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# Implementation of Preconception Care: A Scoping Review

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## ABSTRACT

**Background**: Preconception services provide women with a variety of programs that start when they are teenagers and continue through pregnancy. These programs are designed to ensure a healthy pregnancy. A well-prepared pregnancy is less likely to cause problems for both mother and child. Approximately 800 women died every day in 2020, contributing to a Maternal Mortality Rate (MMR) of 223 for every 100,000 live births. By 2030, the Sustainable Development Goals (SDGs) will reduce the MMR to 70 per 100,000 live births. Strengthening healthcare systems especially for preconception services are urgent to reduce maternal and child health risks. Supporting projects that aim to improve the accessibility and quality of preconception and other reproductive health services is something the World Health Organization is doing to fill the gaps that exist in these areas.
**Purpose**: The following research efforts aim to provide a comprehensive picture of the implementation of preconception care.
**Methods**: This study used a scoping review method that goes through several stages, including (1) Identifying scoping review questions, which refer to the PCC framework; (2) Identifying relevant articles using three databases (PubMed, Ebsco, and ScienceDirect) with keywords (implementation*) and (preconception*) or (preconception care*) and (expectant parent*). (3) Selection of articles, 303 articles were obtained which were then filtered into 6 articles; (4) Data charting and quality assessment of articles using Mixed Methods Appraisal Tools (MMAT); and (5) Presentation of data/results, discussion, and conclusions.
**Conclusion**: Preconception services can help identify potential problems in women and men that could potentially hinder the couple from obtaining a pregnancy. Couples can be given treatment when problems are found, to prepare a safe and heathy pregnancy. Lack of awareness, unsupportive facilities, and expensive service fees become obstacles. Policies and roles of various parties are needed to support and improve the quality of preconception care.

**Keywords**: *Implementation; preconception care; reproductive health.*

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## BACKGROUND

From adolescence to childbirth, the goal of preconception care is to assist women in developing and maintaining a healthy pregnancy. Preconception care is designed to improve the health habits of the brides and grooms or expectant parents, as well as their psychological and physiological preparedness, and their access to preconception care (Yulivantina et al., 2022). This is done to help them have a safe pregnancy. According to the World Health Organization, preconception care includes nutritional conditions, smoking history, genetic conditions, environmental conditions, infertility/sub-fertility, violence, early or unwanted pregnancy, sexually transmitted infections, HIV, mental health, psychoactive substance use, vaccine administration, and female genital mutilation (World Health Organization, 2013).

The global Maternal Mortality Rate (MMR) in 2020 was 223 per 100,000 live births, with nearly 800 women dying every day from preventable problems related to pregnancy and childbirth (World Health Organization, 2023). The Sustainable Development Goals (SDGs) include the target of reducing the MMR to less than 70 per 100,000 live births by 2030, or an annual reduction of 11.6% (World Health Organization, 2023). Therefore, WHO supports several strategies to address this issue, including addressing gaps in the availability and quality of reproductive health services, and ensuring comprehensive health coverage (World Health Organization, 2023). With Indonesia's socioeconomic gap, rural education, and overall low health literacy in Indonesia, gaining access to preconception healthcare is brutal (Tazkiyah et al., 2024; Hadi et al., 2023). Many women having insufficient educational resources makes them unprepared for pregnancy. In addition, favorable perceptions of preconception care indicate a lack of understanding of people's marital status, occupation, and level of education, emphasizing the importance of education campaigns (Munthali et al., 2021).

Preconception care plays an important role in improving other services such as ANC, childbirth, postpartum, and reducing the adverse effects of pregnancy (Fetena et al., 2023). During a well-prepared pregnancy, there is less chance of problems for both mother and child (Yulivantina et al., 2022). Preconception care has many benefits, reduced maternal and child mortality; reduced likelihood of unwanted pregnancies; reduced likelihood of adverse birth outcomes such as stillbirth, premature birth, low birth weight, birth defects, stunting, and HIV transmission; reduced likelihood of contracting infectious diseases; prevention of various childhood cancers; and reduced likelihood of type 2 diabetes and cardiovascular disease (World Health Organization, 2013). The existence of preconception care can also save costs because it is a preventive measure,

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so that if there are health problems can be overcome before pregnancy occurs (Fetena et al., 2023).

The assumption that preconception care will be time-consuming, reluctance to disturb health workers who have a high workload, more comfortable discussing with other (more than with health workers), and characteristics of health workers (experience, empathy, and communication skills) are factors that contribute to the implementation of preconception care (Poels et al., 2017). Other factors include educational status, financial and psychological support from partners, history of chronic health problems, and knowledge of preconception care (Fetena et al., 2023). Some other things that can also affect preconception care are the level of knowledge of health workers, policy makers (government), and the individual (Zakaria et al., 2022).

## OBJECTIVE

The aim of the following study was to provide an overview of the implementation of preconception care.

## METHODS

This research used the scoping review method, which aims to present important concepts that form the basis of the research. Scoping review is a process of mapping the existing literature or evidence base (Arksey & O'Malley, 2005). This research went through several stages that refer to Arksey & O'Malley (2005), including:

### Identifying scoping review questions

The development of scoping review questions and selection of articles refers to the following framework:

**Table 1. Framework PCC**

| P (Population) | C (Concept) | C (Context) |
|---|---|---|
| Brides and grooms | Implementation of preconception care | - |

Based on this framework, the scoping review question was "How is preconception care implemented for prospective brides and grooms?"

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## Identifying relevant articles

To find relevant articles, it was first necessary to establish inclusion and exclusion criteria, which was done after the scoping review topic had been determined. Articles written in English and published during the last five years (2019-2023) became the inclusion criteria. While review articles (literature review, systematic review, etc) became the exclusion criteria in this study. Databases used in the literature search were PubMed, Ebsco, and ScienceDirect, using the keywords (implementation*) AND (preconception*) OR (preconception care*) AND (expectant parent*).

## Article selection

The literature search using the three databases found 303 articles, consisting of 16 articles from PubMed, 48 articles from Ebsco, and 239 articles from ScienceDirect. The articles obtained were then filtered and obtained as many as 6 articles which will then be quality assessed using the critical appraisal tool. The results of the literature search were documented in the following PRISMA-ScR flow diagram:

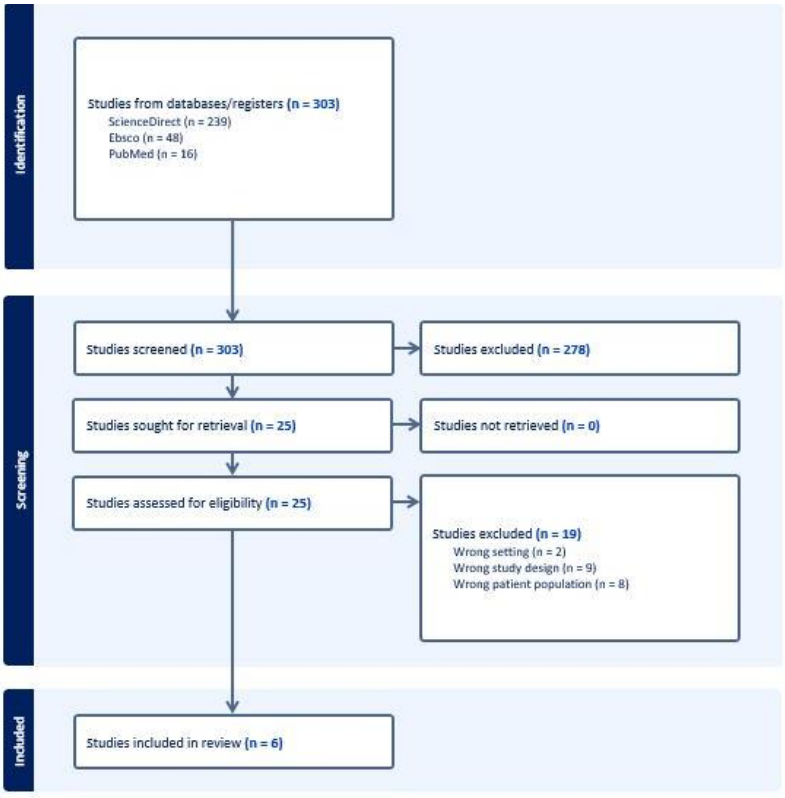


**Figure 1. PRISMA-ScR Flow Diagram**

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**Data charting**

All selected articles were then entered into a table. The following are the results of data charting:

**Table 2. Data Charting**

| No. | Title/Author/Year/Grade | Country | Aim | Research Type, Sample Size, Data Collecting Technique | Result |
|---|---|---|---|---|---|
| A1 | "Gendered Conceptions of Preconception Health: A Thematic Analysis of Men's and Women's Beliefs About Responsibility for Preconception Health Behavior" (Mello et al., 2020) | United States | Exploring societal expectations (gender appropriate) of responsibility for engaging in preconception health behaviors | Qualitative study, 573 participants, interview | Women perceive preconception health behaviors to be a mother's job |
| A2 | "Exploring The Perception of and Attitude Towards Preconception Care Service Provision and Utilisation in a South Western Nigerian Community – A Qualitative Study" (Ojifinni et al., 2021) | Nigeria | Exploring knowledge and attitudes about preconception health | Qualitative study 57 participants, FGDs | The inhibiting factors in preconception care are a lack of awareness and high costs |
| A3 | "The Perspective of Healthcare Practitioners on Preconception Care at Primary Healthcare in Jakarta: A Qualitative Study" (Kurniawati et al., 2021) | Indo-nesia | Identifying preconception services provided by health workers to prospective brides and grooms | Qualitative study, 32 participants, FGDs | Health workers need to be given specialized training to improve their skills in providing preconception care |
| A4 | "Utilization of Preconception Care and Its Impacts on Health Behavior Changes Among Expectant Couples in Shanghai, China" (Du et al., 2021). | China | Giving an understanding of the role of service providers in promoting preconception health behaviors and factors associated with service use | Cross-sectional study, 948 participants, questionnaire | Unwanted pregnancy and a lack of awareness were the main reasons for participants not utilizing preconception services |

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| No. | Title/Author/Year/Grade | Country | Aim | Research Type, Sample Size, Data Collecting Technique | Result |
|---|---|---|---|---|---|
| A5 | "How to Improve Preconception Care in a Local Setting? Views from Dutch Multidisciplinary Healthcare Providers" (Maas et al., 2022) | Nether-lands | Exploring health workers' views on improving preconception services | Mixed-Methods study, 250 participants, questionnaire and interactive workshop | Health workers (other than midwives) felt less competent in providing preconception information |
| A6 | "Current Preconception Care Practice in The Netherlands – An Evaluation Study Among Birth Care Professionals" (Scheele et al., 2023) | Nether-lands | Evaluating preconception services and health workers' (midwives) perceptions of preconception services | Cross-sectional study, 102 participants, questionnaire | Preconception care should be provided to all couples, but there is low interest among prospective parents in preconception care |

**Presentation of data/results, discussion and conclusions**

The results of the literature search on three databases using the PCC framework, obtained a total of 303 articles. Literature screening was carried out to obtain 6 articles, which were then subjected to critical appraisal using the Mixed Methods Appraisal Tool (MMAT) to assess the quality of the articles, classified, until themes were obtained.

**Table 3. Quality Assessment MMAT (Cross-sectional, Qualitative, and Mixed Methods Study)**

| Scales | Total Value Limitations | Grades | Categories |
|---|---|---|---|
| 2 = Yes | 10-14 | A | Excellent |
| 1 = Can't tell | 5-9 | B | Good |
| 0 = No | 0-4 | C | Poor |

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**Table 4. Critical Appraisal MMAT (Cross-sectional Study)**

| No. | Question Items | No. Items | |
|---|---|---|---|
| | | A4 | A6 |
| 1. | Are there clear research question? | 2 | 2 |
| 2. | Do the collected data allow to address the research question? | 2 | 2 |
| 3. | Is the sampling strategy relevant to address the research question? | 2 | 2 |
| 4. | Is the sample representative of the target population? | 2 | 2 |
| 5. | Are the measurements appropriate? | 2 | 2 |
| 6. | Is the risk of nonresponse bias low? | 2 | 2 |
| 7. | Is the statistical analysis appropriate to answer the research question? | 0 | 0 |
| | **Totals** | **12/A** | **12/A** |

**Table 5. Critical Appraisal MMAT (Qualitative Study)**

| No. | Question Items | No. Items | | |
|---|---|---|---|---|
| | | A1 | A2 | A3 |
| 1. | Are there clear research question? | 2 | 2 | 2 |
| 2. | Do the collected data allow to address the research question? | 2 | 2 | 2 |
| 3. | Is the qualitative approach appropriate to answer the research question? | 2 | 2 | 2 |
| 4. | Are the qualitative data collection methods adequate to address the research question? | 1 | 2 | 2 |
| 5. | Are the findings adequately derived from the data? | 2 | 2 | 2 |
| 6. | Is the interpretation of results sufficiently substantiated by data? | 2 | 2 | 2 |

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| | | | | |
|---|---|---|---|---|
| 7. | Is the coherence between qualitative data sources, collection, analysis and interpretation? | 2 | 2 | 2 |
| | **Totals** | **14/A** | **14/A** | **13/A** |

**Table 6. Critical Appraisal MMAT (Mixed Methods Study)**

| No. | Question Items | No. Items |
|---|---|---|
| | | A5 |
| 1. | Are there clear research question? | 2 |
| 2. | Do the collected data allow to address the research question? | 2 |
| 3. | Is there an adequate rationale for using a mixed methods design to address the research question? | 0 |
| 4. | Are the different components of the study effectively integrated to answer the research question? | 2 |
| 5. | Are the outputs of the integration of qualitative and quantitative components adequately interpreted? | 2 |
| 6. | Are divergences and inconsistencies between quantitative and qualitative results adequately addressed? | 2 |
| 7. | Do the different components of the study adhere to the quality criteria of each tradition of the methods involved? | 2 |
| | **Totals** | **12/A** |

## RESULTS

Based on the 6 articles reviewed in this study related to the implementation of preconception services, the following results were obtained:

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## Article Characteristics

The articles obtained in this study have the following characteristics:

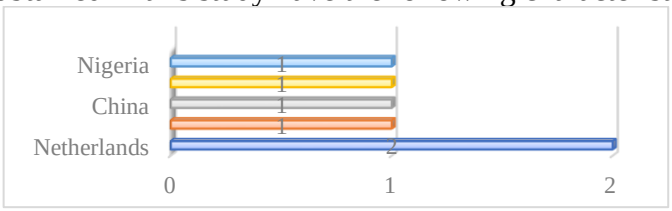


**Figure 2. Articles Based on Country**

Based on this graph, articles were obtained from various countries: the Netherlands (2 articles), the United States, China, Indonesia and Nigeria (each 1 article).

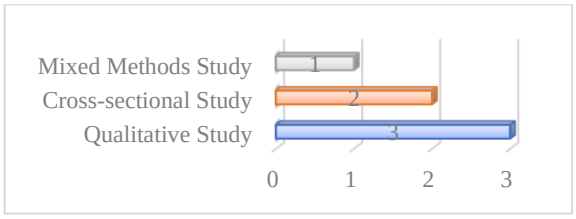


**Figure 3. Articles Based On Research Design**

Based on this graph, the research design used in 6 articles is 3 articles of qualitative study, 2 articles of cross-sectional study, and 1 article of mixed methods study.


**Figure 4. Articles Based On Quality**

Based on this graph, the critical appraisal assessment conducted found that the overall quality of the articles were Grade A (excellent).

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## Analysis and Mapping of Research Article Themes

**Table 7. Article Themes**

| No. | Themes | Sub Themes | Article |
|---|---|---|---|
| 1. | Types of preconception care | | A1, A2, A3, A5, A6 |
| 2. | Barriers of preconception care | Health workers | A3 |
| | | Bride and groom/expectant parents | A1, A2, A3, A4, A5 |
| 3. | Expectations for preconception care | Health workers | A3, A6 |
| | | Bride and groom/expectant parents | A2 |

## DISCUSSION

Based on the 6 articles that have been obtained, the following points were found:

### Types of preconception care

Preconception care provided by health workers includes genetic counseling, health counseling (diet and lifestyle), and health screening to ensure optimal pregnancy outcomes (Ukoha & Mtshali, 2021). Genetic conditions must be optimally managed before and after conception, therefore health care providers, in this case health workers, must ask about pregnancy risks based on age, medical history, obstetric history, and family history (Solomon et al., 2008). A three-generation family history of both expectant parents helps identify genetic disorders, congenital disorders, and developmental delays, with special counseling provided if needed (Solomon et al., 2008). Good nutrition also crucial for a healthy pregnancy, and assessing the couple's nutritional status allows for necessary follow-up, including supplementation with folic acid, calcium, and iron to prevent deficiencies that may cause complications (Gardiner et al., 2008; Yulivantina et al., 2022).

In Indonesia, preconception care is regulated under Peraturan Menteri Kesehatan Nomor 97 Tahun 2014, which mandates pre-pregnancy health services, including physical and nutritional preparation, Tetanus Toxoid (TT) immunization, and other health counseling, ideally conducted three months before the wedding. Khekade et al. (2023) stated that health promotion, risk assessment, family planning, genetic counseling, immunization against infectious diseases, and psychosocial support are the key components of preconception care. This care helps prevent unwanted pregnancies, reduces pregnancy complications, and identifies potential health issues that may affect

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fertility (Ojifinni et al., 2021). Since maternal health directly impacts future generations, maintaining preconception health is an essential responsibility for prospective mothers (Mello et al., 2020).

**Barriers of preconception care**

Several obstacles impede the efficient delivery of preconception care, such as limited facility hours, inadequate supporting technologies, fear of knowing certain results, costliness, religious issues, and low attitudes toward this service (Kurniawati et al., 2021). This is in line with research conducted by Admiraal et al. (2022), which found that one of the main barriers to providing preconeption care is a lack of time. Most couples wrongly perceive that preconception care is only relevant to those who have infertility problems or think that the avoidance of harmful practices during this time will have a negligible effect on the child's health (Maas et al., 2022; Mello et al., 2020). Rahman et al. (2017) also found that one of the main barriers to providing PCC is that many women are unaware of pre-pregnancy services despite their establishment. These commonly held myths negatively affect participation in preconception care programs. Along with these, there are other practical barriers, which are geared more at the level of systems as opposed to a singular individual. Health system underfunding and lack of knowledge and awareness of the medical professionals create serious hurdles (Bradfield et al., 2023; Khekade et al., 2023). Due to preconception care is a newly developed area, many health workers do not consider it important and, therefore, choose to ignore it, which directly stems from a lack of teaching on the subject during their medical training (Khekade et al., 2023).

Additionally, socioeconomic issues, lousy structuring, and lack of a national preconception care service system stop potential parents from accessing these services (M'hamdi et al., 2017). This has created a need for improved preconception care services. Improvement of integration within the healthcare system, public education, especially among expectant parents, better training of health workers, and intersectoral and interdisciplinary collaboration need to be done (Khekade et al., 2023). It is important to note that many intending couples still harbor misconceptions regarding the practice, believing it to be another form of marriage preparation instead of a major component of reproductive health planning (Kurniawati et al., 2021).

Factors such as marital status, occupational status, and educational level have an impact on how people view preconception care (Munthali et al., 2021). Increased engagement with preconception care services, especially by younger women, has been linked to heightened awareness regarding the importance of preconception care (Ojifinni et al., 2021). The ultimate responsibility for delivering preconception care takes place at basic healthcare centers. However, in order for it to be effective and widely accepted,

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there has to be extensive cross-sector collaboration between the healthcare industry, government agencies, and community groups (Maas et al., 2022).

**Expectations for preconception care**

There are several expectations for improving preconception care from both healthcare providers and expectant parents. Currently, preconception care mainly focuses on women, but it should also include men and all couples to ensure comprehensive care and early treatment if needed (Scheele et al., 2023). Bayrami et al. (2020) also stated that their participants expected that preconception care should also be provided for their husbands. Optimizing both men's and women's health during the preconception period can significantly improve maternal and child health outcomes (Scheele et al., 2023). However, limitations in preconception care persist due to the lack of clear policy guidelines and insufficient integration into university curricula, which affects the knowledge and skills of healthcare providers (Munthali et al., 2021; Maas et al., 2022). Evaluations of undergraduate and postgraduate education indicate a significant gap in preconception care training (Hall et al., 2023).

To enhance the quality of preconception care, specialized training for health workers is essential, as many currently feel unprepared or lack confidence in providing these services (Kurniawati et al., 2021; Hall et al., 2023; Khekade et al., 2023). Improving health education on sexual and reproductive health, addressing both internal and external barriers, and resolving government policy challenges are critical steps in strengthening preconception care (Machfudloh & Astuti, 2022). Additionally, expanding antenatal care to include preconception services, particularly for adolescents, women of childbearing age, and high-risk groups, can contribute to reducing maternal and child mortality rates (Lassi et al., 2014). Lastly, the role of various stakeholders, including cross-sector collaborations, is vital in ensuring the successful implementation of preconception care (Kurniawati et al., 2021).

This study has several limitations. This review consisted of excluded review-based studies, which may result in fragmented synthesized thoughts. In addition, most of the studies are concentrated in specific areas, making them less relevant to other healthcare environments. Lastly, while key barriers and facilitators are identified, this review does not assess the effectiveness of specific interventions. More primary data combined with comparative studies should be conducted to enhance the implementation of preconception care.

## CONCLUSION

Preconception care is essential for a healthy pregnancy. However, many couples or expectant parents consider it just another checklist item towards getting married. Couples can be given treatment when problems are found, to prepare a safe and heathy

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pregnancy. The costly price of services, lack of awareness and inadequate supportive structures pose as challenges. Coordinated efforts and policies from different stakeholders are necessary in order to enhance the quality of preconception care and make it more accessible.

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