December 2024; 15(2): 133-146
Jurnal Kesehatan Reproduksi
DOI: 10.58185/jkr.v15i2.279
ISSN: 2354-8762 (Online)
https://journaliakmitangsel2.iakmi.or.id/index.php/kespro

EXPLORING BARRIERS AND OPPORTUNITIES IN PRECONCEPTION EDUCATION: PERSPECTIVES FROM BRIDES, HEALTH WORKERS, AND RELIGIOUS OFFICIALS

Fanny Ayudia[1]*, Erwani[2], and Radian Ilmaskal[3]

[1] Midwifery Study Program, Faculty of Health Science and Information Technology, Alifah Padang University, Indonesia
[2] Midwifery Study Program, Padang Health Polytechnic, Ministry of Health, Indonesia
[3] Public Health Study Program, Faculty of Health Science and Information Technology, Alifah Padang University, Indonesia

Email: ayudiafanny@gmail.com
* Corresponding author

Article Info

Keywords:
Brides;
Education;
Reproductive Health;
Preconception;

Abstract

Background: Maternal and child health issues remain significant in Indonesia, partly due to limited understanding among brides regarding preconception health and healthy pregnancy planning. **Method**: We utilized a qualitative phenomenological approach. Participants included five brides, three marriage officials from the Religious Official (RO), and three health workers at the public health center (PHC). Data were collected through in-depth interviews, observations, and documentation, then analyzed using the Braun and Clarke method. **Results**: Findings reveal that brides have limited knowledge of preconception health, while health workers and RO officers face constraints in providing preconception education due to time and resource limitations. **Conclusion**: This study highlights the urgent need for more comprehensive and effective preconception education to support healthy pregnancy planning.

Received 03/12/2024 Revised 01/02/2025 Accepted 09/04/2025

How to Cite:

Ayudia F, Erwani, Ilmaskal R. EXPLORING BARRIERS AND OPPORTUNITIES IN PRECONCEPTION EDUCATION: PERSPECTIVES FROM BRIDES, HEALTH WORKERS, AND RELIGIOUS OFFICIALS. J. Kesehat. Reproduksi [Internet]. 2024 Dec. 15(2):133-146. Available from: https://doi.org/10.58185/jkr.v15i2.279

Introduction

Maternal and child health (MCH) remains a critical global concern, particularly because of the high maternal mortality rates stemming from complications during pregnancy and childbirth.[1–3] Approximately 75% of maternal deaths are caused by pregnancy complications such as gestational diabetes, hypertension, and preeclampsia, which are often difficult to control.[4] In developing

countries, this condition is even more severe, with 99% of complications and maternal deaths occurring in these regions[5]. The impact is not only felt by the mother but also by the unborn baby, where such complications can result in low birth weight (LBW) and increase the risk of congenital abnormalities. More than 12% of pregnancies in the world also experience preterm birth, which is one of the leading causes of infant mortality.[6–8]Although MCH remains a global challenge, specific issues such as chronic energy deficiency (CHD) highlight the unique context of Indonesia's struggle within this global concern. Based on Indonesia Basic Health Research (Riskesdas) in 2018, it was reported that 17.3% of pregnant women and 14.5% of non-pregnant women of reproductive age experienced CHD[9]. The incidence of anemia in pregnant women increased from 37.1% in 2013 to 48.9% in 2018[9,10]. Maternal health problems before pregnancy will have an impact on complications of pregnancy and childbirth by 78.7%, with details of bleeding 28%, eclampsia 4%, infection 11%, prolonged partus 5%, and abortion 5%[9,10]. Similarly, 29.5% of newborns experience prematurity and 6.2% are born with low birth weight (LBW). [9,10]

MCH remains a significant concern also in Padang City until now. Over the past five years, maternal mortality has seen an upward trend, rising from 16 incidents in 2017 to 30 in 2021. Similarly, infant mortality rates have slightly increased from 89 incidents to 90 during the same period.[11] A study reported that maternal mortality due to obstetric complications is primarily influenced by anemia status, history of maternal disease, and high-risk factors like hypertension at Dr. M. Djamil Padang Hospital in 2017 – 2020.[12] This fact indicated that preconception services were still low in Padang City.

Preconception counseling is a vital component of maternal healthcare that enhances knowledge, improves adherence to health interventions, and optimizes the management of chronic conditions.[13–15] It plays a crucial role in reducing risks and improving outcomes for both mothers and their children.[16] Integrating these services into existing healthcare systems can significantly benefit women planning to conceive by supporting reproductive health and preventing sexually transmitted infections.[17]

The literature suggests that efforts to address pregnancy complications have largely focused on medical interventions during pregnancy and delivery.[18,19] However, this approach has not been fully effective in reducing maternal complications and mortality, especially in developing countries.[20] A study indicates that a more comprehensive approach, which includes preconception care and proactive antenatal management, is necessary to improve outcomes for mothers and infants alike.[21] Preparation of brides before pregnancy, such as nutritional intake, health check-ups, and immunizations, is very important to reduce these risks.[22–24] Therefore, adequate health education for brides is crucial in improving the quality of future generations. However, this effort is often hampered by a lack of knowledge and attitude of the brides regarding the importance of health preparation

DOI: 10.58185/jkr.v15i2.279
ISSN: 2354-8762 (Online)

before marriage. This lack of understanding of the factors that influence knowledge and attitudes can be an obstacle in planning effective education programs.[25,26]

Several studies have explored the importance of health education for brides. A literature review found that sexual and reproductive health education for groom-to-be is essential to increase their knowledge and sensitivity to reproductive health issues, which can significantly impact maternal and child mortality rates.[27] Health education through media such as booklets has been shown to significantly increase knowledge and awareness of pregnancy risk prevention among prospective brides[28]. This method effectively increased public understanding from 48.15% to 87.35%, demonstrating the potential of educational materials to improve health literacy.[29]

A qualitative approach using phenomenological methods allowed the researcher to gain deeper insights into the experiences and views of brides, which has not been described in previous quantitative studies. This study considers the role of culture and local beliefs in influencing brides' attitudes towards pregnancy preparation. This is important given Indonesia's cultural diversity, which influences how people view health and pregnancy. Therefore, they can be integrated into health education programs that are more effective and culturally appropriate. This study aims to contribute to address the identified gaps by exploring the personal beliefs, knowledge, and intentions that influence preconception health behaviors among brides in Indonesia, thereby offering insights into how educational programs can be more effectively designed.

METHODS

Research Design

This study employed a qualitative phenomenological approach to explore how brides and their attendants perceive, understand, and plan for a healthy pregnancy. The research was conducted in July-August 2022 at the RO and PHC of Kuranji District. The phenomenological design was chosen because the purpose of this study was to understand the meaning given by individuals to the phenomenon of preconception as well as the factors that influence their pregnancy readiness. With this approach, it is hoped that the researcher can explore the in-depth experiences of brides, RO officers, and health workers at the PHC regarding preconception education. Reporting of this study followed the guidelines of The Consolidated Criteria for Reporting Qualitative Studies (COREQ) 32-item checklist. [30]

Participants

Participants in this study were selected through a purposive sampling technique, which allowed the researcher to select individuals who fit the research criteria.

The inclusion criteria were as follows.

a. Brides:

1) Brides are engaged or preparing for married
2) Aged within the reproductive range
3) Willing to participate and provide informed consent
4) Have not yet attended preconception education programs

b. Health Workers:

1) Professionals involved in maternal and child health (e.g. midwives, doctors, nurses, or nutritionists).
2) Have experience in providing preconception counseling or education.
3) Working in healthcare facilities or community health programs.

c. Religious Officials:

1) Religious leaders or marriage counselors are involved in premarital education.
2) Have experience guiding couples on health and family planning from a religious perspective.

The Exclusion Criteria were as follows:

a) Individuals who do not provide informed consent
b) Brides with high-risk medical conditions that could bias the study
c) Health workers or religious officials with less than a year
d) Participants who have been exposed to or involved in preconception education efforts

This study involved 12 participants, consisting of six brides, three RO officers, and three health workers at the PHC. The number of participants did not increase again because they had reached saturation data and answered the research objectives. The recruitment process was conducted through a direct approach to the RO and PHC, which had brides and related officers. All participants provided informed consent to participate in the study after receiving a detailed explanation of the study objectives and procedures. To ensure participant confidentiality, identity information (e.g. names and contact details) was replaced with unique codes or pseudonyms. Data are stored securely; only authorized research team members have access.

Data Collection

Data were collected through in-depth interviews using semi-structured interview guidelines by FA, who is a midwifery lecturer at one of the universities in Padang City and has experience attending qualitative research training. The interview guidelines were designed based on the relevant

literature and discussions with reproductive health experts. Interviews were conducted face-to-face in a place agreed upon by the participants at the RO office and PHC to create a comfortable atmosphere for the participants. Each interview lasted approximately 45-60 minutes and was recorded with the participants' consent. Additional data were also collected through field notes to document non-verbal expressions and the context of the interview by RI. Participants were invited to review and validate interview summaries or key findings. This ensured that interpretations accurately reflected their perspectives rather than being shaped by the researcher's assumptions. FA and RI were regular discussions to ensure diverse perspectives in data interpretation.

Data Processing

The audiotaped interviews were transcribed verbatim in the Indonesian language by RI. The transcripts were subsequently reviewed line by line by the first author (FA) to verify their accuracy. Transcripts were then analysed line by line for coding development, utilising Open Code 4.6 software. These codes were derived from significant words, phrases or statements in the transcripts. Initial codes were generated based on recurrent patterns in the data, followed by axial coding to establish relationships between themes. To ensure methodological rigour, data triangulation was conducted by comparing insights from different participant groups, and inter-coder reliability was maintained through discussions among FA, E, and RI. The authors engaged in multiple deliberations until they reached a consensus on the codebook.

Data Analysis

The data were analyzed using the thematic analysis method according to Braun and Clarke's approach.[31] This method was employed to identify, analyse and report patterns within data, progressing incrementally through six phases. In the initial phase, the researchers thoroughly examined and re-examined the transcripts to obtain a comprehensive overview of the data, identifying patterns of meaning and potential areas of interest. Notes were recorded and potential codes were identified. The second phase involved the generation of initial codes from the data. In Phase 3, the primary investigator searched for themes by categorising different codes into potential themes, utilising a mind map to organise them into thematic groupings. Following the development of a set of candidate themes, the fourth phase commenced. The researchers engaged in discussions to review and refine the themes. In the fifth phase, the themes and subthemes were defined and named, and the essential characteristics of each theme were identified. The sixth phase encompassed the final analysis and composition of the report. The analytical process involved continuous iteration within the entire data set. All researchers participated in repeated discussions of the analysis, and any disagreements were resolved through negotiated consensus.

1. Credibility and Reliability

In this study, trustworthiness was ensured through a natural and systematic process in the field, allowing for credibility, dependability, transferability, and confirmability. To build trust with participants, researchers spent time engaging with brides, health workers, and religious officials, ensuring open and honest discussions. Data credibility was strengthened through triangulation, where insights from different participant groups were compared and member checking allowed participants to validate interpretations of their responses. The research team maintained reflexive journals to track personal biases, ensuring that findings accurately reflected participants' experiences rather than researchers' assumptions. Thick descriptions of cultural and institutional contexts have been documented to support transferability, enabling others to assess the relevance of findings to similar settings. To ensure consistency, data coding, and thematic analysis were cross-checked among the researchers, with an audit trail maintained to track decisions throughout the study.

2. Research Ethics

This study was approved by the Research Ethics Committee of the Faculty of Medicine, Andalas University (No.587/UN.16.2/KEP-FK/2021). Participants were informed of the purpose, benefits, and risks of the study, as well as a guarantee of data confidentiality before the interview began. The participants signed an informed consent form before participating in the study

RESULTS

This study involved 12 informants, consisting of six brides, three officials at the Religious Affairs Office (RO), and three health workers at the PHC. The characteristics of each informant group are described below.

The average age of the brides was 27 years, indicating that this group comprised young adults. The average age of RO Officers and health workers is in the adult group. Most of the informants were male, with the highest education in college. The work experience of RO Officers is longer than health workers in providing guidance services.

From the results of the data analysis, six main themes influence brides in planning for a healthy baby: (1) Knowledge and Understanding of Preconception, (2) The Role and Views of Health Workers at the Health Center, (3) Educational Practices at the Religious Affairs Office (RO), (4) Limitation of Preconception Education Media, (5) Attitudes and Perceptions towards Preconception Education, and (6) Barriers to the Implementation of Preconception Education.

1. Knowledge and Understanding of Preconception

DOI: 10.58185/jkr.v15i2.279
ISSN: 2354-8762 (Online)

Based on the interviews, most of the prospective couples showed a limited understanding of the importance of preconception in planning for a healthy pregnancy. They generally understood the importance of maternal and child health but had a less in-depth understanding of the specific steps that should be taken before pregnancy. One of the prospective brides revealed,

"I knew I had to be healthy before I got pregnant, but I didn't know that there were check-ups that had to be done before marriage." - Brides1

Another participant added,

"We think that marriage and pregnancy preparation is something natural, without much special preparation." - Brides2

These statements indicate a knowledge gap and the need for more in-depth and structured education on preconception.

Table 1. Characteristics of research informants

Characteristics	Brides		RO Officer		Health worker	
	n	%	n	%	n	%
Age (Average) in year	27		45		32	
Gender						
Female	3	50			3	100
Male	3	50	3	100		
Education Level						
SD						
SMP						
HIGH SCHOOL	2	0.3				
Higher Education	4	0.7	3	100	3	10
Work Experience (Average) in year			15		5	

2. Roles and Views of Health Workers at PHC

Health workers at PHC understand the importance of preconception education but face limitations in its implementation. This is expressed by the following health workers:

"We want to provide more education but are often limited by time and energy. So, preconception education sometimes takes a back seat to more urgent disease education." -Health Worker1

"If there is a session specifically for preconception, maybe the impact can be more pronounced. Right now, preconception education is just a small part of a bigger education." -Health Worker2

These barriers highlight the need for increased capacity and time allocation for preconception education at PHC.

3. Educational Practices at the RO

DOI: 10.58185/jkr.v15i2.279
ISSN: 2354-8762 (Online)

Observations at the RO show that most premarital educational activities are conducted in the form of short lectures, without the use of supporting media. One prospective bride said,

"The information we received was mostly about family, and religion rather than details about pre-pregnancy health." -Brides4

The RO officer explained that,

"In one meeting, there are many prospective brides and grooms who have to be given information, so we can only convey general matters. For the health sector, it is not our capacity to deliver it"-ROofficer1

This resulted in limited information being received by the brides, especially regarding their preconceptions. Some participants stated that the lectures were difficult to remember because the information was too much and delivered in a short time, as one bride said,

"We received a lot of information at once, but because the time was short, we may not remember everything." -Brides5

4. Limitations of Preconception Education Media

Observation data showed that at both RO and PHC, educational media related to preconception were very limited. At the RO, information is delivered orally with no printed materials to take home or study further. One prospective bride mentioned,

"We would like some take-home material, maybe a booklet or something like that, so we can read it again at home." -Brides6

On the other hand, health workers at PHC admit that,

"We usually only have leaflets about diseases, we don't have any specifically for preconception." -Health Worker3

This finding emphasizes the importance of providing varied and informative educational media to improve the understanding of prospective brides regarding preconceptions.

5. Attitudes and perceptions towards preconception education

In general, brides expressed positive attitudes towards preconception education after receiving information. They found the information useful but wished that preconception materials were provided earlier. The brides stated,

"If we knew from the beginning, maybe we could have been better prepared." -Brides3

"Information like this is very important, but it should be given when we register, not at the end." -Brides1

DOI: 10.58185/jkr.v15i2.279
ISSN: 2354-8762 (Online)

This statement shows that brides consider preconception education an important step in their wedding planning, but the timing of the education delivery is an obstacle to the effectiveness of receiving information.

6. Barriers to the Implementation of Preconception Education

Health workers and RO officers face various barriers in delivering preconception education. The RO officer explains,

"Sometimes there are many candidates in one session, so the time available is very limited. We can't deliver all the information in detail." -ROofficer2

"Our capacity is only in the field of religion, if we are asked to convey related health education, we can be given a briefing in advance, or midwives are invited here when conducting a marriage trial"-ROofficer3

Health workers at PHC also experience similar constraints,

"Our time to provide education is limited because patients must also be served by others. We need special sessions for preconception education to be effective." -Health Worker3

These barriers point to the importance of reforms in the structure and time allocation for preconception education, both at ROs and PHC, to ensure that prospective brides and grooms receive the information they need effectively, as well as cross-sector collaboration

DISCUSSION

This study revealed the urgent need for improved preconception education among brides to support healthy pregnancy planning. The lack of understanding of preconception, as found in this study, suggests the importance of comprehensive health education. However, the results of this study showed that brides still require more in-depth information regarding preconception health preparation. Thus, a more interactive and needs-based educational approach is recommended so that preconception information can be easily understood and applied by brides.

Furthermore, this study also found that time constraints and education priorities at PHC were barriers for health workers in delivering preconception education because of limited educational media. This finding is in line with research which states that health workers often experience pressure to meet various health service needs with limited time.[32,28] Intensive job demands, especially increased time pressure and multitasking, significantly contribute to employee burnout and patient satisfaction.[33] This suggests the need for policies that allocate more time and resources for preconception education in primary health care.

On the other hand, the practice of education at the RO also presents challenges. Education that is delivered orally in the form of short lectures makes it difficult for prospective brides to understand and remember the information provided.[34] As stated in a previous study, an effective education method should be interactive and equipped with supporting media such as booklets or leaflets. [28,35,36] In this study, prospective brides stated that they would understand the information more easily if it was delivered in a more varied and structured form. This finding reinforces the need to provide informative educational media on RO to maximize the understanding of prospective brides on the importance of preconceptions.

In addition, this study found that brides expressed positive attitudes towards preconception education, despite the limited delivery of the information. They wished that this information was provided earlier in the marriage preparation process so that they had more time to prepare themselves physically and mentally. According to the Change Readiness theory, individuals who have sufficient information will be better prepared to deal with significant changes in their lives, such as pregnancy.[37] The brides who participated in this study indicated that preconception information was relevant to their needs; however, limited time and access meant that they did not feel fully prepared for their role as parents. These findings indicate the need for a preconception education program that is provided continuously and integrated with premarital services.

The structural barriers faced by health workers and RO officers highlight the need to improve health education policies. Preconception education in PHC and RO is often not considered a priority; therefore, it is delivered only briefly and not in depth. According to Planned Behavior theory, a person's behavior can be influenced by perceived control.[38] In this case, both health workers and RO officers perceive limited control over how and to what extent they can deliver preconception education. To overcome this barrier, policies that support the allocation of dedicated time and the development of relevant educational media need to be considered by relevant agencies.

Finally, this study highlights the importance of a more inclusive and adaptive approach to preconception education. By considering factors such as time constraints, educational media, and delivery methods, preconception services can be more effective and relevant to prospective brides and grooms. This study contributes to enriching the literature on preconception health education and provides practical recommendations for policymakers and health practitioners. In this context, strengthening preconception education is expected to contribute to improving the readiness of brides for healthy pregnancies, which in turn can reduce the number of maternal and child health complications in Indonesia. This study has several limitations. First, as a phenomenological study, the findings are inherently influenced by the researcher's interpretations, which may introduce subjectivity. To mitigate this, we employed triangulation and member checking to enhance the trustworthiness of the data. Second, the study's findings are not intended to be generalized beyond

the specific group of participants involved. While the study provides in-depth insights into the phenomenon, further research with a larger and more diverse sample is recommended. Third, the sample size was relatively small, which, while appropriate for phenomenological research, may limit the range of perspectives captured. Lastly, the data analysis process was time-consuming and required careful interpretation, which could be influenced by researcher bias. Future studies could incorporate multiple analysts or mixed method approaches to enhance the robustness of the findings, such as longitudinal studies to track the impact of improved preconception education on maternal and child health outcomes, could be valuable.

CONCLUSION

This study highlights the urgent need for more comprehensive and effective preconception education to support healthy pregnancy planning. The findings show that brides generally have a limited understanding of the importance of preconception, which impacts their readiness for pregnancy. The lack of information and access to preconception education in RO and PHC indicates the need to develop more in-depth and sustainable education programs. Thus, the provision of adequate preconception information is expected to improve the readiness of prospective brides and grooms for their role as parents.

RECOMMENDATION

The main recommendations of this study include the need for capacity building of health workers, adjustment of educational methods at the RO and PHC of Kuranji District, and the development of relevant educational media, such as the use of mobile health applications. With these measures, it is hoped that brides can receive adequate information to prepare for a healthy pregnancy, which in turn can contribute to improving the quality of maternal and child health in Indonesia.

ACKNOWLEDGEMENT

We thank the informants, officers of the RO, health workers at the PHC of Kuranji District, and the Alifah Nur Ikhlas Padang Foundation for their cooperation and contributions.

REFERENCES

1. Maldonado LY, Bone J, Scanlon ML, Anusu G, Chelagat S, Jumah A, et al. Improving maternal, newborn and child health outcomes through a community-based women's health education program: a cluster randomised controlled trial in western Kenya. BMJ Glob Heal [Internet]. 2020 Dec 8;5(12):e003370. Available from: https://gh.bmj.com/lookup/doi/10.1136/bmjgh-2020-003370
2. Ahmad K, Kabir E, Keramat SA, Khanam R. Maternal health and health-related behaviours and their associations with child health: Evidence from an Australian birth cohort. Magnus MC, editor. PLoS One [Internet]. 2021 Sep 13;16(9):e0257188. Available from: https://dx.plos.org/10.1371/journal.pone.0257188
3. Oh C, Keats E, Bhutta Z. Vitamin and Mineral Supplementation During Pregnancy on Maternal, Birth, Child Health and Development Outcomes in Low- and Middle-Income Countries: A

Systematic Review and Meta-Analysis. Nutrients [Internet]. 2020 Feb 14;12(2):491. Available from: https://www.mdpi.com/2072-6643/12/2/491
4. Choudhury S, Erausquin JT, Withers M, editors. Global Perspectives on Women's Sexual and Reproductive Health Across the Lifecourse. Cham: Springer International Publishing; 2018. Available from: https://doi.org/10.1007/978-3-319-60417-6
5. WHO. Exclusive breastfeeding for optimal growth, development and health of infants [Internet]. World Health Organization. 2023 [cited 2023 Aug 23]. Available from: https://www.who.int/tools/elena/interventions/exclusive-breastfeeding
6. McNestry C, Killeen SL, Crowley RK, McAuliffe FM. Pregnancy complications and later life women's health. Acta Obstet Gynecol Scand [Internet]. 2023 May 17;102(5):523–31. Available from: https://obgyn.onlinelibrary.wiley.com/doi/10.1111/aogs.14523
7. Couture C, Girard S. Diagnostic or Therapeutic Strategies for Pregnancy Complications. J Clin Med [Internet]. 2022 May 31;11(11):3144. Available from: https://www.mdpi.com/2077-0383/11/11/3144
8. Gregory EJ, Liu J, Miller-Handley H, Kinder JM, Way SS. Epidemiology of Pregnancy Complications Through the Lens of Immunological Memory. Front Immunol [Internet]. 2021 Jun 25;12. Available from: https://www.frontiersin.org/articles/10.3389/fimmu.2021.693189/full
9. Kementerian Kesehatan RI. Riset Kesehatan Dasar 2018. Badan Penelitian dan Pengembangan Kesehatan. Jakarta: Kementerian Kesehatan RI; 2018. 198 p.
10. Kementerian Kesehatan RI. Riset Kesehatan Dasar 2013. Jakarta: Kementerian Kesehatan RI; 2013. 1–384 p.
11. Dinas Kesehatan Kota Padang. Profil Kesehatan Kota Padang Tahun 2022. Padang: Dinas Kesehatan Kota Padang; 2023.
12. Farah Tri Ulfa, Yusrawati Yusrawati, Dedy Kurnia. Analysis of Determinants of Maternal Mortality due to Obstetric Complications at Dr. M. Djamil Padang Hospital in 2017 - 2020. Int J Med Heal [Internet]. 2024 Jul 8;3(3):61–77. Available from: https://journal.amikveteran.ac.id/index.php/ijmh/article/view/3828
13. Berhane A, Belachew T. Effect of Picture-based health education and counselling on knowledge and adherence to preconception Iron-folic acid supplementation among women planning to be pregnant in Eastern Ethiopia: a randomized controlled trial. J Nutr Sci [Internet]. 2022 Jul 13;11:e58. Available from: https://www.cambridge.org/core/product/identifier/S2048679022000519/type/journal_article
14. Cha E, Smart MJ, Braxter BJ, Faulkner MS. Preconception Care to Reduce the Risks of Overweight and Obesity in Women of Reproductive Age: An Integrative Review. Int J Environ Res Public Health [Internet]. 2021 Apr 26;18(9):4582. Available from: https://www.mdpi.com/1660-4601/18/9/4582
15. Dorney E, Black KI. Preconception care. Aust J Gen Pract [Internet]. 2018 Jul 1;47(7):424–9. Available from: https://www1.racgp.org.au/ajgp/2018/july/preconception-care
16. Țarnă M, Cima LN, Panaitescu AM, Martin CS, Sîrbu AE, Barbu CG, et al. Preconception Counseling in Patients with Hypothyroidism and/or Thyroid Autoimmunity. Medicina (B Aires) [Internet]. 2022 Aug 18;58(8):1122. Available from: https://www.mdpi.com/1648-9144/58/8/1122
17. Elfiani, Saam Z, Delvis Y. Persepsi calon pengantin terhadap tes kesehatan dan pelaksanaan konseling pra-nikah di Puskesmas Medang Kampai Kota Dumai. J Doppler [Internet]. 2022;6(1):101–12. Available from: https://journal.universitaspahlawan.ac.id
18. Astuti SK, Aziz MA, Arya IFD. Maternal Mortality Risk Factors in Dr. Hasan Sadikin General Hospital, Bandung in 2009−2013. Int J Integr Heal Sci [Internet]. 2017 Sep 29;5(2):52–6. Available from: http://journal.fk.unpad.ac.id/index.php/ijihs/article/view/992
19. Zewudie SB, Sewyew DA, Limenh S kassa, Bante S animen. Maternal complication related to instrumental vaginal delivery and its associated factors among mothers who gave birth at Felege Hiwot comprehensive specialized hospital, Northwest Ethiopia. Institutional based retrospective cross-sectional study [Internet]. 2019. Available from: https://www.researchsquare.com/article/rs-1649/v1

20. Parker J, Hofstee P, Brennecke S. Prevention of Pregnancy Complications Using a Multimodal Lifestyle, Screening, and Medical Model. J Clin Med [Internet]. 2024 Jul 25;13(15):4344. Available from: https://www.mdpi.com/2077-0383/13/15/4344
21. Gaikwad V, Bhadoriya A, Gaikwad S. A Comparative Study of Fetal and Maternal Outcomes in Registered and Unregistered Antenatal Cases in a Tertiary Care Center. Cureus [Internet]. 2024 Aug 3; Available from: https://www.cureus.com/articles/274742-a-comparative-study-of-fetal-and-maternal-outcomes-in-registered-and-unregistered-antenatal-cases-in-a-tertiary-care-center. https://doi.org/10.7759/cureus.66066
22. Zhou Q, Zhang S, Wang Q, Shen H, Tian W, Chen J, et al. China's community-based strategy of universal preconception care in rural areas at a population level using a novel risk classification system for stratifying couples´ preconception health status. BMC Health Serv Res [Internet]. 2016 Dec 28;16(1):689. Available from: http://bmchealthservres.biomedcentral.com/articles/10.1186/s12913-016-1930-4
23. Arieska R. Intervensi Edukasi dan Kesehatan Reproduksi Terhadap Pengetahuan dan Sikap Calon Pengantin Wanita. J Ilm Kesehat Masy Media Komun Komunitas Kesehat Masy [Internet]. 2023 Jun 4;15(2):64–71. Available from: https://jikm.upnvj.ac.id/index.php/home/article/view/485
24. Brammall BR, Garad RM, Teede HJ, Harrison CL. Feasibility, acceptability & preliminary efficacy of a digital preconception intervention: OptimalMe. Eur J Public Health [Internet]. 2023 Oct 24;33(Supplement_2). Available from: https://academic.oup.com/eurpub/article/doi/10.1093/eurpub/ckad160.1225/7327645
25. Irawati H, Kartini A, Nugraheni SA. Pengaruh Booklet Terhadap Pengetahuan dan Sikap Kesehatan Reproduksi Calon Pengantin Terkait Pencegahan Risiko Kehamilan di Kabupaten Pemalang. J Manaj Kesehat Indones [Internet]. 2019 Aug 31;7(2):124–31. Available from: https://ejournal.undip.ac.id/index.php/jmki/article/view/21816
26. Al-Shroby WA, Sulimani SM, Alhurishi SA, Bin Dayel ME, Alsanie NA, Alhraiwil NJ. Awareness of Premarital Screening and Genetic Counseling among Saudis and its Association with Sociodemographic Factors: a National Study. J Multidiscip Healthc [Internet]. 2021 Feb;Volume 14:389–99. Available from: https://www.dovepress.com/awareness-of-premarital-screening-and-genetic-counseling-among-saudis--peer-reviewed-article-JMDH
27. Machfudloh M, Astuti AW. The Implementation of Sexual and Reproductive Health Education to Future Bridegrooms: Scoping Review. J Aisyah J Ilmu Kesehat [Internet]. 2022 Apr 22;7(2). Available from: https://aisyah.journalpress.id/index.php/jika/article/view/7226
28. Page B, Irving D, Amalberti R, Vincent C. Health services under pressure: a scoping review and development of a taxonomy of adaptive strategies. BMJ Qual Saf [Internet]. 2024 Nov;33(11):738–47. Available from: https://qualitysafety.bmj.com/lookup/doi/10.1136/bmjqs-2023-016686
29. Dewi RK, Prasetyanti DK, Nikmah AN, Fitriasnani ME, Ardela MP, Mega Puspita NL, et al. Edukasi Pencegahan Resiko Kehamilan Pada Calon Pengantin dengan Pendidikan Kesehatan Melalui Media Booklet. J Abdi Masy [Internet]. 2022 Apr 27;5(2). Available from: http://ojs.unik-kediri.ac.id/index.php/jaim/article/view/2577
30. Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. Int J Qual Heal Care [Internet]. 2007 Sep 16;19(6):349–57. Available from: https://academic.oup.com/intqhc/article-lookup/doi/10.1093/intqhc/mzm042
31. Braun V, Clarke V. Using thematic analysis in psychology. Qual Res Psychol [Internet]. 2006 Jan;3(2):77–101. Available from: http://www.tandfonline.com/doi/abs/10.1191/1478088706qp063oa
32. Shevell M. Health Professional Burnout: An (Un)Ethical Consequence of Modern Health Care? Can J Neurol Sci / J Can des Sci Neurol [Internet]. 2019 Nov 14;46(6):682–3. Available from: https://www.cambridge.org/core/product/identifier/S0317167119002804/type/journal_article
33. Huhtala M, Geurts S, Mauno S, Feldt T. Intensified job demands in healthcare and their consequences for employee well-being and patient satisfaction: A multilevel approach. J Adv

Nurs [Internet]. 2021 Sep 28;77(9):3718–32. Available from: https://onlinelibrary.wiley.com/doi/10.1111/jan.14861
34. Hasanah WK, Pratomo H, Latipatul Ashor F, Mulyana E, Jumhati S, Maya Lova S. Analisis Pelaksanaan Edukasi Pranikah Terkait Kesehatan Reproduksi Pada Pasangan Calon Pengantin Muslim (Literature Review). HEARTY [Internet]. 2022 Jul 1;10(2):53. Available from: http://ejournal.uika-bogor.ac.id/index.php/Hearty/article/view/6284
35. Hadie SNH, Dasiman R, Omar NS, Abas R. Effectiveness of Multimedia Approaches in Embryology Teaching: A Scoping Review. Malaysian J Med Heal Sci [Internet]. 2024 Jan 15;20(1):281–92. Available from: https://medic.upm.edu.my/upload/dokumen/2024012411223135_MJMHS_0620.pdf
36. Hasanah Lubis L, Febriani B, Fitra Yana R, Azhar A, Darajat M. The Use of Learning Media and its Effect on Improving the Quality of Student Learning Outcomes. Int J Educ Soc Stud Manag [Internet]. 2023 Jun 6;3(2):7–14. Available from: https://lpppipublishing.com/index.php/ijessm/article/view/148
37. Weiner BJ. A theory of organizational readiness for change. Implement Sci [Internet]. 2009 Dec 19;4(1):67. Available from: https://doi.org/10.1186/1748-5908-4-67
38. Ajzen I. The theory of planned behavior. Organ Behav Hum Decis Process [Internet]. 1991 Dec;50(2):179–211. Available from: https://linkinghub.elsevier.com/retrieve/pii/074959789190020T.

Declarations

Author contribution	:	Fanny Ayudia was responsible for the entire research project. She also led the writing of the manuscript and the collaboration with the whole author. Radian Ilmaskal participated in the data collection, transcription, and analysis. Erwani was responsible for revise the manuscript. All authors approve the final manuscript.
Funding statement	:	This research did not receive any funding.
Conflict of interest	:	All authors declare that they have no competing interests.
Additional information	:	No additional information is available for this paper.