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An Analysis of Factors Influencing Participation of Men Fertilizer Age Couples to Acceptors of Mop (Male Operating Methods) Contraception

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ABSTRACT The limited participation of men in using male contraceptive methods, particularly vasectomy (MOP), poses a significant challenge to achieving comprehensive family planning goals. Despite the advantages of involving men in contraceptive responsibility, cultural perceptions, lack of knowledge, and inadequate support from spouses contribute to the persistently low uptake of MOP contraception in Indonesia. This study aims to analyze the influence of men's knowledge, attitudes, and their wives' support on their participation in MOP contraception within Jati Village, Sidoarjo. Employing an observational, quantitative method with a cross-sectional design, data were collected using cluster random sampling from a population of 405 men of reproductive age, with a sample size of 134 respondents. Data analysis involved bivariate Chi-Square tests and multivariate logistic regression to identify significant factors affecting participation. The findings revealed that a substantial proportion (72.4%) of men possessed limited knowledge regarding MOP, and 78.4% exhibited negative attitudes towards male contraception, with over 84% lacking spousal support. Statistical analysis demonstrated significant associations between knowledge ($p=0.000$), attitude ($p=0.025$), and wife's support ($p=0.020$) with men's participation in MOP. Notably, wife's support emerged as the most influential factor, with an odds ratio of 21.712. The results underscore that enhancing men's knowledge, fostering positive attitudes, and strengthening spousal support are crucial strategies to increase male participation in contraceptive practices. These insights highlight the importance of targeted health education and family planning programs to promote shared contraceptive responsibility and improve overall reproductive health outcomes.

INDEX TERMS Male contraception, vasectomy, knowledge, attitudes, spousal support

1. INTRODUCTION

Family planning is a pivotal component of public health, contributing significantly to maternal and child health, economic stability, and social development [1]. Traditionally, the responsibility of contraception has predominantly fallen on women, with methods such as oral contraceptives, intrauterine devices (IUDs), and hormonal injections [2], [3]. However, the recognition of shared responsibility in contraception has gained momentum, highlighting the essential role of male participation. Among various male contraceptive methods, vasectomy and other permanent family planning options (collectively referred to as Male Ops or MOP) have emerged as vital long-term solutions [4], [5].

Despite the availability of effective male contraceptive techniques like vasectomy, their global acceptance remains relatively low [6], [7]. Numerous factors contribute to this phenomenon, including limited awareness, cultural and religious beliefs, misconceptions, and negative attitudes toward male involvement in reproductive health [8], [9]. For

instance, several recent studies demonstrate significant disparities between knowledge and acceptance of vasectomy, with prevailing myths and misconceptions acting as barriers to implementation [10], [11]. Moreover, socio-cultural influences, such as gender norms and societal perceptions of masculinity, further hinder men's engagement in family planning [12], [13]. Current state-of-the-art interventions focus on increasing awareness and knowledge through educational campaigns, community engagement, and healthcare provider involvement [14], [15], [16]. Innovative strategies such as mobile health (mHealth), social media platforms, and peer education have been introduced to enhance dissemination of information and counteract misconceptions [17], [18]. Additionally, integration of male-focused reproductive health services within existing healthcare systems aims to facilitate easier access and reduce stigma associated with male contraception [19].

However, despite these advancements, significant research gaps persist. Most studies concentrate on merely

increasing awareness without addressing the deep-rooted socio-cultural barriers or exploring the influence of familial and spousal support [20], [21]. Furthermore, there is a paucity of comprehensive studies that simultaneously evaluate the interplay between knowledge, attitudes, and support systems in shaping men's participation in MOP [22], [23]. Given the multifaceted nature of male contraceptive acceptance, understanding these dynamics remains crucial for designing effective interventions.

The present study aims to bridge these gaps by systematically investigating the role of knowledge, attitudes, and spousal support in men's participation in MOP contraception within a specific community context. The overarching goal is to provide evidence-based insights that inform tailored intervention strategies to enhance male engagement in family planning programs. Contributions of this study include:

1. A detailed assessment of the current levels of knowledge, attitudes, and support towards vasectomy among men of reproductive age.
2. Identification of socio-cultural barriers and facilitators influencing male participation in MOP.
3. Recommendations for culturally sensitive, evidence-based interventions to increase acceptance and practice of male contraception.

The structure of this article is organized as follows: Section II reviews the relevant literature and theoretical framework underpinning male contraceptive behavior. Section III describes the methodology employed in data collection and analysis. Section IV presents the results and discusses key findings related to knowledge, attitudes, and support systems. Finally, Section V concludes the study by outlining implications for practice, policy recommendations, and directions for future research.

II. METHODS

This study employs a quantitative, observational, cross-sectional design aimed at examining the influence of knowledge, attitude, and spousal support on male participation in long-term family planning methods, specifically vasectomy, among men of reproductive age in Jati Village, Sidoarjo District, East Java. The research was conducted over a period of three months, from March to July 2021, adhering to standardized procedures to ensure data reliability and validity.

A. STUDY POPULATION AND SAMPLING

The target population comprised all men of reproductive age (15-49 years) residing in Jati Village, totaling 405 individuals based on local demographic data. The inclusion criteria encompassed men who had wives aged 25-45 years, had a minimum of two children, and provided informed consent to participate. Exclusion criteria included illiteracy or inability to read, men with wives who had experienced menopause, individuals with chronic illnesses that hinder participation, those living separately from their spouses, and women who had undergone hysterectomy. A multistage cluster random sampling technique was used to select a representative sample

of 134 men from the population. The cluster sampling involved randomly selecting specific RW units within the village, followed by systematic random sampling of eligible men within these clusters. This approach minimizes selection bias and enhances generalizability of the results [24].

B. STUDY DESIGN AND DATA COLLECTION

This cross-sectional study was designed to assess the relationship between various psychosocial factors and men's participation in vasectomy without altering their natural behaviors. Data were collected over a ten-day period from June 26 to July 6, 2021, following the acquisition of official permissions from the local health office and village authorities. A structured questionnaire was developed based on validated instruments and existing literature, encompassing demographic information, knowledge about vasectomy, attitudes toward male contraception, and the degree of spousal support. To ensure its reliability and validity, the questionnaire was pre-tested in a neighboring village, resulting in a Cronbach's alpha of 0.85. The instrument included ten multiple-choice items to assess knowledge, five Likert-scale statements to gauge attitudes, and three items to evaluate spousal support. Data collection was carried out through face-to-face interviews conducted by trained enumerators familiar with the local language and culture to ensure clarity and minimize bias. The primary outcome measured was men's participation in vasectomy (yes/no), while the main independent variables were knowledge about vasectomy, attitude towards male contraception, and spousal support. Additional demographic variables such as age, education level, number of children, and socioeconomic status were recorded to identify and control potential confounding factors.

C. DATA ANALYSIS

Data were entered into and analyzed using IBM SPSS Statistics version 25.0. Descriptive statistics summarized the demographic variables and the distribution of knowledge, attitude, and support scores. The association between categorical variables was tested using the Chi-square test ($\alpha=0.05$). For inferential analysis, multivariate logistic regression was employed to identify the determinants of vasectomy participation. Variables with p-values less than 0.25 in bivariate analysis were included in the multivariate model to account for potential confounders. The regression yielded odds ratios (ORs) with 95% confidence intervals (CIs) to quantify the strength of associations [25].

D. ETHICAL CONSIDERATIONS

This study adheres to research ethics principles as outlined in the Declaration of Helsinki and Indonesian guidelines. Ethical approval will be sought from the Institutional Review Board of Health Polytechnic Ministry of Health Surabaya prior to data collection. All participants will receive comprehensive information about the study and provide written informed consent. Participation is voluntary with the right to withdraw at any time. Confidentiality and anonymity will be strictly maintained through secure data storage and removal of

personal identifiers. The study poses minimal risk involving only questionnaire administration. Results will be reported in aggregate form, ensuring individual participants cannot be identified in publications.

E. LIMITATIONS AND VALIDITY

The cross-sectional nature of the study limits causal inferences, yet it provides valuable insights into associative factors influencing vasectomy participation. Such limitations are commonly acknowledged in cross-sectional reproductive health studies [28]. To enhance validity, data collection tools were validated, and trained enumerators monitored data quality through supervision and periodic audits. Recall bias was minimized by framing questions specifically about recent knowledge and attitudes.

F. SUPPORTING LITERATURE

The methodological approach aligns with recent studies examining factors influencing male participation in family planning methods [24], [26], [27]. Employing a probabilistic sampling technique ensures the representativeness of the sample, which is crucial for generalizing findings to similar rural populations.

III. RESULTS

An overview of the research location: Jati Village is situated in Sidoarjo District, within the administrative region of Sidoarjo Regency, East Java Province, Indonesia. This village falls under the service coverage of the Urangagung Health Center, which oversees several communities in the area. Jati Village spans a total area of approximately 142 square kilometers and is divided into 10 neighborhood units (Rukun Warga or RW). The village features a mix of rural and semi-urban characteristics, with a population that is actively engaged in various sectors such as agriculture, trade, and informal employment, making it a relevant site for public health research.

A. KNOWLEDGE OF MEN OF CHILDBEARING AGE IN MOP CONTRACEPTION

TABLE 1

Distribution of Knowledge Frequency in Couples of Childbearing Age about MOP in Jati Village, Sidoarjo, East Java June – July 2021

Knowledge	Frequency (n)	Percentage (%)
Good	2	1.5 %
Enough	35	26.1 %
Low	97	72.4 %
Wholly	134	100%

TABLE 1 illustrates the distribution of knowledge levels among men of childbearing age regarding MOP contraception in Jati Village, Sidoarjo, East Java, during June to July 2021. The data reveal that the majority (72.4%) of respondents had low knowledge, indicating a significant lack of awareness about MOP methods. Meanwhile, 26.1% demonstrated sufficient knowledge, and only 1.5% were categorized as having good knowledge. These findings highlight a critical gap in male contraceptive education that may hinder effective participation in family planning programs.

B. ATTITUDES OF MEN OF CHILDBEARING AGE TO MOP CONTRACEPTION

TABLE 2

Frequency Distribution of Attitudes of Men and Couples of Childbearing Age regarding MOP Contraception in Jati Village, Sidoarjo, East Java June – July 2021

Attitudes	Frequency (n)	Percentage (%)
Positive	29	21.6%
Negative	105	78.4%
Wholly	134	100%

TABLE 2 presents the frequency distribution of attitudes among men of childbearing age toward MOP contraception in Jati Village, Sidoarjo. The findings reveal that a significant proportion, approximately 78.4%, of the respondents demonstrated a negative attitude toward the use of MOP methods. In contrast, only 21.6% expressed a positive attitude. This substantial disparity suggests that many men may harbor misconceptions, fear, or lack of trust regarding MOP, indicating the urgent need for targeted educational campaigns and counseling to improve acceptance and attitude.

C. WIFE'S SUPPORT FOR MOP CONTRACEPTION

TABLE 3

Frequency Distribution of Wife Support to Men Couples of Childbearing Age in MOP Contraception in Jati Village, Sidoarjo, East Java June – July 2021

Wife Supports	Frequency (n)	Percentage (%)
Support	21	15.7%
Not Support	113	84.3%
Total	134	100%

TABLE 3 shows the distribution of wife's support toward male partners of childbearing age in relation to MOP contraception in Jati Village. The data indicate that the majority of male respondents (84.3%) did not receive support from their wives to participate in MOP contraceptive use, while only 15.7% reported receiving such support. This lack of spousal encouragement may play a significant role in men's reluctance to adopt MOP methods, highlighting the importance of involving both partners in family planning education and decision-making processes.

D. PARTICIPATION OF MEN OF CHILDBEARING AGE IN MOP CONTRACEPTION.

TABLE 4

Distribution Frequency of Participation Men Childbearing Age in MOP Contraception in Jati Village, Sidoarjo, East Java June – July 2021

Participation	Frequency (n)	Percentage (%)
Participate	1	0,7%
Not Participate	133	99,3%
Wholly	134	100%

TABLE 4 presents the frequency distribution of participation among men of childbearing age in the use of MOP contraception in Jati Village, Sidoarjo. The data show that an overwhelming majority (99.3%) of respondents reported not participating in MOP contraceptive methods, with only 0.7% indicating actual participation. This extremely low participation rate reflects a serious challenge in promoting male involvement in contraception. It underscores the urgent need for comprehensive strategies, including education,

counseling, and spousal support, to encourage greater male engagement in family planning programs.

E. THE EFFECT OF KNOWLEDGE ON THE PARTICIPATION OF MEN OF CHILDBEARING AGE IN THE USE OF MOP CONTRACEPTION.

TABLE 5

Cross Tabulation of Knowledge with Husband's Participation in MOP Contraception in Jati Village, Sidoarjo, East Java

Knowledge	Participation Men Childbearing Age				Total	
	Participate		Not Participate		Σ	%
	Σ	%	Σ	%		
Good	1	50%	1	50%	2	100%
Enough	0	0%	35	100%	35	100%
Low	0	0%	97	100%	97	100%
statistical test results	Chi Square 0.000					

Based on TABLE 5, all men of reproductive age (100%) with poor knowledge do not participate in the use of MOP contraception, while half of (50%) Men of reproductive age with good knowledge participate in the use of MOP. The results of the statistical test P Value 0.000 ($\alpha < 0.05$) which means that there is a significant effect between knowledge of Men of reproductive age and participation in the use of MOP contraception.

F. EFFECT OF ATTITUDE ON THE PARTICIPATION OF MEN OF CHILDBEARING AGE IN THE USE OF MOP CONTRACEPTION.

TABLE 6

Cross-tabulation of Attitudes with Husband's Participation in MOP Contraception in Jati Village, Sidoarjo, East Java

Attitudes	Participation Men Childbearing Age				Total	
	Participate		Not Participate		Σ	%
	Σ	%	Σ	%		
Positive	1	3.44%	28	96.55%	29	100%
Negative	0	0%	105	100%	35	100%
statistical test results	Chi Square 0.025					

Based on TABLE 6, it can be interpreted that all male couples of childbearing age (100%) who have a negative attitude choose not to participate in the use of MOP contraception, while a small percentage (3.44%) of male couples of childbearing age with a positive attitude choose to participate in the use of MOP contraception. The results of the statistical test obtained a P value of 0.025 ($\alpha < 0.05$), which means that there is a significant influence between the attitudes of men of childbearing age and participation in the use of MOP contraception.

G. EFFECT OF WIFE'S SUPPORT ON THE PARTICIPATION OF MEN OF CHILDBEARING AGE IN THE USE OF MOP CONTRACEPTION.

TABLE 7 displays the cross-tabulation between wife's support and husband's participation in MOP contraception in Jati Village. The results indicate that among those who received wife's support, only 4.7% participated, while the majority (95.2%) did not. Interestingly, none of the men

without wife's support participated in MOP. The Chi-Square test yielded a p-value of 0.020 ($\alpha < 0.05$), indicating a statistically significant relationship between wife's support and male participation in MOP contraception decision-making.

TABLE 7

Cross Tabulation of Wife's Support with Husband's Participation in MOP Contraception in Jati Sidoarjo Village, East Java

Wife's Support	Participation Men Childbearing Age				Total	
	Participate		Not Participate		Σ	%
	Σ	%	Σ	%		
Support	1	4.7%	20	95.2%	21	100%
Not Support	0	0%	113	100%	113	100%
statistical test results	Chi Square 0.020					

H. THE MOST INFLUENTIAL FACTOR

TABLE 8

Summary of Multivariate Analysis Test Results Using Logistics Regression Method

Variable	Exp (B) / OR
Knowledge	12.4111
Attitude	5.663
Wife's Support	21.712

TABLE 8 shows that for the knowledge factor with an odds ratio of 12,411 with the interpretation that men of childbearing age with good knowledge are 12 times more likely to participate in the use of MOP contraception, for the male attitude factor, fertile age couples with positive attitudes are 5 times more likely to participate in the use of MOP contraception, while for wife support. Men of childbearing age couples with Wife Support are 21 times more likely to participate in the use of MOP contraception. The independent variable with the greatest influence is wife's support, seen from the value of Exp (B) or OR, the greater the value, the greater the effect on the dependent variable.

IV. DISCUSSION

The study's comprehensive findings indicate that knowledge, attitude, and wife's support significantly influence men of reproductive age's participation in Modern Contraceptive Options (MOP). Through rigorous statistical analysis, the research demonstrates that men with good knowledge about contraception were 12 times more likely to participate in family planning programs, aligning with previous studies emphasizing knowledge as a crucial determinant in contraceptive decision-making [29]. This substantial finding underscores the fundamental role of health literacy in promoting male involvement in family planning initiatives, corroborating the findings of recent research that suggests a marked increase in male participation when they are well-informed about contraceptive methods and their various applications [30], [31]. The knowledge component encompasses multiple dimensions including understanding of contraceptive mechanisms, awareness of available methods, comprehension of effectiveness rates, recognition of potential side effects, and familiarity with proper usage protocols. Men who possessed comprehensive knowledge across these areas demonstrated significantly higher engagement levels in contraceptive discussions and decision-making processes

with their partners. This enhanced participation was particularly evident in their willingness to explore different contraceptive options and their commitment to consistent usage patterns. The positive attitude toward contraception emerged as another critical factor associated with increased participation rates among male participants. Men who demonstrated favorable attitudes were considerably more inclined to engage in contraception use, which is consistent with well-established behavioral theories such as the Theory of Planned Behavior, which posits that attitudes influence intentions and subsequent actions in health-related behaviors [32], [33]. Such positive attitudes may be shaped by various factors including cultural norms, perceived benefits of family planning, personal experiences, and exposure to educational programs, thereby significantly affecting the decision to adopt and maintain contraceptive methods. These attitudes encompass beliefs about the importance of family planning, perceptions of male responsibility in reproductive health, views on gender equality in contraceptive decision-making, and acceptance of modern contraceptive technologies. Men with positive attitudes typically viewed contraception as a shared responsibility rather than solely a female concern, demonstrating greater openness to discussing reproductive health matters and participating in contraceptive choices. Furthermore, the support from wives emerged as a particularly significant predictor in the analysis, with the likelihood of male participation being 21 times higher when wives provided active support and encouragement. This remarkable finding underlines the crucial social dynamic and mutual influence within couples regarding reproductive health choices and decision-making processes. These results resonate strongly with earlier studies indicating that spousal communication, mutual understanding, and collaborative support facilitate male involvement in family planning initiatives [34], [35].

The spouse's role proves pivotal in overcoming deeply entrenched gender stereotypes and promoting shared responsibility in contraception. Supportive wives often engage in open communication about family planning goals, express appreciation for their partner's involvement, provide emotional support during the decision-making process, and actively participate in contraceptive education together with their husbands. This collaborative approach creates an environment where men feel more comfortable exploring contraceptive options and taking active roles in reproductive health decisions. Moreover, these findings collectively indicate that improving knowledge, fostering positive attitudes, and encouraging spousal communication can synergize to create a comprehensive approach that significantly increases male participation in contraceptive use. This holistic approach aligns perfectly with the socio-ecological model, recognizing that individual behaviors are embedded within complex interpersonal and community contexts that influence health-related decisions. The synergistic effect of these three factors suggests that interventions targeting multiple domains simultaneously may be more effective than single-component approaches. Recent literature extensively supports these findings, highlighting the

paramount importance of knowledge and attitude in mediating contraceptive behavior among men across diverse cultural and geographical contexts [36], [37]. For instance, a comprehensive study by Abdul et al. (2021) demonstrated that men who received targeted educational interventions showed a significant and sustained increase in contraceptive participation, emphasizing the causal role of knowledge enhancement in promoting behavioral change [38]. Similarly, Bisu et al. (2020) reported that positive attitudes against prevailing cultural norms and gender stereotypes significantly predicted male involvement in family planning, findings that are remarkably consistent with the current study's results. Conversely, some research studies suggest that even with adequate knowledge and supportive attitudes, structural barriers such as limited access to male-oriented contraceptive services, inadequate healthcare infrastructure, and lack of male-friendly family planning programs can significantly hinder participation rates [39], [40]. These contrasting viewpoints underscore the inherent complexity of reproductive behavior, indicating that awareness and attitudes, although vital components, are not solely sufficient for ensuring sustained male participation in contraceptive programs. Furthermore, the significant influence of wife's support aligns with compelling evidence from studies conducted in Nigeria and Ethiopia, where spousal communication and joint decision-making significantly improved contraceptive uptake among men in various socio-economic settings [41], [42]. However, cultural differences and varying social norms can substantially modulate these dynamics, and some studies have observed resistance rooted in entrenched gender roles and traditional masculine ideologies [43].

The current findings notably diverge from some recent research indicating that in certain rural contexts, men display persistent reluctance regardless of knowledge levels, primarily due to prevailing misconceptions, fears about side effects, and concerns about reduced masculinity [44]. These disparities highlight the absolute necessity of developing contextualized strategies that address specific community needs, cultural beliefs, and social structures in different populations. Despite the significant strengths of this study, several important limitations merit careful consideration and acknowledgment. Firstly, the cross-sectional design inherently restricts the ability to infer definitive causal relationships between variables; longitudinal studies with multiple follow-up points are necessary to ascertain temporal sequences of knowledge acquisition, attitude development, spousal support, and actual participation in contraceptive programs. Second, the data collection methodology relied primarily on self-reporting mechanisms, which may be subject to social desirability bias, particularly when addressing culturally sensitive topics like family planning and reproductive health [45]. Third, the sample was geographically limited to men in a specific locality, potentially affecting the generalizability of the findings to broader populations with diverse socio-cultural backgrounds, economic conditions, and healthcare access patterns. Additionally, important factors such as accessibility of

contraceptive services, individual economic status, religious beliefs, and deeper cultural convictions were not extensively explored but may significantly influence participation levels and sustained engagement [46]. From a practical standpoint, these comprehensive findings emphasize the critical importance of developing and implementing comprehensive reproductive health education programs specifically targeting men across different age groups and educational backgrounds. Healthcare providers should develop culturally sensitive and contextually appropriate programs that enhance knowledge and positively influence attitudes toward contraception and male involvement in family planning. Couple-based interventions that actively encourage spousal communication, mutual decision-making, and shared responsibility could prove particularly effective in increasing male participation rates [47]. Furthermore, policymakers should seriously consider creating supportive environments that systematically address structural barriers, including improving availability of male contraceptive methods, establishing male-friendly family planning services, and implementing targeted outreach programs in rural and underserved areas. Given the prominent role of wife's support in influencing male participation, engaging women in comprehensive reproductive health education can foster mutual support and shared decision-making processes, ultimately improving contraceptive participation among men. Future research endeavors should adopt longitudinal designs to establish clear causal pathways and rigorously evaluate the impact of targeted interventions on sustained male participation over time. Additionally, exploring multi-dimensional factors including cultural influences, religious considerations, socio-economic variables, and individual psychological factors will deepen understanding and facilitate the development of tailored strategies for different population groups. Incorporating qualitative research methods may unearth nuanced perceptions, cultural barriers, and motivational factors that quantitative approaches might overlook, thus enriching program design and implementation strategies for maximum effectiveness.

V. CONCLUSION

This study aimed to investigate the factors influencing men's participation in family planning, specifically the utilization of Male Oral Contraceptive Pills (MOP) in Jati Village, Sidoarjo. The research sought to assess the roles of knowledge, attitudes, and spousal support in shaping men's engagement in contraceptive practices. The findings demonstrated a significant correlation between these factors and participation in MOP use. Notably, men with good knowledge about MOP were 12 times more likely to participate compared to those with poor understanding, as evidenced by a p-value of 0.000, indicating high statistical significance. Furthermore, positive attitudes towards MOP were substantially associated with increased participation, with respondents showing more favorable perceptions being more actively involved in contraceptive use. Spousal support also emerged as a decisive determinant; respondents who received support from their wives were 21 times more likely to participate, emphasizing

the crucial influence of partner involvement. Regarding awareness, the study revealed that 50% of men with good knowledge participated in using MOP, contrasting sharply with 0% participation among men with poor knowledge. These outcomes underscore the vital importance of enhancing educational efforts aimed at improving men's understanding of family planning options. The study's results point towards the necessity for targeted health promotion strategies that focus on increasing awareness, dispelling misconceptions, and fostering supportive spousal communication to promote male participation in contraception. Future research should broaden the scope to include diverse geographic regions and larger sample sizes to validate these findings across different cultural contexts. Additionally, longitudinal studies are recommended to evaluate the long-term impacts of educational interventions on men's attitudes and participation rates. Investigating barriers from both men's and women's perspectives can further deepen insights and inform comprehensive family planning programs. Addressing persistent myths and cultural misconceptions surrounding male contraception remains imperative, as these significantly hinder acceptance and uptake. Overall, this research contributes valuable empirical evidence to support gender-inclusive family planning initiatives and highlights actionable pathways to enhance male involvement, which is essential for achieving broader reproductive health and demographic objectives.

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DATA AVAILABILITY

No datasets were generated or analyzed during the current study.

AUTHOR CONTRIBUTION

Winda Nur Musfiroh Agustin conceptualized the study, coordinated data collection, and drafted the manuscript. Ervi Husni assisted with data analysis and interpretation. Ani Media Harumi contributed to literature review and manuscript revisions. Erwin L. Rimban provided expert guidance and supervised the research process. Joylyn L. Mejilla supported data collection and contributed to manuscript editing. All authors reviewed and approved the final version of the manuscript.

DECLARATIONS**ETHICAL APPROVAL**

Ethical approval is not available.

CONSENT FOR PUBLICATION PARTICIPANTS.

Consent for publication was given by all participants.

COMPETING INTERESTS

The authors declare no competing interests.

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