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Implementation of Health Education and Promotion of Healthy Behaviors Among Unmarried Pregnant Adolescents: A Qualitative Systematic Review

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ABSTRACT

Adolescent pregnancy outside marriage remains a persistent global health challenge because it not only increases maternal and neonatal morbidity but also disrupts education, social participation, and long-term opportunities for young women. The need to address these challenges through health education and promotion is urgent, as unmarried adolescents face stigma, family rejection, and limited access to healthcare, all of which undermine their ability to adopt clean and healthy living behaviors. The purpose of this review was to synthesize recent qualitative evidence on the implementation of health education and promotion strategies that support healthy behaviors among unmarried pregnant adolescents. This study employed a systematic qualitative review design, screening 1,183 articles published between January 2023 and March 2025 in PubMed, Scopus, Web of Science, ScienceDirect, and Google Scholar, and applying inclusion criteria for qualitative and mixed-methods studies as well as relevant books and guidelines published between 2020 and 2025. After removing duplicates and exclusions, 40 studies were analyzed using the CASP checklist for quality appraisal and thematic synthesis to generate descriptive and analytical themes. Results indicated that five major domains emerged: stigma-sensitive education, peer and school-based interventions, digital or mobile health reinforcement, group antenatal care, and adolescent-friendly service delivery. These approaches were shown to increase empowerment, improve antenatal attendance, reduce psychosocial stress, and enhance daily practices such as nutrition, hygiene, and self-care, although challenges of sustainability, cultural adaptation, and disaggregation by marital status persisted. In conclusion, integrated and context-sensitive interventions combining peer education, digital reinforcement, and group antenatal care are recommended to strengthen resilience, foster agency, and ensure equitable health outcomes for unmarried pregnant adolescents across diverse settings.

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INTRODUCTION

Adolescent pregnancy has long been identified as a global health and development challenge, with the World Health Organization estimating that more than 12 million births occur annually among girls aged 15–19 years, the vast majority of which are concentrated in low- and middle-income countries [40]. Pregnancy at such a young age is consistently associated with higher risks of maternal complications, premature labor, neonatal mortality, and long-term health vulnerabilities for both the mother and child [17]. Beyond the direct health consequences, adolescent pregnancy also has profound social impacts, including interruption of education, reduced employment opportunities, and the perpetuation of poverty across generations [24].

The risks associated with adolescent pregnancy are further magnified when pregnancy occurs outside marriage, a context where cultural and social stigma plays a central role in shaping adolescents' experiences and health outcomes [18]. Unmarried pregnant adolescents often encounter rejection from families, bullying or social exclusion from peers, and judgment from healthcare providers, all of which compound their psychological distress and reduce their likelihood of seeking care [35]. This stigma often translates into practical barriers, as adolescents may avoid antenatal services or delay seeking medical care due to fear of exposure and shame, increasing risks for both maternal and infant morbidity [1]. The interplay between stigma, gender inequality, and cultural expectations creates an environment where unmarried adolescents face significant structural disadvantages compared to their married counterparts [13].

In Sub-Saharan Africa and Southeast Asia, adolescent pregnancy rates remain disproportionately high, driven by socio-economic inequality, limited access to contraception, and inadequate sexuality education (Ahinkorah et al., 2023). Qualitative studies from these regions highlight that cultural and religious values strongly influence adolescent health-seeking behavior, often discouraging unmarried adolescents from accessing reproductive health services or openly discussing their needs (Mitchell et al., 2025). These dynamics result in delays in antenatal booking, inconsistent use of preventive health measures, and in some cases complete avoidance of formal services, which worsens maternal and neonatal outcomes (Lesinskienė et al., 2025).

At the national level, governments have attempted to address adolescent reproductive health through frameworks such as school-based sexuality education, community health campaigns, and adolescent-friendly health services [28]. In Indonesia, for example, the *Perilaku Hidup Bersih dan Sehat (PHBS)* program has been promoted nationwide to encourage healthier lifestyles and preventive health behaviors across communities [5]. While the PHBS framework provides a foundation for health promotion, evidence shows that unmarried pregnant adolescents remain underserved, as the program has not been fully adapted to address the unique stigma, confidentiality needs, and psychosocial support required by this group [4]. Local-level studies confirm that many unmarried adolescents still experience difficulties in accessing information and services, reflecting a gap between policy intentions and real-world implementation [7]. Globally, several innovative strategies have been introduced to strengthen adolescent health education and promotion, including peer education, mobile health (mHealth) technologies, and group antenatal care [8]. Peer-led education has been particularly effective in creating supportive spaces where adolescents can engage in open discussions, exchange experiences, and receive accurate health information without fear of judgment, which enhances both self-efficacy and adoption of healthy behaviors [21]. Digital health innovations, such as mobile applications and SMS reminders, have also been found to reinforce adherence to antenatal visits, improve hygiene practices, and sustain daily health behaviors among adolescents, particularly when confidentiality is prioritized [12]. Similarly, group antenatal care, which integrates medical check-ups with structured health education and peer interaction, has shown to improve empowerment, psychosocial well-being, and practical self-care skills among adolescents, particularly those experiencing isolation and stigma [19].

Despite these promising approaches, systematic evidence that focuses specifically on unmarried pregnant adolescents is limited, as many existing reviews examine adolescent reproductive health broadly without distinguishing between married and unmarried populations [37]. This lack of disaggregated data prevents policymakers and practitioners from designing interventions that address the specific social, psychological, and cultural challenges of unmarried adolescents [13]. Consequently, policies and programs risk being generic and insufficiently tailored, perpetuating inequities in access, adherence, and health outcomes [28].

Based on these considerations, the present review was conducted to synthesize qualitative evidence on the implementation of health education and promotion interventions for unmarried pregnant adolescents. The purpose of this study is to identify effective strategies, examine the gaps in current practice, and propose recommendations for culturally relevant and sustainable health promotion programs that can improve maternal and child outcomes for this vulnerable population [36].

MATERIAL AND METHOD

This review followed the principles of systematic qualitative evidence synthesis in order to capture the depth and context of adolescents' lived experiences while simultaneously providing structured evidence to inform health promotion programming [26]. A comprehensive search was conducted between January 2023 and March 2025 across five major databases—PubMed, Scopus, Web of Science, ScienceDirect, and Google Scholar—to ensure wide coverage of peer-reviewed literature on adolescent pregnancy, health education, and promotion interventions [11].

The search strategy employed a combination of keywords such as *"adolescent pregnancy," "unmarried adolescents," "health education," "health promotion," "clean and healthy living behavior," "stigma," "peer education," "mHealth," and "group antenatal care."* Boolean operators AND/OR were used to refine the search strings, and filters for publication year (2023–2025 for journal articles; 2020–2025 for books and guidelines) and English language were applied [10].

Inclusion criteria were: (1) primary qualitative studies, qualitative components of mixed-methods research, or qualitative reviews focused on health education/promotion in adolescent pregnancy; (2) studies explicitly including or analyzing unmarried pregnant adolescents; (3) publications within the time frame specified; and (4) English-language texts. Exclusion criteria were: (1) opinion pieces without empirical data, (2) studies older than 2020 (for books/guidelines) or 2023 (for journals), and (3) studies unrelated to health promotion or behavior change [33].

The initial search yielded 1,183 articles. After removing duplicates, 742 remained, of which 674 were excluded at the title and abstract screening stage. Sixty-eight full texts were reviewed, and 40 met all criteria. These comprised 32 journal articles (2023–2025) and 8 books or guidelines (2020–2025). Data were extracted into a matrix that included author, year, country, study population, type of intervention, and main findings. The CASP qualitative checklist was used for quality appraisal. Finally, thematic synthesis was employed, consisting of line-by-line coding, development of descriptive themes, and generation of analytical themes [26].

RESULTS

The results of this systematic review reflect the synthesis of 40 eligible studies that focused on health education and health-promotion interventions targeting unmarried pregnant adolescents across diverse global contexts. The included studies varied in design and scope but consistently highlighted the psychosocial, cultural, and structural barriers that adolescents face, particularly the influence of stigma and limited access to adolescent-friendly services [18]. The methodological quality of the included research was assessed using the CASP qualitative checklist, ensuring that the findings presented in this section are both factual and valid for the purpose of informing health-promotion practices [26]. In terms of study characteristics, most of the included research was published between 2023 and 2025 and represented data from Sub-Saharan Africa, Southeast Asia, and selected studies from South Asia and Latin America, thereby providing a wide coverage of sociocultural contexts where adolescent

pregnancy remains prevalent [13]. Participants in these studies included unmarried adolescents aged 14–19 years, with sample sizes ranging from small qualitative cohorts of 15 participants to larger community-based programs involving more than 300 adolescents [3]. The interventions described were heterogeneous, including school-based programs, digital reinforcement tools, group antenatal care models, and service delivery innovations, all of which were evaluated qualitatively for their impact on behavior change [8]. A dominant theme across the studies was the pervasive influence of stigma, which profoundly shaped adolescents' decisions and behaviors. Unmarried adolescents often reported concealing their pregnancies due to fear of judgment from peers, families, and healthcare workers, resulting in late initiation of antenatal care and poor adherence to health-promoting practices such as nutrition and hygiene [18]. In Ghana and Indonesia, qualitative evidence demonstrated that interventions explicitly addressing stigma through open dialogue, family-based counseling, and community sensitization increased adolescents' confidence to seek care and adopt preventive practices [5]. Addressing stigma reduced psychological distress and enhanced self-efficacy, enabling adolescents to consistently practice clean and healthy living behaviors [35].

Peer and school-based strategies emerged as another significant approach for promoting healthy behaviors among unmarried pregnant adolescents. School-based sexuality education programs that incorporated interactive methods such as peer discussions and role play improved knowledge, self-efficacy, and decision-making among adolescents [21]. Peer-led initiatives, both within schools and community settings, were perceived as more relatable and trustworthy compared to adult-facilitated interventions, making adolescents more willing to engage in conversations about reproductive health [27]. Community-based programs like the Yathu Yathu initiative further demonstrated that adolescents are more likely to adopt health behaviors when interventions are designed with their active participation and facilitated by peers of similar age [32].

Digital and mobile health interventions provided another layer of support that extended beyond traditional clinical or school-based settings. Programs using SMS reminders, mobile applications, and digital chat platforms reinforced adherence to antenatal visits and promoted daily preventive behaviors such as handwashing and balanced diets [12]. Adolescents reported valuing the confidentiality and personalization of these tools, which allowed them to access information without fear of stigma or exposure [38]. Evidence also suggested that digital interventions were particularly effective when combined with in-person support such as peer education, as this created a blended model that reinforced behaviors through multiple touchpoints [34]. A systematic review further emphasized that embedding digital health tools into broader promotion strategies ensured equitable access and sustained motivation among adolescents [2]. Group antenatal care (GANC) was identified as one of the most effective platforms for delivering both clinical services and health promotion. Adolescents who participated in GANC reported a reduction in feelings of isolation, increased empowerment, and practical knowledge on topics such as breastfeeding preparation, hygiene, and nutrition [23]. Comparative findings revealed that adolescents in group models exhibited higher levels of self-care and adherence to preventive practices than those who attended individual consultations [20]. In Malawi, community health worker–facilitated GANC demonstrated that group models could be adapted to low-resource settings while maintaining confidentiality and cultural sensitivity, ensuring continuity of care for unmarried adolescents [31]. These findings highlight GANC as both a medical and psychosocial intervention, capable of addressing stigma while enhancing health literacy [6].

Finally, adolescent-friendly service delivery was consistently reported as a critical determinant of whether unmarried pregnant adolescents accessed and maintained care. Studies documented that rigid clinic hours, lack of privacy, and judgmental provider attitudes often discouraged adolescents from seeking services in a timely manner [28]. Innovations that provided confidential entry points, flexible hours, and staff training in adolescent-friendly approaches significantly improved service utilization and adherence to healthy behaviors [1]. In Indonesia, aligning service delivery with cultural and religious sensitivities increased community acceptance and improved adolescents' comfort with accessing health services [5]. Policy-level strategies such as linking school re-entry programs with adolescent health promotion further enhanced resilience and reduced long-term exclusion [3]. Overall, the thematic synthesis indicates that the promotion of clean and healthy living behaviors

among unmarried pregnant adolescents requires multi-level interventions that directly address stigma, incorporate peer and digital components, reimagine service delivery, and integrate group antenatal care. The findings suggest that interventions are most effective when adolescents are positioned as co-creators of programs, services are adapted to cultural contexts, and confidentiality is prioritized in all aspects of care [37].

DISCUSSION

The findings of this review confirm that stigma remains one of the most significant structural and psychosocial barriers affecting unmarried pregnant adolescents, and its persistence highlights the importance of situating health education within broader theories of social determinants of health [18]. Social stigma functions not only as an interpersonal experience but also as a structural determinant that reinforces gender inequality, restricts access to health systems, and perpetuates marginalization [35]. Theoretically, stigma operates within the framework of Goffman's theory of social identity, whereby unmarried pregnant adolescents are labeled and subsequently excluded from normative social spaces, resulting in internalized shame and diminished self-efficacy [25]. By addressing stigma through targeted education and sensitization strategies, interventions align with Bandura's social cognitive theory, which emphasizes the role of self-efficacy and observational learning in sustaining behavior change [5].

This interpretation is supported by evidence from other systematic reviews that indicate adolescents who perceive lower stigma are more likely to seek antenatal care, practice recommended hygiene behaviors, and adhere to nutritional advice [17]. Creating safe spaces for adolescents—through peer dialogue, family counseling, or community sensitization—not only reduces psychosocial distress but also facilitates identity reconstruction, allowing adolescents to transition from marginalized individuals into empowered agents of change [24]. These findings are consistent with global evidence emphasizing that psychosocial well-being is a critical prerequisite for effective engagement in health promotion interventions [40].

Peer education has consistently emerged as a mechanism that translates abstract health information into relatable experiences, a process well explained by the diffusion of innovations theory, which argues that individuals are more likely to adopt behaviors when influenced by trusted peers rather than distant authorities [21]. In the reviewed literature, adolescents consistently reported higher comfort levels when health information was delivered by peers, demonstrating the role of shared identity in enhancing trust and receptivity [27]. Furthermore, peer-led initiatives encourage co-creation and collective learning, principles that resonate with participatory action theory, which highlights the transformative potential of including participants as co-designers of interventions [32]. This reflects a paradigm shift from adolescents being passive recipients of information to active contributors in shaping their own health outcomes [8].

Despite these benefits, peer education faces challenges in maintaining fidelity and quality across diverse contexts, especially when adequate training, monitoring, and policy support are lacking [22]. Without systemic reinforcement, peer educators may inadvertently provide inconsistent or incomplete information, raising concerns about sustainability and scalability [16]. Embedding peer-led strategies within institutional frameworks—supported by national adolescent health policies—offers a way to ensure long-term impact, aligning with the principles of health systems strengthening which emphasize governance, financing, and accountability [3].

Digital and mobile health interventions represent a rapidly evolving frontier for adolescent health promotion, grounded in behavioral economics and nudge theory, which emphasize how small, timely reminders can influence decision-making and reinforce positive behaviors [12]. Adolescents' reported appreciation for SMS reminders and mobile applications is consistent with evidence that digital tools increase adherence to preventive practices by providing confidential, personalized support [38]. Importantly, digital interventions reduce structural barriers by providing continuous reinforcement beyond the clinic, thereby bridging the gap between adolescents and health systems [34]. The review also highlighted that blended approaches integrating digital platforms with peer education or group

antenatal care produce stronger and more sustainable outcomes, aligning with the concept of multi-modal interventions in public health promotion [2]. Nevertheless, digital strategies are not universally accessible, and their effectiveness is mediated by access to devices, digital literacy, and economic factors such as the affordability of internet or mobile data [9]. This underscores the importance of equity-focused implementation, where digital solutions must be complemented by community-based strategies to avoid exacerbating existing inequalities [29]. From a theoretical perspective, the effectiveness of mHealth tools reflects the intersection of self-determination theory which emphasizes autonomy and competence and the health belief model, which highlights perceived barriers and benefits as key predictors of behavior adoption [37].

Group antenatal care (GANC) represents an intervention that combines clinical services with education and psychosocial support, aligning with theories of social support and collective efficacy [23]. Adolescents who participated in GANC reported enhanced empowerment, improved self-monitoring, and strengthened psychosocial well-being, findings consistent with social learning theory which emphasizes learning through observation, modeling, and peer reinforcement [20]. The shared dynamics of GANC reduce feelings of isolation and create opportunities for adolescents to validate each other's experiences, thereby normalizing healthy behaviors and reducing stigma [6]. In resource-limited contexts such as Malawi, adaptations of GANC facilitated by community health workers demonstrated scalability and sustainability, illustrating the potential of task-shifting in health systems [31]. Yet, GANC is not without challenges, particularly in settings with limited human resources, cultural resistance, or infrastructural constraints [39]. Adolescents may be reluctant to participate in group sessions if confidentiality is not assured, underscoring the necessity of cultural adaptation and privacy-sensitive design [5]. The lack of longitudinal evidence on the sustainability of GANC outcomes further highlights the need for ongoing research to evaluate long-term effects on maternal and child health [13]. Adolescent-friendly service delivery emerged as another critical determinant of health outcomes, reinforcing the principle of rights-based approaches to healthcare [28]. Adolescents described rigid service hours, stigmatizing provider attitudes, and lack of confidentiality as major deterrents to care, echoing findings from global frameworks such as the WHO's adolescent health strategy [1]. When services were redesigned to include flexible hours, confidential entry points, and non-judgmental staff training, adolescents demonstrated greater trust in the health system and increased adherence to healthy behaviors [3]. Linking service delivery with school re-entry programs not only enhanced resilience but also reduced social exclusion, aligning with human capital theory which emphasizes education as a determinant of long-term health and socio-economic well-being [5].

A critical insight from this review is that multi-component, integrated interventions are more successful than isolated approaches, demonstrating the importance of systems thinking in public health [12]. Hybrid models that combine peer education, digital reinforcement, and group antenatal care create a supportive ecosystem where adolescents receive continuous reinforcement across school, community, digital, and clinical settings [21]. This aligns with the ecological model of health behavior, which recognizes that individual change is influenced by multiple interacting levels—individual, interpersonal, community, and policy [36]. Despite these insights, significant gaps remain in the evidence base. A notable limitation is the lack of disaggregated data by marital status, which constrains understanding of the unique needs of unmarried pregnant adolescents and prevents interventions from being fully tailored to their realities [37]. Short-term evaluations dominate the literature, leaving critical questions about sustainability and long-term outcomes unanswered [17]. There is also limited research on how cultural and religious contexts shape intervention effectiveness, despite these being central to adolescents' lived experiences [5]. Future research should prioritize context-specific adaptations, longitudinal evaluations, and comparative analyses of hybrid versus single interventions to generate evidence that can inform scalable, cost-effective strategies [10]. By embedding health education and promotion strategies into broader systems of care, policy, and education, it becomes possible not only to improve health outcomes but also to promote equity, dignity, and resilience for unmarried pregnant adolescents worldwide [40].

CONCLUSION AND RECOMMENDATION

The synthesis of evidence in this review demonstrates that unmarried pregnant adolescents face layered challenges structural, cultural, and psychosocial that hinder their ability to consistently adopt clean and healthy living behaviors, yet targeted health education and health-promotion strategies can effectively address these barriers when they are designed with sensitivity to context [18]. Stigma emerged as a pervasive determinant of behavior and service utilization, reinforcing the importance of designing interventions that explicitly reduce judgment and create safe, confidential spaces for adolescents [35]. Interventions that failed to address stigma were less likely to succeed in sustaining behavioral change, which confirms that stigma reduction must be viewed as a prerequisite for effective promotion of healthy practices [25]. Peer education, digital reinforcement, and group antenatal care collectively demonstrated consistent effectiveness, particularly when integrated into hybrid models that leverage the strengths of each approach [12]. Peer-led strategies provided relatability and reduced barriers to participation, mobile health interventions extended continuity of support beyond formal health settings, and group antenatal care combined clinical guidance with peer support to enhance empowerment and psychosocial well-being [28]. Together, these approaches illustrate that adolescent-friendly, multi-component interventions are more impactful than isolated efforts, especially for adolescents experiencing stigma and social exclusion [21]. Policy alignment and institutional support are critical for scaling and sustaining these interventions, as studies consistently emphasized the need for adolescent-friendly service delivery, confidential entry points, and culturally sensitive adaptations [1]. Without policy-level reforms, even well-designed programs risk being unsustainable or reaching only a fraction of the intended population [3]. Ensuring that school re-entry policies, community education, and health service frameworks are harmonized is essential for creating enabling environments in which unmarried pregnant adolescents can thrive [5]. Recommendations from this review include several key priorities. First, programs should institutionalize stigma-reduction strategies as an explicit component of all health education and promotion activities for adolescents [24]. Second, hybrid models that combine peer education, digital reinforcement, and group antenatal care should be scaled and adapted to different cultural and resource contexts, as evidence shows their cumulative impact on behavior change and service engagement [2]. Third, adolescent-friendly services should be strengthened through flexible clinic hours, confidential service entry, and staff training to eliminate judgmental attitudes and ensure that unmarried adolescents feel safe in accessing care [28]. Fourth, policies that link school re-entry opportunities with health promotion efforts should be reinforced to reduce educational disruption while simultaneously improving health outcomes [36]. Finally, future research should prioritize disaggregation by marital status, longitudinal evaluation of sustained behavior change, and cost-effectiveness studies to guide scalability and system-level integration [17]. In conclusion, while adolescent pregnancy outside marriage remains one of the most pressing public health and social challenges globally, this review highlights that with targeted, integrated, and culturally sensitive health education and promotion strategies, it is possible to strengthen adolescents' agency, foster resilience, and support the adoption of clean and healthy living behaviors. By embedding these approaches into health systems, schools, and communities, and by aligning them with supportive policy frameworks, stakeholders can ensure not only improved maternal and neonatal health outcomes but also more inclusive, equitable, and sustainable futures for unmarried pregnant adolescents worldwide [40].

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AUTHOR CONTRIBUTIONS

Niken Kartika Sari conceived and designed the study. Literature search and data collection were performed by Baiq Tuhu Abdiani. Data extraction, analysis, and interpretation were conducted by Suci Arsita Sari. The manuscript was drafted by Niken Kartika Sari and revised critically by Baiq Tuhu Abdiani and Suci Arsita Sari. All authors read and approved the final version of the manuscript.

CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest regarding the publication of this manuscript. The research was conducted independently, and no financial, personal, or professional relationships influenced the analysis, interpretation, or reporting of the findings.

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