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Health Belief Model and Contraceptive Choice Among High-Risk Women: A Cross-Sectional Study

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Abstract

Inappropriate contraceptive choice among high-risk women of reproductive age (WRA) may increase the risk of unintended pregnancy and adverse maternal outcomes. Individual perceptions and beliefs regarding health risks and preventive actions, as described in the Health Belief Model (HBM), may influence contraceptive choice. However, evidence regarding the relationship between HBM components and contraceptive choice among high-risk WRA at the community level remains limited. This study aimed to analyze the relationship between Health Belief Model components and contraceptive choice among high-risk WRA in Mulyorejo Village, Sukun Subdistrict, Malang City. This study used a quantitative correlational design with a cross-sectional approach conducted from November 2024 to January 2025. A total of 64 respondents were selected using purposive sampling. Data were collected using a structured questionnaire and analyzed using the Spearman Rank correlation test with a significance level of 0.05. The results showed statistically significant relationships between all HBM components and contraceptive choice among high-risk WRA. Perceived susceptibility was associated with contraceptive choice ($r = 0.301$; $p = 0.016$), as were perceived severity ($r = 0.349$; $p = 0.005$), perceived benefits ($r = 0.314$; $p = 0.011$), perceived barriers ($r = 0.313$; $p = 0.012$), and cues to action ($r = 0.307$; $p = 0.014$). All correlations were categorized as low to moderate. The findings indicate that HBM components play an important role in influencing contraceptive choice among high-risk WRA. Strengthening women's perceptions of pregnancy risk and improving counseling strategies may support appropriate contraceptive selection and improve reproductive health outcomes.

Keywords: *health belief model, women of reproductive age, high-risk, contraception*

INTRODUCTION

Women of reproductive age (WRA) represent a key population in improving reproductive health and controlling birth rates, as they are biologically capable of becoming pregnant within the age range of 15–49 years (WHO, 2020). Globally, unmet need for contraception and inappropriate contraceptive choice remain major public health challenges, contributing to unintended pregnancies and increased risks of maternal and perinatal morbidity and mortality, particularly among high-risk women (WHO, 2022). High-risk WRA such as those who are too young or too old, have multiple pregnancies, a history of obstetric complications, or chronic diseases face a greater likelihood of adverse pregnancy outcomes.

In Indonesia, contraceptive use has not fully met national targets and remains dominated by short-term methods such as pills and injections, which have higher failure rates when not used consistently (SDKI, 2022; BKKBN, 2023). This condition contributes to the persistently high rate of unintended pregnancies, especially among high-risk WRA. Previous studies have shown that contraceptive choice is influenced not only by access to services and demographic factors but also by psychosocial factors, including perceptions of susceptibility, severity, benefits, and barriers (Oni et al., 2021).

The Health Belief Model (HBM) is widely recognized as a theoretical framework used to explain and predict health-related behaviors based on individuals' perceptions of health threats and evaluation of preventive actions. The model emphasizes key constructs, including perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action, which collectively influence an individual's decision to adopt preventive health behaviors (Baek et al., 2022; Zewdie et al., 2022) . In the context of contraception, HBM explains how women evaluate pregnancy risks, consider the effectiveness of contraceptive methods, and respond to internal and external triggers in making decisions. Previous studies have shown that positive perceptions of risk and benefits are associated with the selection of more effective contraceptive methods, while perceived barriers such as fear of side effects, misconceptions, and lack of partner support may hinder appropriate contraceptive use (Chandra-Mouli & Akwara, 2020; Retno Heru Setyorini & Utami, 2022).

At the local level, Mulyorejo Village, Sukun Subdistrict, Malang City, has a notable proportion of high-risk WRA who predominantly use short-term contraceptive methods, while the use of long-term methods remains limited. Preliminary findings in this setting indicate that unintended pregnancies and inconsistent contraceptive use are still encountered, particularly among high-risk groups. In addition, psychosocial factors such as misconceptions, fear of side effects, and limited partner support continue to influence contraceptive decision-making.

However, most previous studies have focused on general contraceptive use behavior rather than specifically examining how each component of the Health Belief Model influences contraceptive choice among high-risk WRA at the community level. Moreover, limited research has integrated all HBM components simultaneously to explain contraceptive decision-making in specific local contexts. This highlights a critical gap in understanding how perception-based factors influence contraceptive choice among high-risk women in community-based settings.

Therefore, this study aims to analyze the relationship between each component of the Health Belief Model and contraceptive choice among high-risk women of reproductive age in a community-based setting at TPMB Evi Dwi Wulandari, Mulyorejo Village, Sukun Subdistrict, Malang City.

METHODOLOGY

This study employed a quantitative correlational design with a cross-sectional approach to analyze the relationship between the Health Belief Model (HBM) and contraceptive choice among high-risk women of reproductive age (WRA). The study was conducted in March–April 2025 at TPMB Evi Dwi Wulandari, Mulyorejo Village, Sukun District, Malang City.

The study population consisted of all 68 high-risk WRA who were family planning acceptors. A total of 64 respondents were selected using purposive sampling based on predetermined inclusion and exclusion criteria. Purposive sampling was applied due to the specific characteristics required, namely high-risk WRA who were active family planning acceptors, making probability sampling less feasible. The sample size was determined based on the total accessible population in the study setting. The inclusion criteria were women of reproductive age (15–49 years) categorized as high-risk, actively using contraceptive methods, and willing to participate in the study. The exclusion criteria were respondents who were not present during data collection or provided incomplete questionnaire responses.

High-risk WRA in this study were operationally defined as women with one or more risk factors, including age <20 years or >35 years, parity ≥4, birth spacing <2 years, a history of obstetric complications, or the presence of chronic conditions such as hypertension or diabetes. Data sources included both primary and secondary data. Primary data were obtained through a structured questionnaire administered directly to respondents, while secondary data were collected from midwives' records and other supporting documents. Data collection was conducted with researcher assistance to ensure respondents' understanding of each item.

The research instrument consisted of a questionnaire based on the Health Belief Model, including five components: perceived susceptibility, perceived severity, perceived benefits, perceived barriers, and cues to action, measured using a four-point Likert scale. A separate questionnaire was used to collect respondent

characteristics and identify the type of contraceptive method used, which was verified through family planning cards. Contraceptive methods were categorized into short-term methods (pills, injections, and condoms) and long-term methods (intrauterine devices/IUDs, implants, and sterilization). The instrument was tested for validity and reliability prior to data collection. The validity test showed that all items had a correlation coefficient (r) > 0.30, indicating that the instrument was valid. Reliability testing showed a Cronbach's alpha value > 0.70, indicating good internal consistency.

Data analysis included univariate analysis to describe respondent characteristics and the distribution of variables, and bivariate analysis using the Spearman Rank correlation test to examine the relationship between each HBM component and contraceptive choice. Statistical significance was determined at a significance level of $\alpha = 0.05$. This study has received ethical approval from the Health Research Ethics Committee of Poltekkes Kemenkes Malang (No.DP.04.03/F.XXI.30/00171/2025). All respondents provided informed consent prior to participation.

RESULT

Table 1. General Characteristics of Respondents

Characteristics	Category	*f*	%
Age	< 20 years	2	3.1%
	20–35 years	1	1.6%
	> 35 years	61	95.3%
Total		64	100%
Education	Primary School	12	18.8%
	Junior High School	15	23.4%
	Senior High School	28	43.8%
	Higher Education	9	14.0%
Total		64	100%
Parity	Primipara	9	14.0%
	Multipara	43	67.2%
	Grandemultipara	12	18.8%
Total		64	100%

According to Table 1, the majority of respondents were >35 years old (95.3%). Most of them have a high school education (43.8%). Based on parity, the majority are multipara (67.2%).

Table 2. Overview of High-Risk Factors Among Respondents

High-Risk Factors	Respondents	
	f	%
Too young (<20 years old)	2	3.1%
Too old (>35 years old)	61	95.3%
A history of pregnancies with too short an interval between them (<2 years)	2	3.1%
Having too many children (≥ 4)	9	14.1%

Hypertension	4	6.3%
Diabetes mellitus	1	1.6%
Total	64	100%

Based on Table 2, most respondents were categorized as high-risk, primarily due to age >35 years (95.3%). Other risk factors included parity ≥4 children (14.1%), hypertension (6.3%), pregnancy distance of <2 years (3.1%), age <20 years (3.1%), and diabetes mellitus (1.6%).

Table 3. Overview of Respondents' Choice of Contraceptive Methods

Contraceptive Methods	***f***	**%**
Short-Term	49	76.6%
Long-Acting Contraceptive Methods (LACMs)	15	23.4%
Total	64	100%

According to Table 3, the majority of respondents used short-term contraceptive methods (76.6%), while the use of long-term methods was still low (23.4%).

Table 4. Distribution of Health Belief Model (HBM) Components

HBM Components	**Category**	***F***	**%**
Perceived Susceptibility	High	58	90.6
	Moderate	6	9.4
	Low	0	0
Perceived Severity	High	61	95.3
	Moderate	3	4.7
	Low	0	0
Perceived Benefits	High	63	98.4
	Moderate	1	1.6
	Low	0	0
Perceived Barriers	High	46	71.9
	Moderate	18	28.1
	Low	0	0
Cues to Action	High	58	90.6
	Moderate	6	9.4
	Low	0	0

The majority of respondents reported a high perceived susceptibility, at 90.6%. A high perception of severity was reported by 95.3% of respondents. A high perception of benefits was reported by 98.4%, while 71.9% reported a high perception of barriers, and 90.6% of respondents reported strong cues to action.

Table 5. Results of the Spearman's Rank Test

Results of the Spearman's Rank Test		
	R	**p-value**
Perceived Susceptibility	0.301	0.016
Perceived Severity	0.349	0.005
Perceived Benefits	0.314	0.011
Perceived Barriers	0.313	0.012
Cues to Action	0.307	0.014

There was a significant relationship between all components of the Health Belief Model and contraceptive choice ($p < 0.05$). Perceived susceptibility ($r = 0.301$; $p = 0.016$), perceived severity ($r = 0.349$; $p = 0.005$), perceived benefits ($r = 0.314$; $p = 0.011$), perceived barriers ($r = 0.313$; $p = 0.012$), and cues to action ($r = 0.307$; $p = 0.014$) showed positive correlations with low to moderate strength ($r = 0.30–0.35$). This indicates that although all HBM components are significantly associated with contraceptive choice, the strength of these relationships is relatively modest.

DISCUSSION

Perceived Susceptibility and Contraceptive Choice

The findings indicate that most respondents had high perceived susceptibility (90.6%), which was significantly associated with contraceptive choice ($r = 0.301$; $p = 0.016$), although the strength of the correlation was low to moderate. Within the Health Belief Model (HBM), perceived susceptibility refers to an individual's subjective perception of their vulnerability to a health condition, which plays an important role in motivating the adoption of preventive health behaviors (Taflinger & Sattler, 2024).

This result is consistent with studies by Loke et al. (2022) and Sharma et al. (2021), which reported that higher perceived risk is associated with increased awareness and intention to use contraception. Similar findings have also been reported in Indonesia, where perceived vulnerability significantly influences contraceptive behavior among women of reproductive age (Kemenkes RI, 2022; BKKBN, 2023).

However, despite high perceived susceptibility, most respondents still preferred short-term contraceptive methods. This indicates a gap between risk perception and actual decision-making, where awareness of risk does not automatically translate into the selection of more effective methods such as long-acting contraceptive methods (LACMs). Theoretically, this suggests that perceived susceptibility alone is insufficient to drive behavior change unless supported by other HBM components, particularly perceived benefits and perceived barriers. Practically, counseling should not only emphasize risk but also explicitly link individual risk conditions with the effectiveness of specific contraceptive methods appropriate for high-

risk women.

Perceived Severity and Contraceptive Choice

Perceived severity was significantly associated with contraceptive choice (r = 0.349; p = 0.005), with most respondents recognizing the serious consequences of high-risk pregnancy. According to HBM, perceived severity reflects beliefs about the seriousness of a condition and its potential consequences, including medical and social impacts. This finding aligns with Chandra-Mouli & Akwara (2020), which found that awareness of maternal complications increases contraceptive use. Indonesian data also show that women with higher awareness of pregnancy risks are more likely to adopt contraceptive methods (BKKBN, 2023).

Nevertheless, the dominance of short-term contraceptive use indicates a discrepancy between knowledge and behavior. Although respondents understand the seriousness of pregnancy risks, this awareness has not been fully translated into optimal contraceptive choices.

From a theoretical perspective, perceived severity contributes to *threat appraisal*, but behavior change requires a balance between perceived threat, perceived benefits, and perceived barriers. Thus, even strong awareness of risk may be overridden by emotional concerns, cultural beliefs, or prior experiences. Practically, this suggests that health education should move beyond general risk awareness toward personalized and solution-oriented counseling, emphasizing how specific contraceptive methods can effectively reduce individual risks.

Perceived Benefits and Contraceptive Choice

Perceived benefits showed a significant relationship with contraceptive choice (r = 0.314; p = 0.011), with nearly all respondents (98.4%) recognizing the advantages of contraception. This supports the HBM assumption that individuals are more likely to adopt health behaviors when perceived benefits are clear. This finding is consistent with Retno Heru Setyorini & Utami (2022) and supported by Indonesian reports indicating that perceived benefits play a key role in contraceptive acceptance (Kemenkes RI, 2022).

However, the persistence of short-term method dominance suggests that perceived benefits remain generalized rather than method-specific. Respondents tend to assume that all contraceptive methods offer similar benefits, without considering differences in effectiveness, duration, and safety. This reflects a cognitive gap between general knowledge and informed decision-making, where individuals understand the importance of contraception but lack detailed understanding of method effectiveness. Theoretically, perceived benefits must be specific and actionable to influence behavior. Practically, this implies that counseling should include comparative and evidence-based explanations of contraceptive methods, particularly emphasizing the advantages of long-term methods for high-risk women.

Perceived Barriers and Contraceptive Choice

Perceived barriers were significantly associated with contraceptive choice (r = 0.313; p = 0.012), with a high proportion of respondents reporting concerns about side effects, fear of procedures, and misinformation. This finding is supported by Chandra-Mouli & Akwara (2020) and Saputri et al. (2024), which identify barriers as major determinants of contraceptive behavior. Indonesian studies also highlight that myths, fear, and lack of partner support are key obstacles to long-term contraceptive use (BKKBN, 2023). Within the HBM framework, perceived barriers act as the strongest inhibiting factor, often overriding positive perceptions of susceptibility, severity, and benefits.

Theoretically, this confirms that barriers function as a decisional filter, preventing behavior change even when individuals are aware of risks and benefits. Practically, this underscores the importance of addressing myths and misinformation, providing clear explanations of procedures, involving partners and family in counselling. Reducing perceived barriers is therefore essential to improving the uptake of long-term contraceptive methods among high-risk women.

Cues to Action and Contraceptive Choice

Cues to action were significantly associated with contraceptive choice (r = 0.307; p = 0.014), indicating that external and internal triggers—such as health education, previous experiences, and social support—play an important role. This finding is supported by Sharma et al. (2021), who found that interaction with healthcare providers increases contraceptive use. Similar patterns are observed in Indonesia, where counseling from midwives significantly influences contraceptive decisions (Kemenkes RI, 2022). However, the findings suggest that existing cues are not sufficiently strong or specific to encourage the use of long-term methods. This indicates that the issue lies not only in the presence of cues but also in their quality and effectiveness. Practically, this highlights the need for structured and repeated counselling, targeted messaging for high-risk groups, strengthening the role of healthcare providers.

Integrated Interpretation

Overall, all components of the Health Belief Model were significantly associated with contraceptive choice. However, the correlation strength was low to moderate (r = 0.301–0.349), indicating that these factors influence behavior but are not the dominant determinants. A key finding of this study is the inconsistency between high perceptions (susceptibility, severity, and benefits) and the continued preference for short-term contraceptive methods. This highlights a critical gap between knowledge and behavior, suggesting that cognitive awareness alone is insufficient to drive optimal contraceptive decision-making.

This phenomenon can be explained by several interacting factors beyond individual perception. Fear of side effects, particularly related to long-term methods, remains a major concern. In addition,

misinformation and myths circulating within the community contribute to negative perceptions of long-term contraceptive methods. Furthermore, lack of partner support influences decision-making, as contraceptive choices are often shaped by spousal approval. Limited access to services, including availability of trained providers and facilities, also restricts the use of long-term methods. Economic considerations, even when services are subsidized, may still affect perceived affordability. In addition, previous contraceptive experiences influence current choices, with respondents tending to prefer methods they perceive as familiar and manageable. Lastly, the quality of counseling plays a crucial role; counseling that is not comprehensive or tailored may fail to provide clear, comparative information, leading to suboptimal method selection.

Therefore, contraceptive behavior is multifactorial, influenced not only by perception (HBM) but also by social, cultural, economic, and health system factors. While HBM is useful in explaining behavioral tendencies, its explanatory power remains limited when used alone. This suggests the need to integrate HBM with broader behavioral frameworks, such as socio-ecological models, to better understand contraceptive decision-making among high-risk women.

Practical Implications

These findings suggest that family planning programs should strengthen risk-based and personalized counseling, provide clear comparisons of contraceptive methods, actively reduce perceived barriers through education, improve the quality of counseling rather than focusing solely on frequency, and involve partners and family in decision-making processes.

Limitations

This study has several limitations. The cross-sectional design limits causal interpretation. The sample size was relatively small and limited to a single setting, which may reduce generalizability. In addition, data were self-reported, which may introduce response bias. Furthermore, psychosocial variables beyond the Health Belief Model were not explored.

Recommendations for Future Research

Future studies should consider using longitudinal designs to better assess causal relationships, include larger and more diverse populations, explore additional factors such as cultural beliefs and partner influence, and evaluate intervention-based strategies to improve contraceptive decision-making.

CONCLUSION

This study aimed to analyze the relationship between the components of the Health Belief Model (HBM) and contraceptive choice among high-risk women of reproductive age (WRA). The findings showed that all components of the Health Belief Model were significantly associated with contraceptive choice

among high-risk WRA, indicating that individual perceptions regarding susceptibility, severity, benefits, barriers, and cues to action play an important role in contraceptive decision-making. However, the preference for short-term contraceptive methods among most respondents suggests that knowledge and perceptions alone may be insufficient to produce optimal contraceptive behavior. Therefore, HBM-based counseling strategies are needed to strengthen individualized risk communication, improve understanding of effective contraceptive methods, address misconceptions and perceived barriers, and enhance partner support in order to promote appropriate contraceptive choices among high-risk WRA.

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