic hypothesis that multicomponent school interventions that include comprehensive sexuality education, access to confidential services, and robust connectedness or retention supports are superior to single-component interventions or those based on abstinence-only approaches.

II. LITERATURE REVIEW

2.1 Theoretical Review

This synthesis is informed by an ecological perspective of adolescent development, which views behavior as a result of interacting influences on several levels, including individual, interpersonal, institutional, and wider policy contexts (Bronfenbrenner, 1979). Applying such a view to adolescent pregnancy allows re-positioning the emphasis of the pregnancy issue on the part of the individual decision-maker to the structural and social circumstances where reproductive behavior develops. At the microsystem level, individual knowledge, attitudes, and skills, such as knowledge on contraception, ability to negotiate, and risk perception, influence the risk of adolescent pregnancy. The main level of operation is school-based comprehensive sexuality education (CSE), which is based on the development of knowledge, attitudes, and behavioral skills required to make informed decisions.

Norms and expectations are formed at the mesosystem level when key relationships between essential surrounding areas are observed, especially between schools, families, and peer networks. This level revolves around school connectedness as it depicts how well students feel helped, honored, and familiar at school. Well-connectedness provides adult trust, positive norms, and a higher probability of seeking advice and engaging in protective behavior among the adolescents (Markham et al., 2010; Wilkins et al., 2023). At the exosystem level, institutional policies and structures are involved in the resources and opportunity access. School health services and referral systems run at this level by finding out whether adolescents can obtain confidential, affordable, and timely reproductive health care. Likewise, disciplinary, attendance, and re-entry policies that are developed in schools will determine either the continued involvement in the education process or non-involvement in it.

On a macrosystem level, there are more general social norms, gender disparities, and policy contexts that precondition the way schools operate and the way adolescents are affected by it. They affect how the school-based interventions are practiced and the acceptability of the services, such as contraception and sex education. This multi-level framework highlights the point that adolescent pregnancy cannot be seen as an outcome of individual decisions,

but it is the product of interplaying factors in systems. It also gives a theoretical framework on how to arrange the evidence in this review. The three domains under discussion, including comprehensive sexuality education, availability of reproductive health care, and school connectedness and retention, overlap at the various levels of ecology and complement each other.

Moreover, social cognitive theory and the theory of planned behavior can be used to shed some light on the mechanisms by which such interventions work. Comprehensive sexuality education affects knowledge, perceived norms, self-efficacy, and access to services, decreases structural action barriers, school connectedness alters motivation, expectations, and future orientation, and service access decreases structural action barriers. Collectively, the mechanisms provide the argument that multicomponent school-based strategies are better than single-component intervention strategies since they tackle several determinants of behavior simultaneously.

2.2 Empirical Review

The existing empirical literature can be summarized into three areas. The former field explores comprehensive sexuality education and other classroom interventions. In this case, the prevailing trend is that comprehensive, skills-based, and participatory programs are superior to abstinence-based or thin information-based interventions, particularly regarding contraceptive use, sexual initiation, and other behavioral antecedents of pregnancy (Bennett & Assefi, 2005; Chin et al., 2012; Mohamed et al., 2023). Simultaneously, according to recent reviews, direct effects of pregnancy are relatively rarely measured, and implementation is not uniform, especially when programs are evaluated against international CSE standards (Marseille et al., 2018; Myat et al., 2024).

The second area is school-based access to reproductive health services, including school-based health centers (SBHCs) and referral systems that can offer or facilitate access to confidential contraceptive services. This literature does not present the argument that clinics replace education. Instead, it implies that a curriculum without service provision creates an implementation gap: students can be aware of what to do, but still be unable to get confidential, affordable, and timely contraceptives. California, Oregon, and the City of New York assessments have shown that access to reproductive health services in schools and the use of contraceptives, especially more efficient ones, are higher (Bersamin et al., 2018; Ethier et al., 2011; Fisher et al., 2026).

The third area is school climate, connectedness, and the continuity of education. Even though they are occasionally viewed as indirect research on pregnancy prevention, they are at the center of explaining why certain school systems work better than others. Systematic review evidence provides evidence that school connectedness is protective of sexual and reproductive health outcomes (Markham et al., 2010). Survey evidence reported by the United States of America provides evidence that more connected students report fewer cases of sexual risk behaviors, such as ever having sex and unprotected sex (Wilkins et al., 2023). The connection is more structural in the low- and middle-income context: pregnancy predisposes to school dropout, and school dropout predisposes to later pregnancy (Stoner et al., 2019).

III. METHODOLOGY

This study employed a structured narrative synthesis guided by PRISMA 2020 reporting principles (Page et al., 2021). A narrative approach was appropriate because the evidence base comprised heterogeneous study designs, including systematic reviews, scoping reviews, cross-sectional analyses, and quasi-experimental studies, making statistical meta-analysis unsuitable. The synthesis followed established guidance for narrative reviews, particularly the framework proposed by Popay et al. (2006), to ensure transparency and analytical rigor.

3.1 Search Strategy

A systematic search was conducted in PubMed and ERIC on March 12, 2026. The search strategy combined terms related to adolescent pregnancy, school-based interventions, and reproductive health. The PubMed search string was: ("adolescent pregnancy" OR "teen pregnancy" OR "teenage pregnancy" OR "unintended pregnancy") AND (school* OR "school-based") AND ("sex education" OR "sexuality education" OR contraception OR "school connectedness" OR "school-based health center" OR policy OR program). The ERIC search string was ("teen pregnancy" OR "adolescent pregnancy") AND (schools OR "school-based") AND ("sex education" OR "sexuality education" OR contraception OR "school connectedness" OR "school health"). Searches were limited to English-language publications between 2005 and 2026 to capture contemporary, policy-relevant evidence.

3.2 Eligibility Criteria

Studies were included if they:

- examined school-based interventions, school-linked reproductive health services, or school-related structural factors;
- reported outcomes related to pregnancy or credible proximal indicators (e.g., contraceptive use, sexual initiation, unprotected sex, school dropout); and



(c) were empirical studies or systematic/scoping reviews.

Studies were excluded if they:

- (a) focused on non-school settings;
- (b) were commentary or opinion pieces;
- (c) lacked evaluative outcome data; or
- (d) were not published in English or fell outside the specified time frame.

3.3 Study Selection

The search identified 26 records, of which 4 duplicates were removed. Title and abstract screening were conducted against the eligibility criteria, resulting in the exclusion of 7 records. These were excluded primarily because they did not focus on school-based interventions, lacked relevant outcomes, or were descriptive without evaluative evidence. Fifteen full-text articles were assessed for eligibility. Two studies were excluded at this stage because they did not provide evaluative outcome data or did not meet the school-based focus. Thirteen studies and reviews were retained for inclusion in the final synthesis. The selection process is summarized in the PRISMA flow diagram (Figure 1).

3.4 Quality Appraisal

To strengthen the rigor of the synthesis, a structured appraisal of study quality was conducted. Given the diversity of study designs, quality was assessed using criteria adapted to each type of evidence. Systematic and scoping reviews were assessed for methodological transparency and comprehensiveness, while empirical studies were evaluated based on study design, sample adequacy, measurement validity, and risk of bias. Studies were categorized as high, moderate, or low quality based on these criteria. Particular attention was paid to common limitations identified in the literature, including short follow-up periods, reliance on self-reported outcomes, and non-randomized designs. Quality assessments were not used to exclude studies but informed the interpretation of findings and the strength of policy inferences drawn in the synthesis.

3.5 Data Extraction

Data from included studies were extracted using a standardized matrix (Appendix A), capturing author, year, study context, design, intervention or policy focus, outcomes, key findings, and methodological limitations. This facilitated systematic comparison across studies and supported transparent synthesis.

3.6 Synthesis Approach

Narrative synthesis was done in three phases. To begin with, research papers were organized into three areas of analysis as per their main mechanism: (1) comprehensive sexuality education, (2) access to reproductive health services, and (3) school connectedness and retention. Second, the comparison of the findings was conducted within and across these domains to determine convergence and divergence patterns. This involved the investigation of consistency of results, variations by the study design, and variations by settings. Third, narratives of the strength of evidence were evaluated based on the methodological rigor, consistency of the findings, and causal pathways. Every theme was created in a style of reading, coding, and comparing. Where interpretations were questionable, they were checked with the original studies in order to maintain the same.

This method does not emphasize statistical coalescence, but seeks to reveal the process and the reasons behind the impact of school-based interventions on the risk of teenage pregnancy, as opposed to determining a unitary effect size.

PRISMA 2020 Flow Diagram for Source Identification and Selection

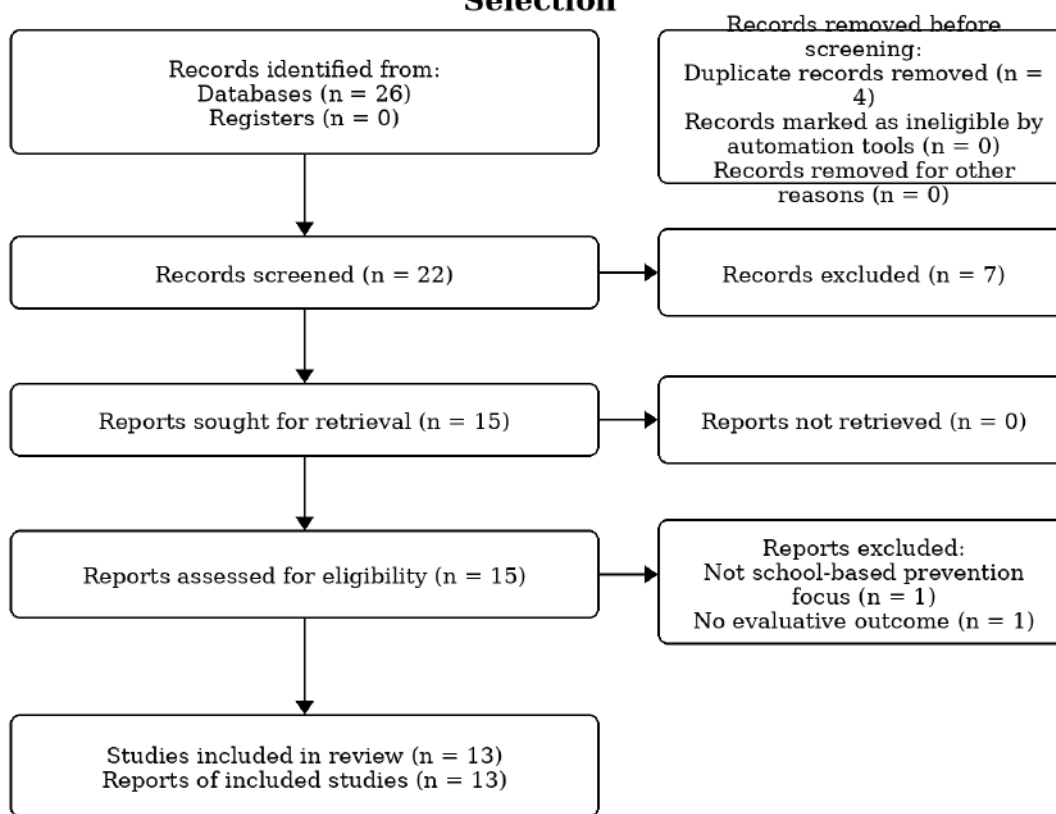


Figure 1
 PRISMA 2020 Flow Diagram for Source Identification and Selection
 Database searched: PubMed and ERIC. Search date: March 12, 2026

IV. FINDINGS & DISCUSSION

4.1 Findings

The final corpus comprised 13 sources: seven systematic or scoping reviews, four studies on school-based health centers or contraceptive provision, and two studies on school connectedness or school retention. Most evidence originated from the United States, with additional contributions from a European systematic review and a South African longitudinal analysis. Secondary and high school settings predominated. Across studies, outcomes were more frequently reported for proximal indicators—such as contraceptive use, delayed sexual initiation, unprotected sex, knowledge, and attitudes—than for confirmed pregnancy outcomes (Myat et al., 2024).

4.1.1 Comprehensive Sexuality Education

Evidence consistently indicates that comprehensive, risk-reduction sexuality education is more effective than abstinence-only or information-based approaches in influencing adolescent sexual behavior. Chin et al. (2012), in a synthesis of 66 comprehensive risk-reduction studies and 23 abstinence education studies, reported positive effects of comprehensive interventions across behavioral outcomes, while abstinence-only programs showed inconsistent effects. Similarly, Bennett and Assefi (2005) found that school-based interventions incorporating contraceptive information demonstrated more favorable outcomes than abstinence-only programs.

Effective programs were typically multi-session, interactive, and skills-based, focusing on communication, negotiation, and correct contraceptive use (Abrams et al., 2023; Chin et al., 2012; Mohamed et al., 2023). WHO evidence summaries also report that high-quality comprehensive sexuality education is associated with delayed sexual initiation, reduced sexual risk-taking, and increased contraceptive use (World Health Organization, 2026). However, evidence on direct pregnancy outcomes is less consistent. Marseille et al. (2018) found no significant differences in pregnancy rates across most pooled comparisons and rated the overall evidence as low or very low due to high risk of bias. In addition, Myat et al. (2024), in a review of 79 studies, reported substantial variation in program content, delivery, and duration, with no interventions fully aligned with international technical guidance on sexuality education.

4.1.2 Access to Reproductive Health Services

Evidence from multiple studies indicates that access to school-based or school-linked reproductive health services is associated with improved contraceptive use and reproductive health behaviors. Ethier et al. (2011) found that female students with access to school-based health centers (SBHCs) were more likely to receive preventive services, use hormonal contraception, and access emergency contraception compared to those without such access. Bersamin et al. (2018) similarly reported that the presence of SBHCs in Oregon schools was associated with increased contraceptive use and healthier sexual behaviors, with stronger effects observed in lower socioeconomic settings.

Studies also highlight the importance of on-site service provision. Bersamin et al. (2018) found that on-site prescribing and dispensing of contraceptives were positively associated with contraceptive use. However, Sullivan et al. (2022) reported that fewer than half of adolescent-serving SBHCs provided contraceptives on-site, with barriers often arising from school or district policies rather than clinical limitations. Recent evidence from New York City further indicates that access to school-based reproductive health programs is associated with increased use of moderately effective and long-acting contraceptive methods among sexually active female students. However, overall contraceptive use did not differ significantly (Fisher et al., 2026).

4.1.3 School Connectedness, Attendance, and Retention

A third body of evidence focuses on school connectedness and retention as factors associated with adolescent sexual and reproductive health outcomes. Markham et al. (2010) identified a consistent protective association between school connectedness and sexual and reproductive health outcomes in a systematic review. Similarly, Wilkins et al. (2023), using data from the 2021 Youth Risk Behavior Survey, reported that higher levels of school connectedness were associated with lower prevalence of sexual risk behaviors, including sexual intercourse and unprotected sex. Longitudinal evidence from South Africa further demonstrates the relationship between school participation and pregnancy outcomes. Stoner et al. (2019) found that school dropout increased the likelihood of subsequent pregnancy, while pregnancy also increased the likelihood of dropout. Lower attendance among enrolled students was also associated with higher pregnancy risk.

4.2 Discussion

This synthesis indicates that school-based strategies of preventing adolescent pregnancy are most effective when they run as an integrated system as opposed to a single intervention. Although the findings indicate consistent evidence in each domain, including comprehensive sexuality education, accessing reproductive health services, and connectedness to school, the main conclusion of the given review is that these domains are not only interdependent but also reinforce each other.

The data help substantiate a multicomponent model where various school-based mechanisms respond to different yet complementary factors that determine the behavior of adolescents. Comprehensive sexuality education is a knowledge-based program that develops attitudes and skills required in making informed decisions. Nevertheless, it is not only necessary that knowledge exists where structural obstacles exist and do not allow access to contraception. School-based or school-linked health services are very important in such situations since they can take knowledge and translate it into action. Simultaneously, school connectedness and retention establish the relational and aspirational contextualization in which the protective behaviors are more likely to be adopted and maintained. These components do not work independently, but they work together and contribute to the fact that single-component interventions demonstrate rather limited or variable results.

The interpretation is in harmony with the ecological framework that is used to guide this study. Sexuality education impacts the individual's knowledge, attitude, and self-efficacy at the microsystem level. Relationships with trusted adults become stronger, and social norms that promote healthy behavior are reinforced at the mesosystem level. The institutional policies at the exosystem level dictate the availability of confidential and timely reproductive health services to the adolescents. The overlap of such levels of evidence offers a theoretical rationale for the identified effectiveness of multicomponent interventions: interventions that combine the impact on individual, relational, and structural factors are most likely to induce long-term behavior change.

The results are also helpful in clarifying the role of mixed results or null results in the literature. The research, such as that by Marseille et al. (2018), reporting that there were limited effects on pregnancy outcomes, should not be seen as an indication of ineffectiveness but rather as the manifestation of the limitations of the methods and their implementation. Pregnancy is comparatively a very rare occurrence that takes extended follow-ups and bigger samples to make statistically significant adjustments. Moreover, there are a lot of studies in the existing reviews that have a high risk of bias, which restricts the ability to draw causal conclusions. More to the point, the larger evidence base reflects the persistent positive changes in more proximal outcomes, including contraceptive use and delayed sexual initiation, which are along the causal pathway to reduce pregnancy. These results may indicate that the lack of vigorous effects on pregnancy outcomes is usually a weakness of measurement, but not intervention logic.

Simultaneously, the almost obvious implementation gaps are identified in the review. The inconsistency observed in comprehensive sexuality education programs, such as non-conformity to international standards (Myat et al., 2024), suggests that the effectiveness is not only a matter of the presence of the interventions but also a matter of their quality and adherence. In a similar way, it has been demonstrated that school-provided health services are limited by institutional policies, even in cases where the services are technically accessible (Sullivan et al., 2022). Such results highlight the fact that inefficient results are usually due to partial or inefficiently applied interventions instead of the natural drawbacks of school-based interventions.

Synthesis also supports the significance of considering school retention and connectedness as the core elements of pregnancy prevention policy instead of the secondary issues. Bidirectional correlation between school dropout and pregnancy proves that risk can be increased by exclusionary school climate, and that inclusive school policies that facilitate attendance and re-entry can also play a part in prevention. This enlarges the school-based interventions beyond health education and service provision and broadens the institutional practices that influence the interactions of the students with the education and future orientation.

Policymaking-wise, the results can be used to advocate that the departments should no longer be fragmented and instead develop coordinated strategies on the system level. Schools work best when the relationship between curriculum, access to services, and institutional climate is all in alignment to promote consistent messages and eliminate obstacles to protective behavior. This will involve education and health sectors working together, well-defined policy frameworks that will facilitate the provision of services, and also investment in teacher training and the quality of programs. It also needs to take equity into consideration since the advantages of school-based interventions are especially high in students with a higher level of structural disadvantage.

This research has limitations that need to be acknowledged. The synthesis is inherently founded upon a fairly small and disparate collection of studies, with a focus on evidence in high-income locations, and with specific emphasis on the United States. The inconsistencies in study design, measurement of outcomes, and implementation contexts decrease the possibility of conclusive inferences regarding the effect sizes. There are also risks of publication bias due to depending on published research and the limitation of not being able to infer the study on pregnancy reduction due to the proximal outcomes. Nevertheless, the similarity of results in various domains and types of studies enhances faith in the generalized results.

Altogether, this review has shown that the success of school-based pregnancy prevention is not in the effectiveness of one of the interventions but in the interaction between several mechanisms that act on different levels of influence. Schools as integrated systems, as opposed to isolated delivery sites, have a higher chance of generating meaningful and sustained decline in the risk of adolescent pregnancy.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

Teenage pregnancy is not reduced by schools simply because students are physically present in classrooms. It is reduced when schools deliberately organize knowledge, relationships, services, and opportunity structures to support informed and future-oriented decision-making. The best available evidence supports a hierarchy of effectiveness. At the core lies comprehensive sexuality education that is medically accurate, interactive, and skill-based. That core becomes stronger when students can obtain confidential reproductive health services or effective referrals. The preventive effect is further strengthened when the school environment cultivates connectedness, supports attendance, and keeps girls enrolled even when they face heightened vulnerability.

This synthesis therefore rejects both extremes that often dominate policy debate. It rejects the minimalist view that pregnancy prevention can be achieved through abstinence messaging or occasional information sessions. It also rejects the narrow curricular view that schools need only teach and not alter access or climate. The school systems most likely to reduce teenage pregnancy are those that align curriculum, service delivery, trusted adult support, and retention policy into a coherent institutional strategy.

5.2 Recommendations

Effective school-based pregnancy prevention requires coordinated action across education and health systems. The following recommendations translate the evidence into implementable policy directions. First, ministries of education should mandate comprehensive sexuality education (CSE) across the secondary school cycle, with clear national standards specifying content, duration, and pedagogy. Curriculum frameworks should require age-appropriate coverage of contraception, consent, healthy relationships, and service navigation, and should prioritize multi-session, interactive, and skills-based delivery. Teacher training institutions and in-service programs must be aligned with these standards to ensure educators are equipped to deliver CSE effectively. Implementation should be monitored through

curriculum audits, classroom observation, and assessment of student competencies rather than relying solely on curriculum presence.

Second, education and health authorities at national and district levels should establish formal mechanisms to ensure adolescents can access confidential reproductive health services. Where feasible, school-based health centers should be supported to provide on-site counseling and contraceptive services. In settings where on-site provision is not possible, schools should maintain formal referral agreements with nearby health facilities, clearly defining referral pathways, confidentiality protocols, and staff responsibilities. Policies that restrict access to contraception within school-linked services should be reviewed and revised. Monitoring systems should track service utilization, referral completion rates, and access to effective contraceptive methods.

Third, school leadership and district education offices should institutionalize strategies to strengthen school connectedness as a core component of prevention policy. This includes establishing advisory systems, mentoring programs, and safe reporting mechanisms, as well as implementing anti-bullying and inclusive discipline practices. Schools should designate trained staff responsible for student support and ensure that all students have access to at least one trusted adult within the school environment. Indicators such as student-reported connectedness, attendance, and engagement should be incorporated into school performance monitoring frameworks.

Fourth, governments and school systems should adopt retention and re-entry policies that explicitly prevent the exclusion of pregnant and parenting students. This includes prohibiting expulsion based on pregnancy, providing flexible learning arrangements, and ensuring continuity of education during and after pregnancy. Schools should be supported with clear guidelines and resources to implement these policies, including counseling services and academic support programs. Monitoring should include tracking dropout rates, re-entry rates, and educational outcomes for affected students.

Finally, monitoring and evaluation systems should be strengthened to improve the evidence base for school-based interventions. Programs should measure both proximal outcomes (e.g., contraceptive use, sexual behavior) and, where feasible, longer-term outcomes such as pregnancy rates. Evaluation frameworks should include indicators of implementation fidelity, such as adherence to CSE standards and availability of services. Data systems should be designed to support continuous improvement, enabling policymakers and practitioners to identify gaps in implementation and adjust strategies accordingly. Taken together, these recommendations emphasize that effective pregnancy prevention in schools depends not on isolated interventions but on coordinated policies that align curriculum, service access, and institutional practices within a coherent system.

Declaration of Interest

The author declares that she does not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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Appendix A: Data Extraction Matrix

| Study | Context and design | School policy/program focus | Outcomes and principal findings |
|----------------------------|---|--|--|
| Abrams et al. (2023) | Europe: systematic review of 16 studies in 7 countries | School sexual health promotion interventions emphasizing communication, respect, attitudes, and psychosocial resources | Six of 13 quantitative studies reported significant positive effects on at least one outcome; qualitative studies described positive participant experiences. Evidence is promising but heterogeneous. |
| Bennett and Assefi (2005). | United States; systematic review of randomized controlled trials | Secondary-school pregnancy prevention programs comparing abstinence-only with abstinence-plus/comprehensive approaches | Programs including contraceptive information showed stronger promise than abstinence-only approaches. The trial base was relatively small and early-generation. |
| Bersamin et al. (2018) | Oregon, United States; cross-sectional multi-level analysis of 134 high schools | Presence of school-based health centers and on-site contraceptive prescribing/dispensing | SBHC presence was associated with healthier sexual behavior and contraceptive use; on-site prescribing/dispensing was positively related to contraceptive use. Observational design limits causal inference. |
| Chin et al. (2012) | United States; two systematic reviews/meta-analyses | Group-based comprehensive risk-reduction versus abstinence education for adolescents | Comprehensive risk-reduction interventions showed favorable effects across all reviewed outcomes. Abstinence education findings were inconsistent and insufficient for firm conclusions. |
| Ethier et al. (2011) | California, United States; comparative study across 12 urban high schools | Access to school-based health centers | Among sexually experienced female students, SBHC access increased prevention care, hormonal contraceptive use, emergency contraception, and STD screening. Benefits were less evident for males and not universal across outcomes. |
| Fisher et al. (2026) | New York City, United States; pooled survey evaluation | School-based health center reproductive health project | Access to increased use of moderately effective hormonal contraception and long-acting reversible contraception among sexually active female students. Overall, any method used did not differ. |
| Markham et al. (2010). | Systematic review | Connectedness as a predictor of adolescent sexual and reproductive health outcomes | School connectedness showed a protective association with sexual and reproductive health outcomes. Evidence was broad but methodologically varied. |
| Marseille et al. (2018) | United States and Canada; systematic review/meta-analysis of school-based pregnancy prevention programs | School-based programs with pregnancy outcomes | Ten RCTs and 11 non-RCTs produced no consistent pregnancy effect across most pooled comparisons. All studies were at high risk of bias, and the evidence was rated low or very low. |
| Mohamed et al. (2023) | Rapid overview of systematic reviews | Adolescent pregnancy prevention interventions, including school-based strategies | School-based primary prevention strategies may reduce unintended pregnancy, improve contraceptive use and knowledge, and delay sexual debut, but generalizability is limited by study quality and heterogeneity. |
| Myat et al. (2024) | Scoping review of 79 studies | School-based comprehensive sexuality education for pregnancy prevention | Most studies were from high-income settings; few reported direct pregnancy, contraceptive, or abortion outcomes; none fully adhered to international technical guidance on sexuality education. |
| Stoner et al. (2019) | South Africa; longitudinal analysis from HPTN 068 | School dropout, attendance, and pregnancy | Pregnancy increased the hazard of dropout, dropout increased the hazard of pregnancy, and lower attendance predicted higher pregnancy risk. Strong evidence that retention is structurally relevant to pregnancy prevention. |

| | | | |
|------------------------|--|--|--|
| Sullivan et al. (2022) | United States; cross-sectional analysis of the National School-Based Health Care Census, 2001–2017 | Provision of contraceptives in school-based health centers and policy barriers | Fewer than half of adolescent-serving SBHCs provided contraceptives on-site. Barriers often originated in school or district policy rather than clinic capacity. |
| Wilkins et al. (2023). | United States; National Youth Risk Behavior Survey analysis | School connectedness and adolescent risk behaviors | Higher connectedness was associated with lower prevalence of every risk behavior examined, including sexual intercourse and unprotected sex. Findings are cross-sectional but policy-relevant. |

Appendix B: Search Strategy and Screening Summary

| Database | Core concepts searched | Filters | Records identified |
|----------|---|-----------------------|--------------------|
| PubMed | Adolescent/teen pregnancy; school-based; sexuality education; contraception; school connectedness; school health center; policy/program | English; (2005).–2026 | 22 |
| ERIC | Teen/adolescent pregnancy; schools; sex/sexuality education; contraception; school connectedness; school health | English; (2005).–2026 | 4 |

Illustrative PubMed search string: ("adolescent pregnancy" OR "teen pregnancy" OR "teenage pregnancy" OR "unintended pregnancy") AND (school* OR "school-based") AND ("sex education" OR "sexuality education" OR contraception OR "school connectedness" OR "school-based health center" OR policy OR program)). Illustrative ERIC search string: ("teen pregnancy" OR "adolescent pregnancy") AND (schools OR "school-based") AND ("sex education" OR "sexuality education" OR contraception OR "school connectedness" OR "school health"). Eligibility criteria: empirical studies or reviews focused on school-based interventions, school-linked reproductive health services, or school-related structural factors with pregnancy outcomes or credible proximal outcomes. Exclusion criteria: non-school settings, commentary/opinion pieces, descriptive reports without evaluative outcomes, non-English sources, and sources outside the publication window. PRISMA counts used in Figure 1: 26 records identified; 4 duplicates removed; 22 records screened; 7 records excluded; 15 reports sought and retrieved; 15 reports assessed; 2 reports excluded at full text; 13 studies included.