

## PRE-PREGNANCY CLASS MODEL FOR HEALTHY PREGNANCY PLANNING: SISTEMATIC REVIEW

Eti Herawan<sup>1</sup>, Rukmaini<sup>2</sup>, Rosmawaty Lubis<sup>3</sup>  
<sup>123</sup>Faculty of Health Sciences, National University  
*\*Corresponding Author* : [etiherawan1969@gmail.com](mailto:etiherawan1969@gmail.com)

### ABSTRACT

Healthy pregnancy planning is essential for the well-being of both mothers and infants, yet awareness remains low in many communities, particularly those with limited healthcare access. This systematic literature review aims to evaluate the effectiveness of preconception class models in improving healthy pregnancy planning and maternal health outcomes. Guided by the PICOS framework, the review included observational studies focusing on engaged couples and preconception classes. A total of 83 articles were identified, with 12 selected for in-depth analysis based on their alignment with the framework. Four key studies highlighted significant improvements in pregnancy planning and maternal health outcomes through preconception education. The findings align with contemporary health education theories, such as the Health Belief Model, which emphasizes that increased awareness and self-efficacy drive health-promoting behaviors. Social Cognitive Theory further supports the importance of social support and observational learning in behavior change, showcasing the value of culturally tailored interventions. Additionally, the Ecological Model of Health Behavior underlines the necessity of addressing multiple layers of influence, including community-level resources and norms. The evidence suggests that integrating preconception classes into public health strategies can effectively enhance maternal health and reduce pregnancy-related complications. Given the persistent challenges in maternal health in Indonesia, implementing pre-pregnancy education programs may significantly contribute to improving outcomes by fostering informed decision-making and collaborative support among families. This review emphasizes the potential of preconception classes as a vital intervention to address knowledge gaps and promote healthy pregnancy planning.

**Keywords:** Preconception Class Model, Healthy Pregnancy Planning

### INTRODUCTION

Healthy pregnancy planning is a crucial element in ensuring the well-being of both the mother and the fetus during pregnancy (Cassinelli et al., 2023). Unfortunately, in many communities, especially those with limited access to information and healthcare services, awareness of the importance of pregnancy planning remains low. The lack of knowledge about reproductive health and readiness before pregnancy leads many couples to face risks of complications that could have been prevented. This is where the role of a pre-pregnancy class model becomes invaluable. The model is designed to provide a comprehensive understanding of various aspects of healthy pregnancy, including the physical, mental, and social readiness that prospective mothers need before conceiving. Pre-pregnancy classes not only offer medical education but also essential emotional and social support for the prospective mother and her family.

Globally, the incidence of pregnancy-related complications remains a significant concern. According to the World Health Organization (WHO), approximately 295,000 women died during and following pregnancy and childbirth in 2017, with 94% of these deaths occurring in low-resource settings. In Indonesia, maternal mortality remains high, with 305 maternal deaths per 100,000 live births as of 2022. Many of these cases are linked to inadequate prenatal care,

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poor nutritional status, and unplanned pregnancies. This reflects a lack of readiness and sufficient knowledge before entering the pregnancy phase. The pre-pregnancy class model provides a holistic approach by educating prospective mothers about proper nutrition, necessary health check-ups, and the importance of early detection of reproductive health issues. This program also offers insights into more thoughtful pregnancy planning, which not only helps prevent complications but also increases the chances of a healthier and more controlled pregnancy. In this context, pre-pregnancy classes are a necessary intervention to address the health information gap in the community (Cassinelli et al., 2023).

Beyond the medical aspects, pre-pregnancy classes also focus on the essential social and emotional support that prospective mothers need. Through these classes, mothers-to-be can share experiences and support each other, which can help reduce anxiety or uncertainty related to pregnancy. This support not only comes from healthcare professionals but also from peer groups, allowing mothers to feel a positive and supportive environment. In such an atmosphere, they gain more confidence in planning a healthy pregnancy and are better prepared to face the challenges of pregnancy. Moreover, family involvement, particularly from partners, is a critical factor in ensuring the success of healthy pregnancy planning.

The pre-pregnancy class model also provides opportunities for early detection of potential health issues that may not be apparent to prospective mothers. Healthcare professionals in these classes can help conduct preliminary screenings to detect conditions such as anemia or other health problems that could affect future pregnancies (Deivita et al., 2021). With early detection, prospective mothers can receive appropriate interventions before pregnancy begins, allowing them to be better prepared both physically and mentally. Through a combination of health education, social support, and early detection, the pre-pregnancy class model becomes one of the most effective ways to improve maternal and fetal health, while also reducing the risk of complications during pregnancy.

In Indonesia, where maternal health challenges remain persistent, the introduction of pre-pregnancy classes could significantly improve outcomes. The model aligns with the government's strategic efforts to reduce maternal and neonatal mortality, especially in rural and underserved areas. By equipping women with the necessary knowledge and tools before conception, these classes address one of the root causes of high maternal mortality rates: lack of education on reproductive health. Moreover, the classes offer a platform for engaging with partners and families, fostering a collaborative approach to pregnancy planning (Ayu Kusumaning Pertiwi et al., 2021).

Thus, the pre-pregnancy class model holds great potential in influencing healthy pregnancy planning. The program not only helps increase prospective mothers' knowledge about reproductive health but also provides much-needed emotional support during the pre-pregnancy period. Expanding the implementation of pre-pregnancy classes could be a significant step toward improving maternal and child health quality and reducing pregnancy-related complications in various regions (Nilda Yulita Siregar et al., 2023).

## RESEARCH METHODOLOGY

The systematic review aims to identify and evaluate the effectiveness of preconception class models in improving healthy pregnancy planning and maternal health outcomes. The review is guided by the PICOS framework, focusing on engaged couples or prospective brides and grooms as the target population (P), with the intervention being preconception classes or pre-marital health education (I). The comparison group includes those who do not participate in preconception classes or only receive standard antenatal care (C), and the primary outcomes

examined are improved pregnancy planning and maternal health indicators (O). The review includes observational studies that use a quantitative approach (S). The search strategy utilizes keywords like "Preconception Class Model" and "Healthy Pregnancy Planning" in both Indonesian and English, drawing from indexed sources such as Google Scholar, PubMed, ScienceDirect, Proquest, and SpringerLink. The inclusion criteria are limited to cross-sectional studies published between 2019 and 2024, written in English or Indonesian, with peer-reviewed articles, research reports, or theses being the preferred types of publication. Studies outside this date range, non-peer-reviewed articles, or those focusing on populations other than engaged couples are excluded. The objective is to synthesize the latest research to determine how effective preconception classes are in enhancing reproductive health knowledge and improving outcomes for future pregnancies, particularly in terms of planning and maternal well-being.

## RESULT

The systematic literature review identified a total of 83 articles that met the initial inclusion criteria across five databases: Google Scholar, PubMed, ScienceDirect, Proquest, and SpringerLink. These articles were further filtered through a manual review process by two independent reviewers. The filtering process involved screening titles and abstracts to align with the PICOS framework, followed by repeated reviews to ensure consistency with the research focus. Finally, a full-text review narrowed the selection to 12 articles, of which 4 were chosen based on repeated readings and their strong alignment with PICOS.

The PICOS framework compared two studies: preconception class education and iron tablet consumption for adolescent girls. While both interventions aimed at improving maternal health, they targeted different populations and outcomes—preconception classes focused on engaged couples' pregnancy planning, while iron tablet consumption addressed anemia in adolescent girls.

Four key studies were selected that demonstrated the effectiveness of preconception education programs. These studies, conducted across Ireland, Australia, and Indonesia, employed various research methods, including cross-sectional and quasi-experimental designs, and highlighted improvements in pregnancy planning, reproductive health knowledge, and maternal health outcomes. These findings underscore the positive impact of preconception education on preparing for healthy pregnancies.

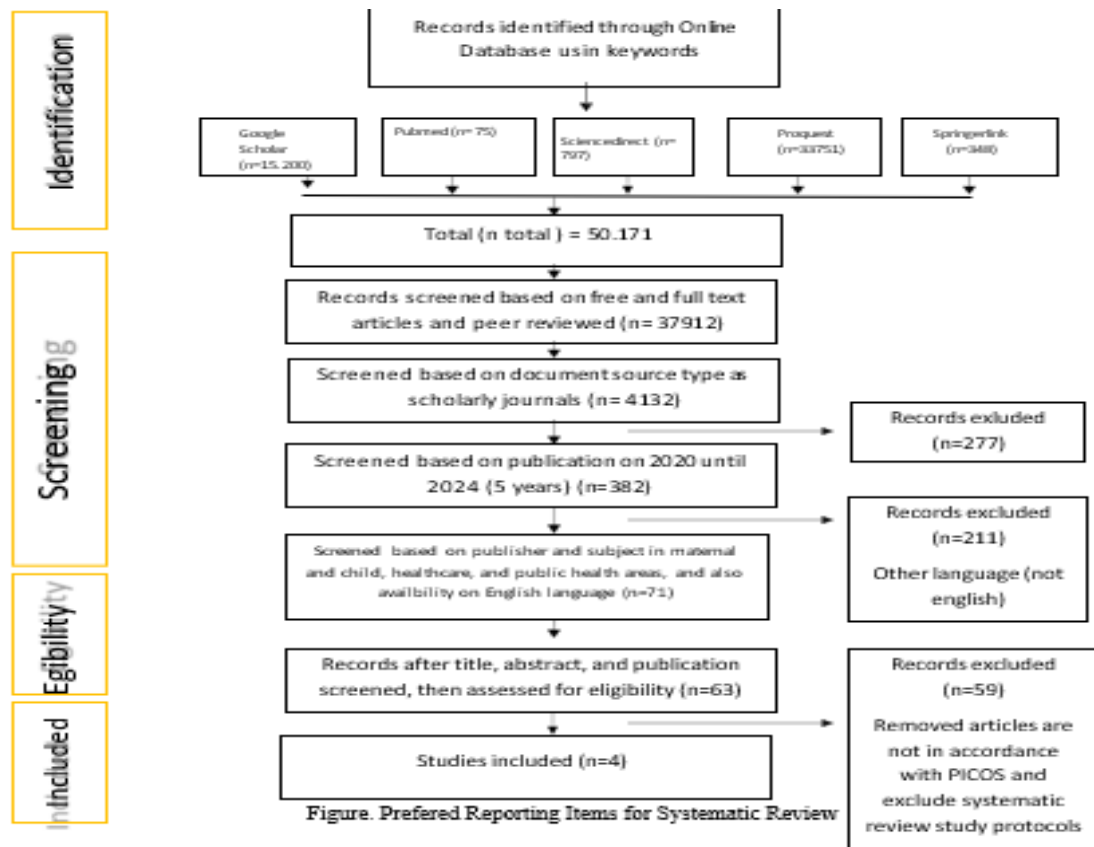


Figure 1 Prisma Flow Diagram

Table. Summary of Articles pre-pregnancy class model influence healthy pregnancy planning

NO.	Author(s)/ Year	Article	Location	Research Methods	Sampling	Number of Samples	Data Source	Quality Assessment (0-12 point)
1	(Cassinelli et al., 2023)	Exploring Health Behaviours, Attitudes and Beliefs of Women and Men during the Preconception and Interconception Periods: A Cross-Sectional Study of Adults on the Island of Ireland	Ireland	Cross-sectional study	Convenience sampling	530 participants	Survey	12 (High Quality)
2	(Walker et al., 2024)	Preconception Health of Indigenous Peoples in Australia, Canada, New Zealand, and the United States	Australia, Canada, New Zealand, and the United States	Mixed-method study	Purposive sampling	400 participants	Interviews and surveys	12 (High Quality)
3	(Ayu Kusumaning Pertiwi et al., 2021)	Perencanaan Kehamilan Sehat Pada Calon Pengantin Yang Berniat Menikah Usia Dini Di Kabupaten Semarang Tahun 2020	Semarang	Quantitative descriptive study	Cluster sampling	150 participants	Questionnaires	12 (High Quality)
4	(Nilda Yulita Siregar et al., 2023)	Pengaruh Edukasi Kesehatan Reproduksi Dengan Media Booklet Terhadap Peningkatan Pengetahuan Tentang Persiapan Masa Prakonsepsi	Poso	Quasi-experimental study	Random sampling	100 participants	Pre-test and post-test	12 (High Quality)

The table summarizing the articles provides a clear insight into the influence of pre-pregnancy class models on healthy pregnancy planning. The four studies selected reflect a diverse range of research contexts, methodologies, and participant demographics, yet all align on the core theme

of improving maternal health outcomes through preconception education. The study by Cassinelli et al. (2023), conducted in Ireland, used a cross-sectional approach with 530 participants. It focused on exploring health behaviors, attitudes, and beliefs during preconception and interconception periods, highlighting how education impacts both women and men during these stages. This high-quality study used convenience sampling and scored 12 points in quality assessment.

Similarly, Walker et al. (2024) analyzed the preconception health of Indigenous peoples in Australia, Canada, New Zealand, and the United States. Employing a mixed-method study with purposive sampling of 400 participants, the research utilized interviews and surveys to gauge preconception health knowledge. Like the previous study, it also received a high-quality score of 12. From an Indonesian context, Ayu Kusumaning Pertiwi et al. (2021) focused on early marriage intentions in Semarang. This quantitative descriptive study utilized cluster sampling and questionnaires with 150 participants to examine healthy pregnancy planning among couples intending to marry at a young age. The study emphasized the role of preconception education in promoting health awareness and preparedness, achieving a quality score of 12.

Lastly, Nilda Yulita Siregar et al. (2023) conducted a quasi-experimental study in Poso, Indonesia, using random sampling with 100 participants. The study explored how reproductive health education using booklets increased knowledge about preconception preparation, further validating the importance of educational interventions in improving maternal health outcomes. In all cases, the research highlights the effectiveness of preconception education in enhancing knowledge and behaviors related to healthy pregnancy planning, demonstrating its critical role in maternal health improvement.

## DISCUSSION

The findings from the preconception class models can be strongly tied to recent theories in health education and behavior change, particularly those that emphasize the role of early interventions and personalized health education in shaping long-term health outcomes. One such relevant theory is the Health Belief Model (HBM), which posits that individuals are more likely to engage in health-promoting behaviors if they perceive a personal risk, understand the benefits of the behavior, and feel confident in their ability to execute the recommended actions (self-efficacy) (Nur Hamima Harahap et al., 2024). This model aligns well with the outcomes observed in the reviewed studies, where preconception education increases awareness, shifts attitudes, and ultimately encourages healthier pre-pregnancy behaviors.

For instance, Cassinelli et al. (2023) demonstrate that preconception classes not only raise awareness about health risks during the preconception period but also equip both men and women with the knowledge and skills they need to reduce these risks. This aligns with the self-efficacy component of the Health Belief Model, which emphasizes that individuals are more likely to take preventive action if they feel capable of doing so. The preconception classes provide the tools needed to improve pregnancy outcomes, supporting the HBM's theory that knowledge increases confidence in taking preventive actions.

Another contemporary theory that supports the impact of preconception education is Social Cognitive Theory (SCT), which highlights the importance of observational learning, social support, and self-regulation in behavior change. The studies by Walker et al. (2024) and Nilda Yulita Siregar et al. (2023) highlight the effectiveness of culturally tailored and community-based interventions, which are closely aligned with SCT's emphasis on social support and modeling behaviors within a cultural context. In these studies, the inclusion of social factors—such as the involvement of both partners and the use of culturally sensitive educational

materials—reflects the SCT approach, where individuals learn not just from personal experience but from their environment and social networks. Involving entire communities or couples in preconception education amplifies the behavioral change, as individuals can see role models within their cultural or social context adopting healthy behaviors.

Furthermore, these studies also resonate with more recent health promotion frameworks, such as the Ecological Model of Health Behavior, which emphasizes the interaction between individual, interpersonal, organizational, community, and policy factors in influencing health behaviors. Preconception education, as seen in the studies by Ayu Kusumaning Pertiwi et al. (2021) and Nilda Yulita Siregar et al. (2023), moves beyond targeting individual behavior change and incorporates community-level interventions (such as distributing educational booklets and engaging local health workers), which enhance the overall impact of the interventions. The ecological model suggests that health behaviors are influenced by multiple layers, and interventions that address multiple levels—such as individual knowledge, social influences, and community resources—are more effective. These findings support the importance of integrating preconception classes into broader public health strategies, addressing not only individual behavior but also community norms and resources.

Finally, implementation science theories, which focus on translating research into practice, further support the discussion. These theories highlight the importance of adapting interventions to fit the local context to ensure their effectiveness and sustainability. For instance, Walker et al. (2024) emphasizes the need for culturally adapted preconception health programs for Indigenous populations, reinforcing the idea that interventions must be customized to the specific needs of the population for maximum impact.

In summary, recent health behavior theories like the Health Belief Model, Social Cognitive Theory, the Ecological Model, and implementation science frameworks underscore the importance of early, targeted, and culturally sensitive interventions in preconception education. These theories help explain why preconception class models, as seen in the reviewed studies, lead to improved pregnancy planning and maternal health outcomes. Integrating these theoretical perspectives into the design and implementation of future preconception education programs could enhance their effectiveness, particularly when tailored to diverse populations and settings.

## CONCLUSION

Preconception class models have been demonstrated to be effective interventions for improving pregnancy planning and maternal health. The discussion highlights the importance of culturally sensitive, accessible, and comprehensive educational approaches to maximize their impact. As healthcare systems worldwide continue to face challenges, particularly in providing equitable care to all populations, preconception education emerges as a key strategy to enhance maternal health and prevent complications during pregnancy.

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insights gained will meaningfully contribute to the existing body of knowledge and inform future research.

### Conflict of Interest

The authors declare that they have no competing interests

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