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Health Counseling for Self-Care in Adolescent and Young Women During Pregnancy and Motherhood: A Systematic Review and Meta-Analysis

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Abstract

This study aimed to evaluate the effectiveness of counseling and educational interventions delivered during pregnancy and early motherhood in promoting maternal health knowledge, self-care behaviors, and related health outcomes among adolescent and young women. A systematic review of randomized controlled trials and quasi-experimental studies published in English or Spanish was conducted using Medline, Web of Science, Scopus, Cinahl, and the Cochrane Library. Methodological quality was assessed using Joanna Briggs Institute critical appraisal tools, and risk of bias was evaluated using the Risk-of-Bias 2 and ROBINS-I tools. Data were synthesized narratively and in tables. When comparable outcomes were reported, preliminary meta-analyses were performed using standardized mean differences with random-effects models. The certainty of evidence was assessed using the GRADE approach. Seven studies (n = 7) involving 776 participants were included. Interventions consisted of counseling or educational programs delivered through face-to-face sessions, group activities, or digital resources. Overall, the interventions showed improvements in pregnancy-related knowledge, self-care behaviors, psychological outcomes, and maternal health practices and attitudes. Meta-analysis suggested a large effect favoring the intervention for pregnancy-related health knowledge (SMD = 1.90; 95%CI: −0.02 to 3.83) and self-care behaviors (SMD = 2.39; 95%CI: 0.29–4.49), although substantial heterogeneity across studies was observed and the certainty of evidence ranged from low to very low. Counseling and educational interventions during pregnancy may improve pregnancy-related health knowledge and self-care among pregnant adolescents and young women. Nevertheless, the evidence remains limited and heterogeneous. Further well-designed studies conducted in diverse settings are needed to confirm these findings and strengthen the evidence base.

Keywords: pregnant women; adolescent mothers; health knowledge, attitudes, practice; self care; systematic review

1. Introduction

Pregnancy is a complex and multidimensional process that involves physical, psychological, and social changes [1], and it requires maturity to assume new responsibilities associated with the

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maternal role, while not being exempt from complications [2]. Therefore, specialized professional prenatal care is essential to prevent and manage such complications [2].

According to the World Health Organization (WHO), adolescence is the developmental period following childhood and preceding adulthood, ranging from 10 to 19 years of age [3]. It is a transitional stage with physical and psychological changes in which young women face new challenges and vulnerabilities related to risk behaviors, including pregnancy. Thus, adolescent pregnancy refers to women who become mothers before the age of 19 at the time of delivery [2]. It is a global phenomenon with health, social, and economic consequences for both the mother and the newborn, leading to lack of care and neglect of the newborn, emotional problems, school dropout, and loss of employment or opportunities in the labor market [4]. In most cases, these pregnant adolescents generally lack sufficient maturity to assume the responsibilities inherent to motherhood [1].

According to WHO, in 2019, 21 million women aged 15 to 19 years from low- and middle-income countries became pregnant, despite the fact that the pregnancy rate has declined in recent years, particularly in developed countries. According to the Spanish National Institute of Statistics, in 2021 there were 7,202 births among mothers under 20 years of age, representing a 50% decrease since 2008 [5]. However, in sub-Saharan Africa the number of pregnancies among women aged 15 to 19 increased during 2021, exceeding 6 million births, followed by Central Asia with 68,000 births [6].

These differences may be due to the lack of promotion of comprehensive sexual education, lack of family support, and insufficient health system services [7,8]. In addition, adolescents' access to contraceptive education is influenced by health professionals' attitudes, including limited training, personal beliefs, and cultural biases that may restrict open discussions about sexual and reproductive health [9,10]. In this regard, health literacy is fundamental for adequate prenatal care for both the mother and the newborn [11]. According to the 2011 European project, improving this literacy requires enhancing communication between professionals and adolescents, with the aim of fostering self-care and empowerment in the context of maternity [12].

According to WHO, self-care is the ability of individuals, families, and communities to promote their own health, prevent disease, maintain health, and cope with illness and disability, with or without professional support [13]. In the context of pregnant women, promoting self-care can help maintain their health and well-being. Although pregnancy is not itself a health problem, adequate monitoring is necessary to prevent complications [14]. In this sense, adopting healthy practices includes recommendations on maintaining a balanced diet, engaging in physical activity, taking nutritional supplements, and avoiding the consumption and abuse of toxic substances [15].

For adolescent mothers, facing both the transition to adulthood and motherhood simultaneously can be a challenge, and their ability to adapt depends on the amount of information, attitudes, and behaviors acquired. However, in this age group, lack of knowledge, information, and skills is common, making it essential to implement comprehensive programs that include health education strategies tailored to the needs of this population sector [16,17].

Additionally, motherhood in young women aged 20 to 25 years presents unique characteristics that differ from those observed in adolescents. While both age groups share similar vulnerabilities, young women generally have greater emotional maturity and stronger social resources, which may influence their adaptation to the maternal role. However, they also face challenges related to the transition to motherhood, balancing education or employment, and making reproductive decisions [9,18]. It is essential that health interventions, such as professional counseling, address the specific needs of this age group to promote self-care, mental health, and empowerment in the context of motherhood [9].

In this context, the following research question was posed: What is the effectiveness of professional health counseling in promoting self-care, knowledge, attitudes toward the transition to motherhood, and healthy practices among pregnant and parenting adolescent and young women? Accordingly, the aim was to evaluate the effectiveness of counseling and educational interventions

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delivered during pregnancy and early motherhood in promoting maternal health knowledge, self-care behaviors, and related health outcomes among adolescent and young women.

2. Materials and Methods

2.1. Design

A systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines [19]. The research question was formulated using the PICO framework: Population (P): Adolescent and young women during pregnancy and motherhood; Intervention (I): professional health counseling aimed at promoting self-care and enhancing knowledge, attitudes toward the transition to motherhood, and healthy practices; Comparison (C): absence of health counseling; and Outcomes (O): effectiveness in self-care and improvements in knowledge, attitudes, and healthy practices. The review protocol was prospectively registered in PROSPERO (CRD420251132537). Generative artificial intelligence (GenAI) was not used in the conception, preparation, or writing of this paper.

2.2. Information Sources and Search Strategy

The first step involved identifying relevant publications on the topic through preliminary searches in Google Scholar® and PROSPERO to refine research question. Subsequently, comprehensive searches were conducted in the databases Medline (PubMed), Web of Science (WOS), Scopus, Cinahl, and Cochrane Library in February 2026. The search strategy employed Medical Subject Headings (MeSH) terms: “Pregnancy”, “Pregnant People”, “Adolescent Mothers”, “Health Knowledge, Attitudes, Practice”, “Self Care”, and “Counseling”, combined using the Boolean operators AND and OR. All searches were conducted by one researchers (CRS) and independently verified by a second reviewer (CARS) in accordance with the PRISMA-S guidance [20]. Detailed search strategies are presented in Table 1.

Table 1. Search strategy in each of the databases.

Database Search date	Search Strategy
Medline (Pubmed) Febraury 23, 2026	(“Pregnant People”[MeSH Terms] OR “Pregnancy”[MeSH Terms] OR “pregnant women”[Title/Abstract] OR “pregnan*”[Title/Abstract] OR “adolescent mother*”[Title/Abstract]) AND (“health knowledge, attitudes, practice”[MeSH Terms] OR “knowledge”[Title/Abstract] OR “attitude*”[Title/Abstract] OR “awareness”[Title/Abstract] OR “perception*”[Title/Abstract] OR “belief*”[Title/Abstract]) AND (“self care”[MeSH Terms] OR “self care”[Title/Abstract] OR “self care”[Title/Abstract] OR “self management”[Title/Abstract]) AND (“Counseling”[MeSH Terms] OR “Health Education”[MeSH Terms] OR “counsel*”[Title/Abstract] OR “educat*”[Title/Abstract])
Scopus Febraury 23, 2026	TITLE-ABS-KEY ((“pregnant women” OR “pregnant people” OR pregnan* OR “adolescent pregnan*” OR “adolescent mother*”)) AND TITLE-ABS-KEY (((knowledge OR attitude* OR awareness OR perception* OR belief*) W/3 (health OR care OR behavio*r))) AND TITLE-ABS-KEY ((“self care” OR “self-care” OR “self management” OR “self-management”)) AND TITLE-ABS-KEY (((counsel* OR educat* OR “health education” OR “patient education”) W/3 (program* OR intervention* OR support OR guidance)))
Web of Science Febraury 23, 2026	TS=((“pregnant women” OR “pregnant people” OR pregnan* OR “adolescent pregnan*”OR “adolescent mother*”)) AND TS=((knowledge OR attitude* OR awareness OR perception* OR belief*) NEAR/3 (health OR care OR behavior*)) AND TS=((“self care” OR “self-care” OR “self

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Cinahl Febraury 23, 2026	management" OR "self-management")) AND TS=((counsel* OR educat* OR "health education" OR "patient education") NEAR/3 (intervention* OR program* OR guidance OR support)) ((MH "Pregnancy+") OR (MH "Pregnant Women") OR TI (pregnan* OR "pregnant women" OR "pregnant people") OR AB (pregnan* OR "pregnant women" OR "pregnant people")) AND ((MH "Health Knowledge, Attitudes, Practice") OR TI ((knowledge OR attitude* OR awareness OR perception*) N3 (health OR care OR behavio*r)) OR AB ((knowledge OR attitude* OR awareness OR perception*) N3 (health OR care OR behavio*r))) AND ((MH "Self Care+") OR TI ("self care" OR "self-care" OR (self N2 care) OR "self management") OR AB ("self care" OR "self-care" OR (self N2 care) OR "self management")) AND ((MH "Counseling+") OR (MH "Health Education+") OR TI ((counsel* OR educat* OR "health education") N3 (program* OR intervention* OR support)) OR AB ((counsel* OR educat* OR "health education") N3 (program* OR intervention* OR support)))
Cochrane Library Febraury 23, 2026	(Pregnancy OR pregnan* OR "pregnant women" OR "pregnant people"):ti,ab,kw AND ("Health Knowledge" OR "Health attitudes" OR "Health belief"):ti,ab,kw AND ("self care" OR "self-care" OR "self management" OR "self-management"):ti,ab,kw AND (counsel* OR counselling OR educat* OR "health education" OR "patient education"):ti,ab,kw AND ("health behavior" OR "health behaviour" OR behavio*r OR practice*):ti,ab,kw

2.3. Inclusion and Exclusion Criteria

Randomized Controlled Trials (RCTs) and quasi-experimental studies involving pregnant or parenting adolescents (10 to 19 years) and young women (20 to 25 years) were included. Studies that did not exclusively focus on these age groups were also considered if adolescents or young women were part of the sample and the mean age of participants was below 26 years. This criterion was applied due to the limited literature specifically addressing pregnant and parenting adolescents and young women. Studies published in English or Spanish, were included in the review. No restrictions were applied regarding publication date. Studies employing other designs, such us systematic, scoping, or narrative reviews, observational studies, and case reports or gray literature were excluded.

2.4. Screening Process and Risk-of-bias Assessment

After conducting the searches, all records were exported to Excel®. Duplicates were removed, and the remaining were screened by title and abstract, and categorized as potentially eligible, uncertain eligibility, or excluded. Records classified as potentially eligible or uncertain eligibility were retrieved for full-text screening. The methodological characteristics of the full-text records were assessed using the Joanna Briggs Institute (JBI) critical appraisal checklist for RCTs (13 items) and for quasi-experimental studies (9 items). The JBI tools were used descriptively to summarize the methodological quality of the included studies, and no studies were excluded based on a numerical JBI score or predefined threshold. The screening process was performed independently by two reviewers (CRS and CARS), with disagreements resolved by a third reviewer (HGT).

Risk-of-bias was assessed using the Cochrane Risk-of-Bias 2 (RoB 2) tool for RCTs [21] and the ROBINS-I V2 tool for quasi-experimental studies [22]. Each domain was rated as low risk-of-bias, some concerns, or high risk-of-bias. Two independent reviewers (CARS and SMP) conducted the assessments, and discrepancies were resolved by a third reviewer (CMDG). The robvis tool [23] was used for visualization of risk-of-bias assessments.

2.5. Data Extraction

The primary outcome of interest was self-care behaviors. Secondary outcomes included maternal health knowledge and other related maternal health outcomes, such as attitudes, preventive

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health behaviors, coping skills, and psychological well-being, regardless of whether these were reported as primary or secondary outcomes in the included studies.

Sociodemographic and clinical variables were extracted from the included studies and summarized through narrative synthesis and tables. Data were collected on study characteristics (country, year, study design, primary and secondary outcomes, and instruments used), as well as on intervention characteristics (type of counseling or educational intervention, context, session duration, and participants involved). When studies did not report the mean and standard deviation (SD) of participants' age but instead provided the median and interquartile range (IQR), these values were converted to approximate mean and SD estimates using established methods. Assuming an approximately normal distribution, the median was considered an estimate of the mean, and the SD was calculated as IQR/1.35, following the approaches described by Wan et al. [24] and Luo et al. [25]. Additional outcome variables were extracted when available. Data extraction was conducted independently by two blinded reviewers (CRS and SMP), with disagreements resolved by a third reviewer (CMDG). Where feasible, results were pooled in a meta-analysis.

2.6. Meta-Analysis

Meta-analyses were conducted using the online software Meta-Mar (meta-analysis calculator, version 4.0.2) for studies comparing two or more groups on outcomes such us knowledge and self-care. Post-intervention means, and standard deviations were used for the calculations. When studies reported multiple outcome measurements over time, the first post-intervention assessment was selected for pooling to ensure comparability across studies and to avoid double counting of follow-up measurements. Random-effects models were applied to account for heterogeneity across studies, which was assessed using the I^2 statistic. The standardized mean difference (SMD) was calculated using Hedges' g. Variance was estimated using the inverse variance method, with restricted maximum likelihood. Forest plots were generated to present the SMDs, with their corresponding effect sizes and 95% confidence intervals (95%CI). Given the limited number of studies available for some outcomes and the variability in outcome measurement instruments, the pooled estimates should be interpreted with caution.

2.7. Certainty of Evidence

The certainty of evidence for the main outcomes was assessed using the Grading of Recommendations Assessment, Development and Evaluation (GRADE) approach [26,27]. The GRADE framework evaluates the overall certainty of evidence across studies for each outcome by considering five domains: risk of bias, inconsistency of results, indirectness of evidence, imprecision of effect estimates, and publication bias. Evidence from RCTs initially starts as high certainty, whereas evidence from non-randomized studies begins as low certainty and may be downgraded or upgraded depending on these domains.

For each outcome, the certainty of evidence was evaluated by three reviewers (CRS, CARS and HGT) based on the methodological quality of the included studies, the consistency of results across studies, the directness of the evidence in relation to the research question, the precision of the pooled or reported estimates, and the potential for publication bias. When serious or very serious concerns were identified in one or more domains, the certainty of evidence was downgraded accordingly. The final certainty of evidence was classified into four levels: high, moderate, low, or very low.

3. Results

3.1. Search Results

A total of 620 records were identified. After removing duplicates and grey literature, 377 records were screened by title and abstract. Following the screening process, 44 full-text records were assessed for eligibility. Of these, 37 records were excluded for reasons including absence of an intervention design, participants outside the defined age range, or insufficient methodological

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quality. Ultimately, seven (n = 7) studies met the inclusion criteria and were included in the review, as illustrated in the PRISMA [19] flow diagram in Figure 1.

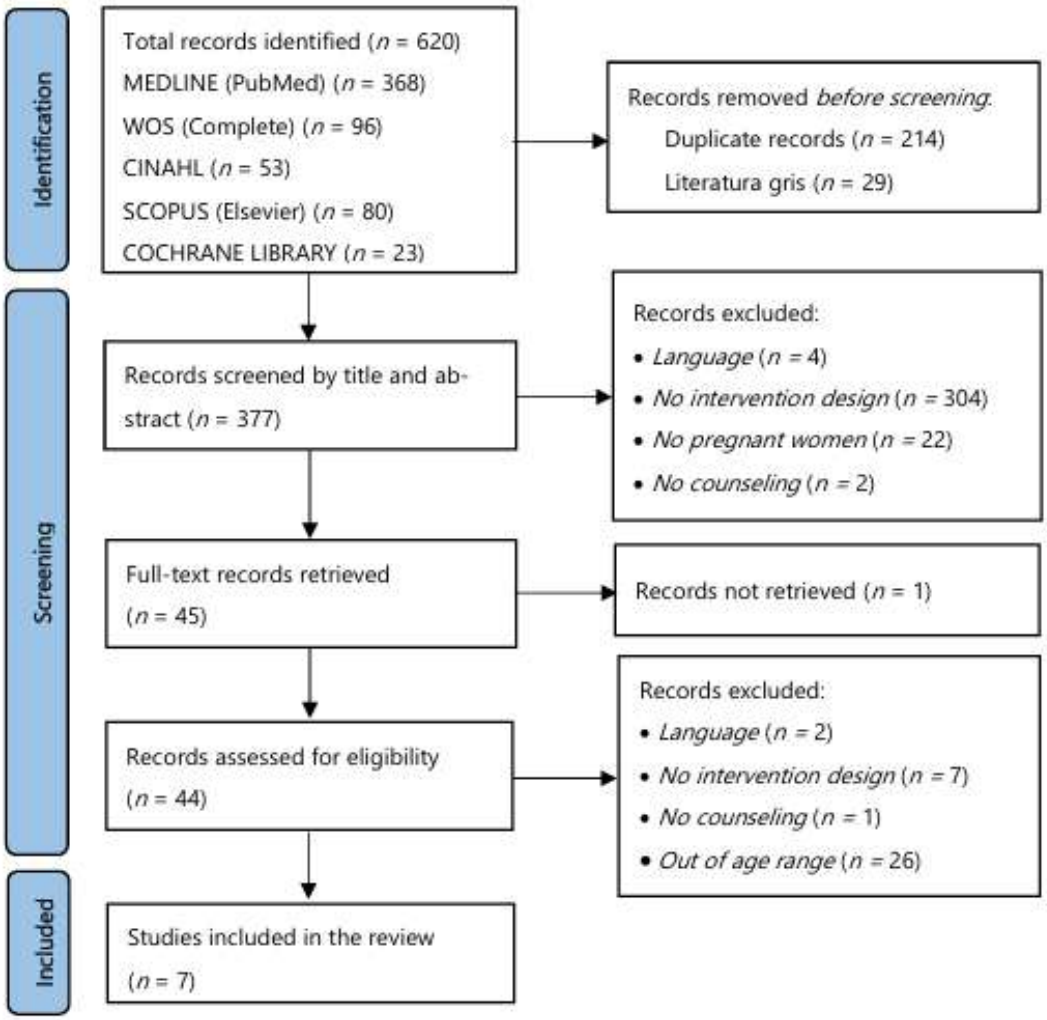

Figure 1. PRISMA flow diagram of the included studies.

3.2. Study Characteristics

Overall, most studies demonstrated moderate to high methodological quality, although some limitations were identified in specific methodological domains. The included studies comprised RCTs and quasi-experimental studies conducted in several countries, including Thailand [28,29], Colombia [30], Spain [31], and Iran [32–34]. The critical appraisal of the included studies is presented in Supplementary Table S1.

The clinical settings included antenatal clinics, health centers, prenatal care services, hospital maternity units, and community prenatal programs. Table 2 summarizes the study designs, country, clinical settings, objectives, primary and secondary outcomes, and main conclusions of the included studies.

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Table 2. General characteristics of included studies.

Author (year) Design	Country; Setting	Type of intervention	Provider	Delivery format	Duration	Outcomes	Main findings	JBI [1] Quality (%)
Chansiri et al., (2026) QE [2] [28]	Thailand; Antenatal clinics	mHealth self-efficacy program + prenatal education	Health professionals	Digital modules + orientation session	4 weeks	Pregnancy-related knowledge; Self-efficacy	Intervention improved knowledge and maternal self-efficacy compared with routine care.	9/9 (100)
Ulloa-Sabogal & Arias-Rojas, (2025) RCT [3] [30]	Colombia; Prenatal care services	Nursing educational counseling based on self-care theory	Nurses	Face-to-face sessions	4 sessions	Pregnancy-related knowledge; Self-care behaviors	Counseling improved maternal knowledge and self-care behaviors.	10/13 (76.9)
Díaz-Hurtado et al., (2024) QE [31]	Spain; Hospital maternity unit	Postpartum educational program on self-care	Healthcare professionals	Group sessions with printed materials	Not specified	Postpartum self-care knowledge	Educational intervention increased postpartum self-care knowledge among adolescent mothers.	6/9 (66.7)
Tavakoly-Sany et al., (2024) QE [32]	Iran; Health centers	Educational program based on self-efficacy and health literacy	Health educators	Group sessions and educational materials	6 sessions	UTI [4] preventive behaviors; Health literacy; Self-efficacy	Intervention improved preventive behaviors and increased health literacy and self-efficacy.	9/9 (100)
Gholami et al., (2022) RCT [33]	Iran; Health centers	Adlerian group counseling	Trained counselors	Group counseling sessions	4 sessions	Prenatal distress; Self-care behaviors	Counseling reduced prenatal distress and improved prenatal self-care.	11/13 (84.6)
Boobpa-mala et al., (2022) RCT [29]	Thailand; Prenatal clinics	Early depression prevention counseling program	Nurses/counselors	Group sessions	5 sessions	Depression symptoms; Coping skills	Intervention reduced depressive symptoms and improved coping skills.	12/13 (92.3)
Rezaie et al., (2021) RCT [34]	Iran; Health centers	Self-care counseling program during pregnancy	Midwives	Face-to-face counseling	6 sessions	Health practices; Attitudes toward motherhood	Counseling improved maternal health practices and attitudes toward motherhood.	12/13 (92.3)

[1] JBI: Joanna Briggs Institute; [2] QE: Quasi-experimental; [3] RCT: Randomized Clinical Trial; [4] UTI: Urinary tract infection.

Across the included studies (n = 776 participants), the weighted mean age of participants was 19.28 years (SD = 4.48).

The interventions consisted of educational or counseling programs delivered through face-to-face sessions, group discussions, or digital resources [29,32–34]. Most interventions included four to

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six sessions lasting approximately 60–120 minutes. Some studies used alternative delivery formats, such as a four-week mobile health self-efficacy program including educational modules and weekly reminders [28], or a four-session nursing educational intervention addressing hypertensive disorders of pregnancy and self-care determinants [30]. Additionally, Díaz-Hurtado et al. [31] implemented a postpartum educational program based on group talks and printed materials focused on self-care and warning signs.

A wide range of validated instruments was used to assess outcomes. These included knowledge and self-efficacy measures [28], the knowledge on hypertensive disorders of pregnancy scale and behavioral determinants questionnaire [30], a self-care knowledge questionnaire [31], the test of functional health literacy in adults, the general self-efficacy scale, and the urinary tract infection preventive behavior questionnaire [32]. Other studies used the quality of prenatal care questionnaire and the prenatal distress questionnaire [33], the coping skills scale and the antenatal depression scale [29], and the health practices questionnaire II, the pregnancy questionnaire assessing maternal attitudes, and the pregnancy symptoms inventory [34]. Table 3 summarizes the characteristics of the participants and the clinical and statistical results.

Table 3. Clinical and statistical results of included studies.

Author (year)	Participants	Instruments	Outcomes and statistical data
Chansiri et al., (2026) [28]	N = 108 pregnant adolescents. IG [1] = 54 (Age M = 17.56, SD = 1.45); CG [2] = 54 (Age M = 17.91 (SD = 1.29) Total Age M = 17.73 (SD = 1.38). Gestational age ≥ 28 weeks.	Knowledge questionnaire; Self-efficacy scale.	Knowledge IG pre: M [3] =12.13 (SD [4] = 2.43); post: M = 17.46 (SD = 1.58) CG pre: M = 12.74 (SD = 3.65); post: M = 13.39 (SD = 3.79); $p < 0.001$ Self-efficacy IG pre: M = 85.09 (SD = 5.94); post: M = 91.24 (SD = 7.42) CG pre: M = 85.52 (SD = 5.97) post: M = 86.91 (SD = 4.88); $p = 0.001$
Ulloa-Sabogal & Arias Rojas (2025) [30]	N = 54 pregnant women. IG = 27 (Age M = 22.00, SD = 12.59); CG = 27 (Age M = 25.00, SD = 11.85). Total age M = 23.50 (SD = 12.21). Gestational age ≤ 24 weeks.	Knowledge on Hypertensive Disorders of Pregnancy Scale (CoNOCiTHE); determinants of behavior questionnaire.	Knowledge IG pre: median 25.0 (IQR [6] 13.0; SD = 9.63); post: median 29.0 (IQR 5.0; SD = 3.70) CG pre: median 27.0 (IQR 10.0; SD = 7.41); post: median 26.00 (IQR 9.0; SD = 6.67); $p < 0.0001$ Self-care behaviors IG pre: median 42.0 (IQR 20.0; SD = 14.81); post: median 48.0 (IQR 12.0; SD = 8.89) CG pre: median 44.0 (IQR 18.0; SD = 13.33); post: median 44.00 (IQR 20.0; SD = 14.81); $p < 0.0001$ Total knowledge + self-care IG pre: median 68.0 (IQR 25.0; SD = 18.52); post: median 77.0 (IQR 14.0; SD = 10.37) CG pre: median 69.0 (IQR 21.0; SD = 15.56); post: median 69.0 (IQR 23.0; SD = 17.04) $p < 0.0001$

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Díaz-Hurtado et al., (2024) [31]	N = 299 adolescent puerperal. No CG. Age M = 17.36 (SD = 1.35). Gestational age not reported. Primiparous (96.66%); eutocic delivery 69.23%.	Self-care knowledge questionnaire.	Knowledge of self-care pre: M = 21.0; 95%CI: 20.99-22.32; SD = 5.88 post: M = 27.74; 95CI%: 27.20-28.20; SD = 4.41 p < 0.0001
Tavakoly-Sany et al., (2024) [32]	N = 110 first pregnancy women. IG = 55 (Age M = 25.51; SD = 5.07); CG = 55 (Age M = 24.09; SD = 4.78). Total age M = 24.80 (SD = 4.92). Gestational age 12–18 weeks.	Test of Functional Health Literacy in Adults (TOFHLA); General Self-Efficacy Scale; Urinary Tract Infection (UTI) preventive behavior questionnaire.	Preventive behaviors IG pre: M = 64.0 (SD = 6.20); post: M = 85.0 (SD = 4.50); follow-up 3 month: M = 81.6 (SD = 4.0) CG pre: M = 64.10 (SD = 7.04); post: M = 65.10 (SD = 6.30); follow-up 3 month: M = 65.40 (SD = 6.30) p < 0.001 Health literacy IG pre: M = 55.80 (SD = 15.90); post: M = 59.90 (SD = 15.30); follow-up 3 month: M = 59.30 (SD = 15.40) CG pre: M = 56.30 (SD = 16.60); post: M = 56.90 (SD = 16.10); follow-up 3 month: M = 56.20 (SD = 15.90) p < 0.001 Self-efficacy IG pre: M = 55.80 (SD = 12.20); post: M = 62.10 (SD = 11.10); follow-up 3 month: M = 61.90 (SD = 12.10) CG pre: M = 55.80 (SD = 13.70); post: M = 56.60 (SD = 13.10); follow-up 3 month: M = 56.50 (SD = 13.00) p = 0.032 (post-intervention); p = 0.045 (follow-up).
Gholami et al., (2022) [33]	N = 79 pregnant women. IG = 40; CG = 39 Total age M = 23.39 (SD = 2.85). Gestational age 22-32 weeks.	Quality of Prenatal Care Questionnaire (QPCQ); Prenatal Distress Questionnaire (PDQ).	QPCQ Physical health IG pre: M = 27.28 (SD = 4.08); post: M = 29.08 (SD = 5.39); follow-up: M = 30.48 (SD = 5.88) CG pre: M = 29.00 (SD = 3.38); post: M = 29.15 (SD = 3.57); follow-up: M = 30.82 (SD = 2.79) p = 0.359 (inter-groups); p = 0.0001 (intra-groups) Behavior IG pre: M = 43.55 (SD = 5.85); post: M = 45.80 (SD = 6.14); follow-up: M = 46.60 (SD = 5.73) CG pre: M = 46.23 (SD = 6.29); post: M = 45.85 (SD = 6.08); follow-up: M = 47.08 (SD = 5.22) p = 0.243 (inter-groups); p = 0.001 (intra-groups) Relationship health

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			IG pre: M = 52.13 (SD = 6.91); post: M = 55.75 (SD = 6.33); follow-up: M = 55.40 (SD = 6.64) CG pre: M = 55.92 (SD = 7.99); post: M = 54.38 (SD = 8.70); follow-up: M = 58.51 (SD = 3.55) p = 0.016 (inter-groups); p = 0.001 (intra-groups) Social health IG pre: M = 53.78 (SD = 6.04); post: M = 56.23 (SD = 4.67); follow-up: M = 54.33 (SD = 3.63) CG pre: M = 52.08 (SD = 8.67); post: M = 50.56 (SD = 8.87); follow-up: M = 54.87 (SD = 8.40) p = 0.007 (inter-groups); p = 0.001 (intra-groups) PDQ Neonatal care IG pre: M = 10.05 (SD = 4.04); post: M = 5.53 (SD = 2.85); follow-up: M = 5.73 (SD = 4.48) CG pre: M = 10.69 (SD = 3.07); post: M = 11.31 (SD = 2.53); follow-up: M = 11.67 (SD = 1.63) p = 0.0001 (inter-groups); p = 0.0001 (intra-groups) Body image and weight IG pre: M = 4.50 (SD = 2.50); post: M = 3.40 (SD = 2.02); follow-up: M = 3.30 (SD = 3.07) CG pre: M = 4.33 (SD = 2.09); post: M = 6.08 (SD = 1.51); follow-up: M = 6.72 (SD = 1.54) p = 0.0001 (inter-groups); p = 0.0001 (intra-groups) Feelings and interpersonal relationships IG pre: M = 4.30 (SD = 2.21); post: M = 2.08 (SD = 1.56); follow-up: M = 1.60 (SD = 1.58) CG pre: M = 4.00 (SD = 2.21); post: M = 4.38 (SD = 3.19); follow-up: M = 3.97 (SD = 1.75) p = 0.0001 (inter-groups); p = 0.0001 (intra-groups)
Boobpa-mala et al., (2022) [29]	N = 72 pregnant adolescents. IG = 36 (Age M = 17.44, SD = 1.46); CG = 36 (Age M = 17.81, SD = 1.24). Total age M = 17.63 (SD = 1.35). Gestational age 5–26 weeks.	Coping Skills Scale; Antenatal Depression Scale.	Coping Skills IG pre (T1): M = 64.94 (SD = 11.01); post (T2): M = 69.69 (SD = 9.84); follow-up 1 (T3): M = 70.56 (SD = 9.99); follow-up 2 (T4): M = 73.47 (SD = 9.14) CG pre (T1): M = 66.08 (SD = 10.42); post (T2): M = 68.33 (SD = 11.92); follow-up 1 (T3): M = 65.61 (SD = 12.32); follow-up 2 (T4): M = 64.39 (SD = 15.83) Between-group p values: T1 p = 0.654; T2 p = 0.599; T3 p = 0.066; T4 p = 0.004 Within-group change (Bonferroni): IG: T1–T2 MD [5] = −4.75 ($p < 0.001$); T2–T3 MD = −5.61 ($p < 0.001$); T3–T4 MD = −8.53 ($p < 0.001$) CG: T1–T2 MD = −2.25 (p = 0.121); T2–T3 MD = 0.47 (p = 0.779); T3–T4 MD = 1.69 (p = 0.432)

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			Depression IG pre (T1): M = 7.03 (SD = 4.07); post (T2): M = 4.53 (SD = 2.60); follow-up 1 (T3): M = 4.00 (SD = 2.56); follow-up 2 (T4): M = 2.03 (SD = 2.13) CG pre (T1): M = 6.72 (SD = 4.04); post (T2): M = 6.39 (SD = 4.28); follow-up 1 (T3): M = 5.97 (SD = 4.02); follow-up 2 (T4): M = 6.56 (SD = 4.55) Between-group p values: T1 p = 0.750; T2 p = 0.029; T3 p = 0.015; T4 p < 0.001 Within-group change (Bonferroni): IG: T1–T2 MD = 2.50 (p < 0.001); T1–T3 MD = 3.03 (p < 0.001); T1–T4 MD = 5.00 (p < 0.001) CG: T1–T2 MD = 0.33 (p = 0.503); T1–T3 MD = 0.75 (p = 0.163); T1–T4 MD = 0.17 (p < 0.001)
Rezaie et al., (2021) [34]	N = 54 pregnant adolescents. IG = 27 (Age M = 17.96, SD = 1.05); CG = 27 (Age M = 18.07, SD = 0.96) Total age M = 18.02 (SD = 1.01). Gestational age 18–24 weeks.	Health Practices Questionnaire II (HPQ-II); Pregnancy Questionnaire assessing maternal attitudes toward pregnancy and motherhood (PRE-MAMA); Pregnancy Symptoms Inventory (PSI).	HPQ-II Total health practices score T0: IG 91.85 (5.83); CG 92.55 (3.88); MD = -0.70; 95%CI: -3.41 – 2.00; p = 0.604; T1: IG 129.74 (12.5); CG 93.85 (3.37); MD = 36.34; 95%CI: 36.34 – 37.98; p < 0.001 Balance between rest and exercise T0: IG 5.52 (0.97); CG 5.37 (1.08); MD = 0.15; 95%CI: -0.41 – 0.71; p = 0.599; T1: IG 9.67 (1.18); CG 4.81 (0.92); MD = 4.78; 95%CI: 4.26-5.30; p < 0.001 Diseases and injury prevention T0: IG 14.78 (1.98); CG 15.23 (1.69); MD = -0.55; 95%CI: -1.56 – 0.45; p = 0.273; T1: IG 22.18 (1.07); CG 15.89 (1.39); MD = 6.54; 95%CI: 6.02-7.07; p < 0.001 Nutrition and diet care T0: IG 22.26 (1.98); CG 22.44 (2.41); MD = -0.18; 95%CI: -1.47 – 1.10; p = 0.774; T1: IG 36.00 (2.15); CG 22.59 (1.91); MD = 13.49; 95%CI: 12.53-14.44; p < 0.001 Avoidance of harmful drugs and narcotics T0: IG 13.15 (1.75); CG 13.59 (1.47); MD = -0.44; 95%CI: -1.33 – 0.44; p = 0.317; T1: IG 18.00 (1.57); CG 13.22 (1.60); MD = 5.04; 95%CI: 4.34-5.71; p < 0.001 Knowledge about pregnancy and childbirth T0: IG 16.15 (2.44); CG 15.81 (2.52); MD = 0.33; 95%CI: -0.78 – 1.44; p = 0.550; T1: IG 23.89 (1.89); CG 17.33 (1.41); MD = 6.37; 95%CI: 5.69-7.05; p < 0.001 PRE-MAMA T0: IG 32.26 (4.57); CG 31.48 (3.98); MD = 0.78; 95%CI: -1.56 – 3.12; p = 0.508; T1: IG 33.92 (3.16); CG 32.44 (3.08); MD = 1.01; 95%CI: 0.06-1.96; p = 0.038 PSI

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	T0: IG 30.78 (10.54); CG 29.55 (7.98); MD = 1.22; 95%CI: -3.89 – 6.33; p = 0.633; T1: IG 25.92 (6.51); CG 27.15 (4.14); MD = -1.37; 95%CI: -4.32 – 1.58; p = 0.354

[1] IG: Intervention Group; [2] CG: Control Group; [3] M: Mean; [4] SD: Standard deviation; [5] MD: Mean Difference; [6] IQR: interquartile range.

3.3. Risk-of-Bias Assessment

The risk-of-bias assessment of the included studies showed that three studies were rated as having a low risk of bias, three as having some concerns, and one as having a high risk of bias in the overall judgment (Figure 2). The main concerns were related to limitations in the randomization process or the use of non-randomized study designs, while most studies showed a low risk of bias in domains related to deviations from intended interventions, outcome measurement, and missing outcome data.

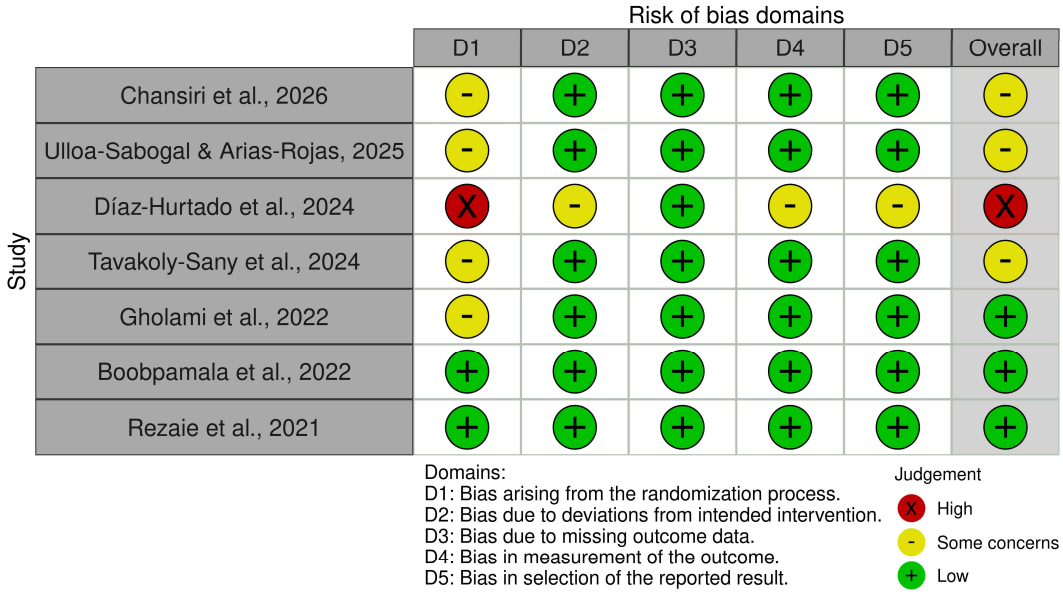

Figure 2. Risk-of-bias domains in each included study.

As shown in Figure 3, most studies presented a low risk of bias regarding intervention implementation, outcome measurement, and management of missing data. However, some concerns were identified mainly in the randomization process or study design, particularly in quasi-experimental studies. Overall, approximately half of the studies were rated as having some concerns, while one study presented a high risk of bias due to the absence of a control group.

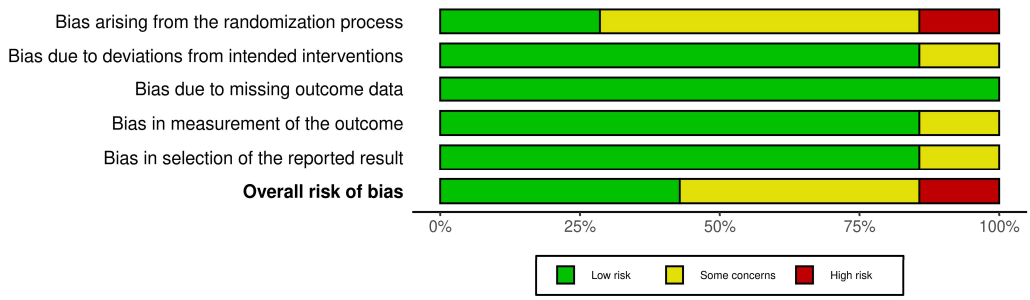

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Figure 3. Risk-of-bias in all included studies.

3.4. Preliminary Meta-Analysis

3.4.1. Pregnancy-Related Health Knowledge

A meta-analysis including three studies [28,30,34] evaluated the effect of counseling and educational interventions on pregnancy-related health knowledge. The pooled analysis showed a large effect favoring the intervention (SMD = 1.90), although the CI crossed the null value (95%CI: −0.02 to 3.83; p = 0.05). Substantial heterogeneity was observed across studies (I^2 = 95%; τ^2 = 2.77; χ^2 = 36.78, p < 0.001), indicating considerable variability in the magnitude of intervention effects. Although all studies favored the intervention, the effect sizes differed markedly. Therefore, while the results suggest a potential benefit of counseling and educational interventions on maternal health knowledge during pregnancy, the findings should be interpreted with caution, as illustrated in Figure 4.

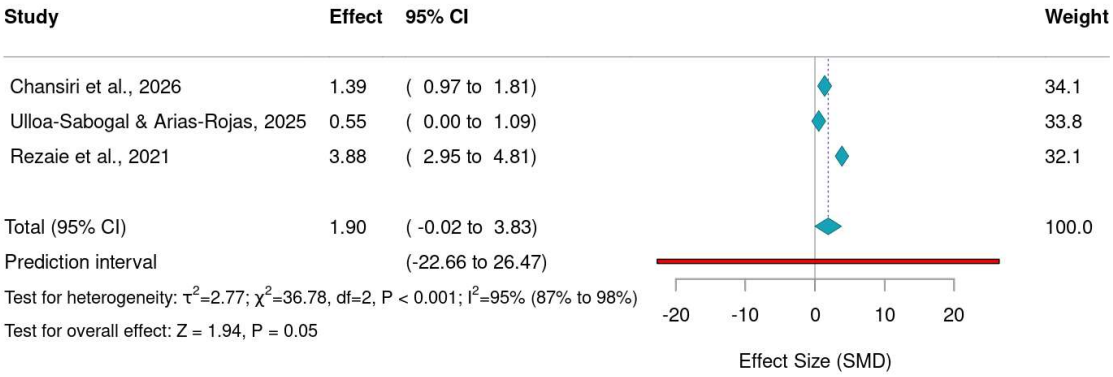

Figure 4. Forest Plot for the variable "pregnancy-related health knowledge ".

3.4.2. Self-Care Behaviors

A meta-analysis including three studies [30,32,34] evaluated the effect of the intervention on the self-care behaviors. The pooled analysis showed a large effect favoring the intervention (SMD = 2.39; 95%CI: 0.29 to 4.49; p = 0.03). However, substantial heterogeneity was observed across studies (I^2 = 97%; τ^2 = 3.32; χ^2 = 66.76, p < 0.001), indicating considerable variability in the magnitude of the intervention effects. Although most studies favored the intervention, the effect sizes differed markedly, with one study showing a small and non-significant effect while the others reported very large effects. Therefore, while the results suggest a potential benefit of the intervention, the findings should be interpreted with caution due to the high heterogeneity and wide prediction interval, as illustrated in Figure 5.

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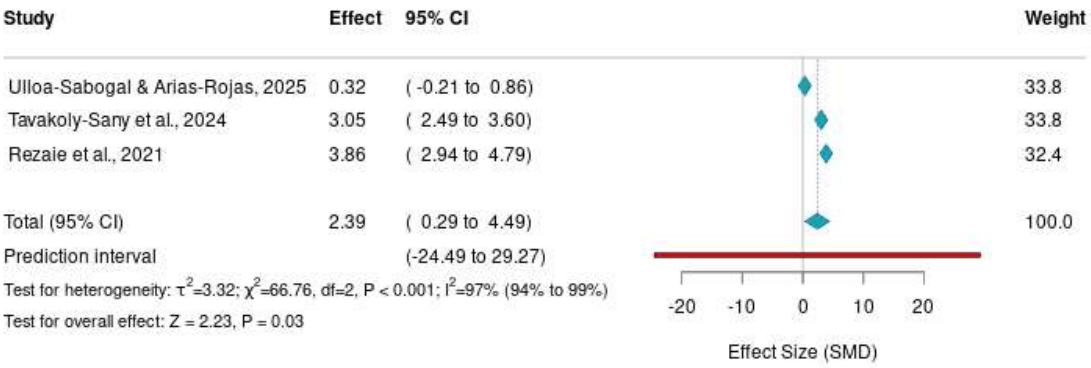

Figure 5. Forest Plot for the variable "self-care behaviors".

3.5. Certainty of Evidence

Table 4 presents a summary of the number and design of studies contributing to each outcome, the estimated effect when available, and the corresponding assessment of risk of bias, inconsistency, indirectness, imprecision, and publication bias. Overall, the certainty of evidence ranged from low to very low across outcomes, mainly due to methodological limitations of the included studies, substantial heterogeneity between interventions and outcome measures, and the limited number of studies available for several outcomes.

Table 4. Summary of findings and certainty of evidence.

Outcome	Number of studies (design)	Participants	Estimated effect	Risk of bias	Inconsistency	Indirectness	Imprecision	Publication bias	Certainty of evidence
Pregnancy-related health knowledge.	3 (2 RCT [1], 1 QE [2])	216	SMD [3] = 1.90 (95%CI −0.02 to 3.83)	S [4]	VS [5]	NS [6]	S	UD [7]	Very low ⊕◯◯◯
Self-care behaviors.	3 (2 RCT, 1 QE)	218	SMD = 2.39 (95%CI 0.29 to 4.49)	S	VS	S	S	UD	Very low ⊕◯◯◯
Self-efficacy.	2 (QE)	218	Interventions improved self-efficacy compared with usual care.	S	NS	NS	S	UD	Very low ⊕◯◯◯
Psychological outcomes (coping skills, depression, prenatal distress).	2 (RCT)	151	Counseling interventions improved coping and reduced depressive symptoms and distress.	S	NA [8]	NS	S	UD	Low ⊕⊕◯◯
Maternal health practices and attitudes.	1 (RCT)	54	Counseling intervention improved health practices and attitudes toward motherhood.	S	NA	NS	S	UD	Low ⊕⊕◯◯
Postpartum self-care knowledge.	1 (QE)	299	Educational intervention improved postpartum self-care knowledge.	VS	NA	NS	S	UD	Very low ⊕◯◯◯

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[1] RCT: Randomized Clinical Trial; [2] QE: Quasi-experimental; [3] S: Serious limitations; [4] VS: Very Serious limitations; [5] NS: Not serious limitations; [6] SMD: Standardized mean difference; [7] UD: Undetected limitations; [8] NA: Not applicable.

4. Discussion

Adolescent and young women's pregnancy constitutes a global public health challenge, particularly in resource-limited settings. Evidence consistently shows that morbidity and mortality associated with pregnancy are higher among adolescents than among adult women, highlighting the need for targeted interventions for this vulnerable population. Socioeconomic determinants such as low educational attainment, limited access to reproductive health services, and social vulnerability contribute substantially to adolescent pregnancy and to poorer maternal and neonatal outcomes. Previous research conducted in low- and lower-middle-income countries has also identified structural factors such as poverty, limited educational opportunities, and restricted access to reproductive health services as key determinants associated with adolescent pregnancy [33].

The findings of this review suggest that educational and counseling interventions may improve several health-related outcomes among pregnant adolescents and young women. Overall, the included studies showed improvements in pregnancy-related health knowledge, self-care practices, preventive behaviors, self-efficacy, coping skills, and psychological well-being. For example, a nursing educational intervention aimed at improving knowledge and self-care behaviors related to hypertensive disorders during pregnancy demonstrated significant improvements in knowledge and self-care behaviors compared with routine prenatal care, while also showing high acceptability and feasibility among participants [28]. Similarly, a self-care counseling intervention in adolescent pregnant women significantly improved overall health practices and all their subdomains, and also enhanced attitudes toward motherhood and pregnancy, although it did not significantly reduce pregnancy symptoms [32]. These findings reinforce the relevance of structured counseling as a strategy to strengthen both behavioral and attitudinal dimensions of maternal health during adolescence. These findings are consistent with previous evidence indicating that counseling-based educational programs can enhance maternal self-efficacy and health-related behaviors among adolescent mothers, including breastfeeding practices and other aspects of maternal care [34,35].

Theory-based educational interventions also are particularly useful when they target key behavioral determinants on maternal health. In this context, approaches grounded in constructs such as self-efficacy and health literacy have been associated with improvements in preventive health behaviors during pregnancy [30]. These findings suggest that interventions informed by behavioral theory may facilitate more sustained changes in health-related practices among pregnant women.

Digital and technology-based interventions may provide additional opportunities to reach adolescents and young women in a scalable and accessible way. In this context, mobile health approaches have been associated with improvements in pregnancy-related knowledge, self-efficacy, and maternal health behaviors among pregnant adolescents [26]. These findings suggest that digital formats may contribute not only to strengthening educational and psychosocial outcomes, but also to supporting healthier pregnancy trajectories. Such approaches may be particularly relevant for adolescent populations, for whom mobile-based interventions are often more acceptable and easier to integrate into everyday life. The growing use of digital health technologies in maternal care has also been highlighted in recent systematic reviews, which report that mobile health tools may support monitoring and self-management of pregnancy-related conditions such as gestational diabetes [36].

The review also highlights the importance of psychosocial interventions during pregnancy. Evidence suggests that counseling-based approaches may contribute to improving coping abilities and emotional well-being among pregnant adolescents [27]. Likewise, counseling strategies focusing on interpersonal relationships and emotional support have been associated with improvements in several dimensions of prenatal well-being and self-care [31]. Taken together, these findings suggest that counseling interventions during pregnancy should not be limited to knowledge transmission alone, but should also address emotional adaptation, interpersonal relationships, and women's

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confidence in managing pregnancy-related demands. This perspective aligns with broader evidence indicating that psychosocial interventions during pregnancy can support behavioral change and reduce health risks, including smoking cessation and other modifiable behaviors that influence maternal and neonatal outcomes [37,38].

Another relevant finding is that educational interventions may also be beneficial during the postpartum period. Educational support provided to adolescent mothers has been associated with improvements in self-care knowledge following childbirth, highlighting the continued importance of maternal education beyond pregnancy [29]. Although this evidence relates to the postpartum stage, it reinforces the broader idea that adolescent and young mothers benefit from structured educational support during key maternal transitions.

The preliminary meta-analyses conducted in this review further suggest that counseling and educational interventions may contribute to improving pregnancy-related health knowledge and self-care behaviors among pregnant adolescents and young women. Overall, the pooled analyses indicated a tendency toward beneficial effects of the interventions, although considerable heterogeneity across studies was observed. This variability likely reflects differences in intervention characteristics, study populations, and outcome measures across the included studies. Therefore, while the findings support a potentially beneficial role of counseling and educational strategies, they should be interpreted cautiously due to the limited number of studies and the methodological variability identified. Consistent with this interpretation, the GRADE assessment indicated that the certainty of evidence ranged from low to very low across outcomes, mainly due to methodological limitations of the included studies, heterogeneity between interventions and outcome measures, and the limited number of studies available for several outcomes. These findings highlight the need for further well-designed trials to strengthen the evidence base on counseling and educational interventions for pregnant adolescents and young women.

Several contextual factors may influence the effectiveness of these interventions. Educational level, socioeconomic status, access to healthcare services, and social support were repeatedly identified in the included studies as relevant background factors. For example, previous research has highlighted that interventions grounded in behavioral theory may remain effective even in populations with relatively limited educational or socioeconomic resources [30]. In addition, counseling approaches that promote communication, emotional support, and social relationships during pregnancy may be particularly beneficial for women experiencing uncertainty or distress during the transition to motherhood [31]. These findings suggest that effective interventions should be sensitive to the social and emotional contexts in which adolescent pregnancy occurs. Furthermore, other maternal health behaviors and contextual conditions may influence pregnancy outcomes. For example, studies have reported that pregnant women often experience uncertainty or negative perceptions regarding weight management during antenatal care, which may affect engagement with health recommendations [39]. Additionally, the practice of self-medication during pregnancy has been identified as a widespread concern globally, often associated with limited access to healthcare services and insufficient health literacy [40,41].

Nevertheless, this review has several limitations. First, the limited availability of studies specifically targeting pregnant adolescents restricted the ability to draw strong conclusions for this age group. Several included studies involved mixed samples of pregnant women or young adults, which may affect the generalizability of findings. Second, methodological heterogeneity across studies, including differences in intervention content, delivery formats, outcome measures, and follow-up periods, limited the possibility of conducting more robust quantitative analyses. Third, publication bias could not be formally assessed due to the small number of studies included in the meta-analyses. Finally, the quantitative synthesis should be considered exploratory because only a limited number of studies reported sufficiently comparable outcomes and substantial heterogeneity was observed across pooled estimates.

Despite these limitations, the findings highlight the importance of integrating educational, psychosocial, and technology-supported interventions into maternal health programs for adolescents

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and young women. Comprehensive strategies that combine health education, counseling, behavioral support, and digital tools may help strengthen pregnancy-related knowledge, self-care capacity, preventive health behaviors, and psychological adaptation during pregnancy and the transition to motherhood.

5. Conclusions

Counseling and educational interventions delivered during pregnancy may contribute to improving pregnancy-related health knowledge and self-care behaviors among pregnant adolescents and young women. However, the current evidence remains limited and should be interpreted with caution due to the small number of studies included in the meta-analyses, the methodological heterogeneity across studies, and the variability in outcome measurement.

Overall, the available findings suggest a potential benefit of counseling-based strategies for strengthening maternal knowledge, preventive health behaviors, and psychosocial adaptation during pregnancy. Nevertheless, further research using more rigorous and standardized study designs is required to confirm the effectiveness of these interventions, particularly regarding knowledge, self-efficacy, mental health, and healthy practices in this population.

Future studies should also include more diverse geographical and sociocultural contexts in order to improve the generalizability of the findings. In addition, stronger evidence is needed on the social and healthcare resources available to support pregnant and parenting adolescents and young women, particularly within maternal health services and community-based programs.

Supplementary Materials: The following supporting information can be downloaded at the website of this paper posted on Preprints.org, Table S1: Critical appraisal of the included studies.

Author Contributions: Conceptualization, C.R.S. and C.A.R.S.; methodology, C.R.S., C.A.R.S. and H.G.T.; software, C.A.R.S.; validation, H.G.T., S.M.P. and C.M.D.G.; formal analysis, C.R.S. and C.A.R.S.; investigation, C.R.S., C.A.R.S., H.G.T., S.M.P. and C.M.D.G.; resources, C.R.S. and C.A.R.S.; data curation, C.R.S. and C.A.R.S.; writing—original draft preparation, C.R.S. and C.A.R.S.; writing—review and editing, H.G.T., S.M.P. and C.M.D.G.; visualization, H.G.T., S.M.P. and C.M.D.G.; supervision, C.A.R.S. and H.G.T.; project administration, C.R.S. All authors have read and agreed to the published version of the manuscript.

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Abbreviations

The following abbreviations are used in this manuscript:

CG	Control Group
CI	Confidence Interval
CoNOCiTHE	Knowledge on Hypertensive Disorders of Pregnancy Scale
HPQ-II	Health Practices Questionnaire II
IG	Intervention Group
IQR	Interquartile Range
JBI	Joanna Briggs Institute
M	Mean
MD	Mean Difference
NA	Not applicable
NS	Not serious limitations
PDQ	Prenatal Distress Questionnaire

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PICO	Population - Intervention – Comparison - Outcomes
PRE-MAMA	Pregnancy Questionnaire
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PSI	Pregnancy Symptoms Inventory
QE	Quasi-experimental
QPCQ	Quality of Prenatal Care Questionnaire
RCT	Randomized Controlled Trial
S	Serious limitations
SD	Standard Deviation
SMD	Standardized Mean Difference
TOFHLA	Test of Functional Health Literacy in Adults
UD	Undetected limitations
UTI	Urinary Tract Infection
VS	Very serious limitations
WHO	World Health Organization

References

1. Serdan Ruiz, D.L.; Vasquez Bone, K.K.; Yupa Pallchisaca, A.E. Cambios fisiológicos y anatómicos en el cuerpo de la mujer durante el embarazo. *Univ, Cienc y Tecn* **2023**, *27*, 29–40. https://doi.org/10.47460/uct.v27i119.704.
2. Palomino Pérez, L.M.; Pérez Suárez, E.; Cabrero Hernández, M.; de la Cruz Benito, A.; Cañedo, G. Embarazo en adolescentes en los últimos 11 años: motivos de consulta y factores de riesgo. *An. Pediatr.* 2018, *89*, 121–122. https://doi.org/10.1016/j.anpedi.2017.11.001.
3. World Health Organization. Adolescent Health. **2019**. Available online: https://www.who.int/es/health-topics/adolescent-health#tab=tab_1 (accessed on 6 December 2024).
4. Azevedo, W.F.; Diniz, M.B.; Fonseca, E.S.; Azevedo, L.M.; Evangelista, C.B. Complications in adolescent pregnancy: systematic review of the literature. *Einstein (Sao Paulo)* **2015**, 13, 618–626. https://doi.org/10.1590/s1679-45082015rw3127.
5. Martínez-Guisasola Campa, J.; Guerrero Ibáñez, M. Embarazo y maternidad en adolescentes. *Pediatr. Integral* **2022**, *26*, 289–299. Available online: https://www.pediatriaintegral.es/wp-content/uploads/2022/xxvi05/03/n5-289-299_JavierMartinez.pdf (accessed on 6 December 2024).
6. World Health Organization. Adolescent pregnancy. **2023**. Available online: https://www.who.int/es/news-room/fact-sheets/detail/adolescent-pregnancy (accessed on 6 December 2024).
7. DeMarco, N.; Twynstra, J.; Ospina, M.B.; Darrington, M.; Whippey, C.; Seabrook, J.A. Prevalence of low birth weight, premature birth, and stillbirth among pregnant adolescents in Canada: A systematic review and meta-analysis. *J Pediatr Adolesc Gynecol* **2021**, *34*, 530–537. https://doi.org/10.1016/j.jpag.2021.03.003.
8. Ramírez-Aranda, J.M.; Gómez-Gómez, C.; Villarreal-Pérez, J.Z.; García-Elizondo, F.J.; Rodríguez-Rodríguez, I.; Rosas-Herrera, C.H.; et al. Factores de protección y riesgo del embarazo en la adolescencia. *Med. Univ* **2013**, *15*, 64–72. Available online: https://www.elsevier.es/en-revista-medicina-universitaria-304-articulo-factores-proteccion-riesgo-del-embarazo-X1665579613082786.
9. Mambo, S.B.; Lodhi, M.M.; Asiimwe, I.; Bizimana, G.N.; Makelele, A.M.; Mbina, S.A.; Igwe, M.C.; Ibrahim, U. Healthcare workers' attitudes and factors affecting provision of sexual and reproductive health services to adolescents in refugee settlements, Western Uganda. *Front. Reprod. Health* 2025, *7*, 1498305. https://doi.org/10.3389/frph.2025.1498305
10. Baigry, M.I.; Ray, R.; Lindsay, D.; Kelly-Hanku, A.; Redman-MacLaren, M. Barriers and Enablers to Young People Accessing Sexual and Reproductive Health Services in Pacific Island Countries and Territories: A Scoping Review. *PLoS ONE* **2023**, *18*, e0280667. https://doi.org/10.1371/journal.pone.0280667
11. Kululanga, L.I.; Kadango, A.; Lungu, G.; Jere, D.; Ngwale, M.; Kumbani, L.C. Knowledge deficit on health promotion activities during pregnancy: the case for adolescent pregnant women at Chiladzulu District, Malawi. *BMC Pregnancy Childbirth* **2020**, *20*, 3386. https://doi.org/10.1186/s12884-020-03386-w.
12. Juvinyà-Canal, D. Alfabetización en salud en la comunidad. *Innov. Educ* **2021**, *31*, 7952. https://doi.org/10.15304/ie.31.7952.

 doi:10.20944/preprints202603.1952.v1

13. World Health Organization. WHO Guideline on Self-Care Interventions for Health and Well-Being. WHO: Geneva, Switzerland, **2022**. Available online: https://www.who.int/es/publications/i/item/9789240052239 (accessed on 6 December 2024).
14. Sociedad Española de Ginecología y Obstetricia. Control prenatal del embarazo normal. Guía de asistencia práctica. *Prog. Obstet. Ginecol* **2018**, 61, 510–527. Available online: https://sego.es/documentos/progresos/v61-2018/n5/GAP_Control%20prenatal%20del%20embarazo%20normal_6105.pdf (accessed on 6 December 2024).
15. Nguyen, L.D.; Nguyen, L.H.; Ninh, L.T.; et al. Women's holistic self-care behaviors during pregnancy and associations with psychological well-being: implications for maternal care facilities. *BMC Pregnancy Childbirth* **2022**, *22*, 4961. https://doi.org/10.1186/s12884-022-04961-z.
16. Denehy, J. Health education: An important role for school nurses. *J. Sch. Nurs* **2001**, *17*, 233–238. https://doi.org/10.1177/10598405010170050101.
17. Gómez-Mercado, C.A.; Montoya-Vélez, L.P. Factores sociales, demográficos, familiares y económicos relacionados con el embarazo en adolescentes, área urbana, Briceño, 2012. *Rev. Salud Pública* **2014**, *16*, 394–406. https://doi.org/10.15446/rsap.v16n3.34986.
18. United Nations International Children's Emergency Fund. Addressing the Needs of Adolescent and Young Mothers Affected by HIV. UNICEF: Nairobi, Kenya, **2020**. Available online: https://www.unicef.org/esa/media/7151/file/UNICEF-ESA-Young-Mothers-HIV-Report-2020.pdf (accessed on 6 December 2024).
19. Page, M.J.; McKenzie, J.E.; Bossuyt, P.M.; et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* **2021**, *372*, n71. https://doi.org/10.1136/bmj.n71.
20. Rethlefsen, M.L.; Kirtley, S.; Waffenschmidt, S.; et al. PRISMA-S: an extension to the PRISMA statement for reporting literature searches in systematic reviews. *J. Med. Libr. Assoc* **2021**, 109, 174–200. https://doi.org/10.5195/jmla.2021.962.
21. Sterne, J.A.C.; Savović, J.; Page, M.J.; Elbers, R.G.; Blencowe, N.S.; Boutron, I.; Cates, C.J.; Cheng, H.-Y.; Corbett, M.S.; Eldridge, S.M.; et al. RoB 2: A revised tool for assessing risk of bias in randomised trials. *BMJ* **2019**, *366*, l4898. https://doi.org/10.1136/bmj.l4898
22. Sterne, J.A.C.; Hernán, M.A.; Reeves, B.C.; Savović, J.; Berkman, N.D.; Viswanathan, M.; Henry, D.; Altman, D.G.; Ansari, M.T.; Boutron, I.; et al. ROBINS-I: A tool for assessing risk of bias in non-randomised studies of interventions. *BMJ* **2016**, *355*, i4919. https://doi.org/10.1136/bmj.i4919
23. McGuinness, L.A.; Higgins, J.P.T. Risk-of-bias VISualization (robvis): An R package and Shiny web app for visualizing risk-of-bias assessments. *Res. Syn. Meth* **2020**, *11*, 1–7. https://doi.org/10.1002/jrsm.1411.
24. Wan, X.; Wang, W.; Liu, J.; Tong, T. Estimating the sample mean and standard deviation from the sample size, median, range and/or interquartile range. *BMC Med. Res. Methodol.* 2014, *14*, 135. https://doi.org/10.1186/1471-2288-14-135.
25. Luo, D.; Wan, X.; Liu, J.; Tong, T. Optimally estimating the sample mean from the sample size, median, mid-range, and/or mid-quartile range. *Stat. Methods Med. Res.* 2018, *27*, 1785–1805. https://doi.org/10.1177/0962280216669183.
26. Guyatt, G.H.; Oxman, A.D.; Vist, G.E.; Kunz, R.; Falck-Ytter, Y.; Alonso-Coello, P.; Schünemann, H.J. GRADE: An emerging consensus on rating quality of evidence and strength of recommendations. *BMJ* 2008, *336*, 924–926. https://doi.org/10.1136/bmj.39489.470347.AD
27. Guyatt, G.H.; Oxman, A.D.; Akl, E.A.; Kunz, R.; Vist, G.; Brozek, J.; Norris, S.; Falck-Ytter, Y.; Glasziou, P.; DeBeer, H.; Jaeschke, R.; Rind, D.; Meerpohl, J.; Dahm, P.; Schünemann, H.J. GRADE guidelines: 1. Introduction—GRADE evidence profiles and summary of findings tables. *J. Clin. Epidemiol.* 2011, *64*, 383–394. https://doi.org/10.1016/j.jclinepi.2010.04.026
28. Chansiri, S.; Moonpanane, K.; Kurain, S. Prevention of preterm birth and low birth weight through the mHealth self-efficacy program among first-time pregnant adolescents in Northern Thailand: A quasi-experimental study. *Pac. Rim Int. J. Nurs. Res.* 2026. https://doi.org/10.60099/prijnr.2026.274983.
29. Boobpamala, S.; Kongvattananon, P.; Quinn Griffin, M.T. Effectiveness of an Early Depression Prevention Program on Coping Skills and Depression among Pregnant Adolescents: A Randomized Controlled Trial.

 doi:10.20944/preprints202603.1952.v1

Pac. Rim Int. J. Nurs. Res. **2022**, *26*, 296–312. Available online: https://he02.tci-thaijo.org/index.php/PRIJNR/article/view/256519 (accessed on 6 December 2024).

30. Ulloa-Sabogal, I.M.; Arias-Rojas, M. Nursing intervention "EducaTHE" to improve knowledge and self-care behaviors for hypertensive disorders in pregnant women: A randomized controlled pilot study. *Investig. Educ. Enferm.* 2025, *43*, e14. https://doi.org/10.17533/udea.iee.v43n1e14.
31. Díaz-Hurtado, D.E.; Mora-Pérez, Y.; Iglesias-Armenteros, A.L.; Sánchez-García, Z.T.; Dos Santos Goulart, G.; Cambil-Martín, J. Influencia de una intervención educativa en puérperas adolescentes sobre nivel de conocimientos de autocuidado. *Rev. Cubana Enferm.* 2024, *40*, e6541. Available online: https://revenfermeria.sld.cu/index.php/enf/article/view/6541 (accessed on 6 December 2024).
32. Tavakoly-Sany, S.B.; Eslami, V.; Lael-Monfared, E.; Ghavami, V.; Peyman, N. Effect of an educational intervention based on self-efficacy theory and health literacy skills on preventive behaviors of urinary tract infection in pregnant women: A quasi-experimental study. *PLoS ONE* 2024, *19*, e0306558. https://doi.org/10.1371/journal.pone.0306558.
33. Gholami, A.; Mehdizadeh Tourzani, Z.; Kabir, K.; Yazdkhasti, M. The effectiveness of Adlerian group counseling approach on mother's distress and self-care during pregnancy: A randomized controlled trial. *J. Holist. Nurs. Midwifery* 2022, *32*, 254–264. https://doi.org/10.32598/jhnm.32.4.2220.
34. Rezaie, R.; Mohammad-Alizadeh-Charandabi, S.; Nemati, F.; Mirghafourvand, M. The effect of self-care counseling on health practices of adolescent pregnant women: a randomized controlled trial. *BMC Pregnancy Childbirth* **2021**, *21*, 4203. https://doi.org/10.1186/s12884-021-04203-8.
35. Pradhan, R.; Wynter, K.; Fisher, J. Factors associated with pregnancy among adolescents in low-income and lower middle-income countries: a systematic review. *J. Epidemiol. Community Health* **2015**, *69*, 918–924. https://doi.org/10.1136/jech-2014-205128.
36. Fahim, S.H.; Kazemi, F.; Masoumi, S.Z.; Refaei, M. The effect of midwife-oriented breastfeeding counseling on self-efficacy and performance of adolescent mothers: a clinical trial study. *BMC Pregnancy Childbirth* **2023**, *23*, 672. https://doi.org/10.1186/s12884-023-05982-y.
37. Coşkun, A.M.; Karakaya, E.; Yaşer, Y. A safe motherhood education and counselling programme in Istanbul. *Eur. J. Contracept. Reprod. Health Care* **2009**, *14*, 424–436. https://doi.org/10.3109/13625180903274460.
38. Garg, N.; Arunan, S.K.; Arora, S.; Kaur, K. Application of Mobile Technology for Disease and Treatment Monitoring of Gestational Diabetes Mellitus Among Pregnant Women: A Systematic Review. *J. Diabetes Sci. Technol* **2022**, *16*, 491–497. https://doi.org/10.1177/1932296820965577.
39. Chamberlain, C.; O'Mara-Eves, A.; Oliver, S.; Caird, J.R.; Perlen, S.M.; Eades, S.J.; Thomas, J. Psychosocial interventions for supporting women to stop smoking in pregnancy. *Cochrane Database Syst. Rev* **2013**, *10*, CD001055. https://doi.org/10.1002/14651858.CD001055.pub4.
40. Tahan, C.; Dobbins, T.; Hyslop, F.; Lingam, R.; Richmond, R. Effect of digital health, biomarker feedback and nurse or midwife-led counselling interventions to assist pregnant smokers quit: a systematic review and meta-analysis. *BMJ Open* **2023**, *13*, e060549. https://doi.org/10.1136/bmjopen-2021-060549.
41. Swift, J.A.; Pearce, J.; Jethwa, P.H.; Taylor, M.A.; Avery, A.; Ellis, S.; Langley-Evans, S.C.; McMullen, S. Antenatal Weight Management: Women's Experiences, Behaviours, and Expectations of Weighing in Early Pregnancy. *J. Pregnancy* **2016**, *2016*, 8454759. https://doi.org/10.1155/2016/8454759.
42. Chaudhary, V.; Kumari, S.; Khurana, N.; Azharuddin, M.; Singh, A.P.; Devi, V.; Dhir, D.; Pal, B. Prevalence of self-medication practices among pregnant women in India: A systematic review and meta-analysis. *Pharmacoepidemiol. Drug Saf* **2024**, *33*, e5791. https://doi.org/10.1002/pds.5791.
43. Bouqoufi, A.; Laila, L.; Boujraf, S.; Hadj, F.A.E.; Razine, R.; Abouqal, R.; Khabbal, Y. Prevalence and associated factors of self-medication in worldwide pregnant women: systematic review and meta-analysis. *BMC Public Health* **2024**, *24*, 308. https://doi.org/10.1186/s12889-023-17195-1.