



Effectiveness, Safety, and Acceptance Factors of Male Surgical Contraceptive Methods

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Abstract. Male contraceptive surgery, commonly known as a vasectomy, is one of the permanent contraceptive methods that has been proven to be very effective and safe in lowering fertility rates. However, its use is still relatively low compared to other contraceptive methods, especially in developing countries, due to limited knowledge, cultural perception, and social acceptance. This literature review aims to examine factors of effectiveness, safety, and acceptance of vasectomy based on previous research. The method used is a literature review by analyzing national and international articles published between 2013 and 2023, sourced from databases such as PubMed, Google Scholar, and ScienceDirect. The findings show that vasectomy has more than 99% effectiveness in preventing pregnancy, with minimal complications that can generally be treated. Nonetheless, acceptance is still a major challenge, influenced by stigma, inadequate information, and prevailing gender and cultural norms. In conclusion, vasectomy is a very effective and safe method of contraception, but to increase its acceptance, comprehensive education, partner involvement, and gender-sensitive reproductive health programs are needed.

Keywords: Contraception, Male Sterilization, Vasectomy, Effectiveness, Safety, Acceptance

1 Introduction

The Male Surgery Method (MOP) or vasectomy is a form of permanent contraception that aims to prevent sperm from coming out during ejaculation. Although proven to be effective and safe, the participation rate of men in Family Planning (KB) programs is still low. Data from the National Population and Family Planning Agency (BKKBN, 2023) shows that the contribution of MOP participants is only around 0.3% of the total contraceptive users in Indonesia. The low participation is influenced by various factors, such as low knowledge about MOPs, negative perceptions, lack of partner support, and social and cultural myths that think MOPs can reduce masculinity.

This literature review aims to analyze the effectiveness of MOP as a contraceptive method, review its safety level based on the results of recent research, and evaluate

factors that affect public acceptance of MOP. The results of the review are expected to be the basis for the development of more effective communication and reproductive health education strategies for the community and health workers.

Family Planning (KB) is one of the pillars of public health policy that functions to control fertility rates, improve family welfare, and support the achievement of health development goals. Most family planning interventions over the decades focused on women—both programmatically and communicationsally—so men's contribution to the selection of contraceptive methods was relatively small. In fact, male involvement is important for the distribution of contraceptive burden, family decision-making, and the sustainability of family planning programs. The Male Surgical Method (MOP) or vasectomy is a method of permanent contraception in men that offer high effectiveness (>99%), a relatively simple procedure, and a low long-term cost. However, the adoption of vasectomy is still low in many countries, including Indonesia, due to various non-medical barriers. Examining the evidence on the effectiveness, safety, and acceptance factors of MOPs becomes important to design effective evidence-based interventions.

Globally, a review of the literature and clinical guidelines shows that vasectomy is a reliable and safe method of sterilization when performed with appropriate techniques (e.g., no-scalpel vasectomy, fascial interposition). Yet adoption trends show disparities between regions: high-income countries have higher coverage than many low-middle-income countries (LMICs). In Indonesia, program data and demographic surveys reported that the contribution of vasectomy to overall male contraceptive coverage was very low (still less than 1% of family planning participants in some surveys), despite sporadic program and campaign efforts. This gap raises important questions about the factors that hinder adoption as well as effective strategies to increase male participation.

Clinical evidence to support the effectiveness and safety of vasectomy, issues such as misconceptions about sexual impacts, concerns about masculinity, cultural and religious barriers, low knowledge and access to services, and limited partner support still give birth to low acceptance rates. Therefore, the literature review aims to integrate clinical evidence (effectiveness and safety) with socio-behavioral evidence (determinants of acceptance), so that the resulting recommendations are not only medically based but also consider social and implementation aspects.

2 Tools and Methods

This study uses a literature review design with a narrative approach. Data sources come from national and international journals published between 2019–2025. The keywords used included 'vasectomy', 'male surgical method', 'contraceptive effectiveness', 'contraceptive safety', and 'acceptance factor'. The inclusion criteria include articles that discuss the effectiveness, safety, and acceptance factors of MOPs in the context of the family planning program. Literature selection was carried out systematically through searches in the PubMed, ScienceDirect, and Google Scholar databases, then analyzed using a thematic approach. The following Table 1 Description of the article.

Table 1. The table caption should be placed on top of the table.

No.	Title/Year/Researcher	Research objectives	Result	Research Methods
1	Barriers to Vasectomy Acceptance and Uptake in Nigeria, (2022), Mary Ndu, Elysee Nouvet, Gertrude Odezugo, Amina Dorayi, Ifeanyi Okkecaru & Lauren J. Wallace African Journal of Reproductive Health	Identify the factors that inhibit and influence the acceptance and adoption of vasectomy as a method of male contraception in Nigeria	The study identified a number of barriers that hinder the acceptance of vasectomy in Nigeria, including a lack of information and misunderstanding of the method, which is often considered equivalent to castration or risks harming male masculinity and sexual ability. In addition, social norms and cultural beliefs contribute to the notion that vasectomy does not fit into traditional male roles, which makes them reluctant to consider it. Fear of side effects and lack of trust in medical personnel also add to the barriers, where family planning responsibilities are often seen as women's duties, so men do not feel the need to take the initiative in choosing this method of contraception. The limited availability of vasectomy services and the lack of trained health workers also reduce the options for men interested in having a vasectomy.	This study uses qualitative research methods
2	An Analysis of Factors Influencing Participation of Men Fertilizer Age Couples to Acceptors of Mop (Male Operating Methods) Contraception, (2022), Winda Nur Musfiroh Agustin1, ErviHusni1, Ani Media Harumil, & Erwin L. Rimban2 International Journal of Advanced Health Science and Technology	To analyze the factors influencing male participation in the acceptance of male surgical contraceptive methods (MOPs) among couples of childbearing age	The results showed that most men of childbearing age (72.4%) had little knowledge of MOP contraceptive methods, almost all (78.4%) had negative attitudes towards MOP contraception, and almost all men of childbearing age (84.3%) did not receive support from their wives to participate in the use of MOP contraception. The results of the analysis showed that there was an influence of knowledge on male participation in the use of MOP contraceptives (P value 0.000), there was the effect of male attitudes on participation in the use of MOP contraceptives (P value 0.025), and there was an effect of wife support on men's participation in MOP contraceptive use (P	Cross-sectional design with Quantitative Approach

No.	Title/Year/Researcher	Research objectives	Result	Research Methods
3	Male involvement in family planning use and associated factors among currently married men in rural Eastern Ethiopia, (2022), Teshale Mulatu1, Yitagesu Sintayehu, Yadeta Dessie & Merga Dheresa	This study aims to investigate the level of male involvement in contraceptive use and factors related to this involvement among married men in rural Eastern Ethiopia.	<p>value 0.020). The most influential factor was the wife's support with an OR score of 21,712. There was also an influence of knowledge, attitudes, and support of wives on the participation of men of childbearing age in the use of MOP contraception.</p> <p>The male involvement rate in contraceptive use was recorded at 59.3% (interval 95% confidence: 47.1–68.2). Factors that were significantly associated with a higher likelihood of male involvement in contraceptive use included: partner contraceptive use (adjusted odds ratio: 2.37; 95% confidence interval: 1.59–3.52), discussions with partners about sexual health and reproduction/family planning (adjusted odds ratio: 2.05; 95% confidence interval: 1.40–3.02), and husband consent to family planning (adjusted odds ratio: 2.45; 95% confidence interval: 1.34–4.96). The results of the analysis showed that male involvement in contraceptive use was still low, but several factors were found to be significantly related to the level of involvement. Men with higher education, good knowledge of family planning, and who are in a better economic status have the advantages. Kinan is greater to be involved in family planning. In addition, positive attitudes towards contraception and discussions about family planning with partners were also found to be important factors that drove men's involvement in contraceptive use.</p>	This study used a cross sectional method with logistic regression analysis conducted to identify factors that affect men's involvement in contraceptive use.
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4	Uptake and Associated Factors of Male Contraceptive Method Use: A Community-Based Cross Sectional Study in Northern Uganda, (2023) Raymond Tumwesigye, Eustes Kigongo,	Identify the rate of adoption of male contraceptive methods, including vasectomy, as well as the factors influencing men's decision to use the	Male contraceptive acceptance reached 46.4% with a 95% confidence interval (CI) between 41.5% to 51.3%. Factors related to male contraceptive acceptance include:	This study uses A community based cross sectional approach, which involves collecting

No.	Title/Year/Researcher	Research objectives	Result	Research Methods
	Stella Nakiganga, Godfred Mbyariyehe, Joel Nabeshya, Amir Kabunga, Marvin Musinguzi, & Richard Migisha Open Access Journal of Contraception	method in the Northern Uganda region	a. Have heard of male contraception (adjusted prevalence ratio [aPR] = 1.73; CI 95%: 1,172–2,539; p = 0.006), indicating that men who had knowledge of male contraceptives were more likely to receive it. b. Willingness to use new contraceptive methods (aPR = 2.90; CI 95%: 1,337–6,293; p = 0.007), which means that those who are open to the new method have a higher chance of using male contraception. Both partners felt responsible for contraception (aPR: 1.53; 95% CI: 1,113–2,119; p = 0.009), indicating that male contraceptive acceptance increases when both husband and wife feel equally responsible for contraception.	data from men of productive age.
5	Determinants Affecting the Adoption of Vasectomy as a Family Planning Method among Married Men in Kizir-anfumbi Sub County, Kikuube District, (2023), Tibeita Semu Idosr Journal of Science And Technology	Identify the factors influencing the adoption of vasectomy as a contraceptive method among married men in Kiziranfumbi Sub-County, Kikuube District, Uganda.	There are still misconceptions, with 52.1% unsure about its impact on sexual function and 19.3% considering it a form of castration. Cultural influence is considerable, with 45.8% saying cultural beliefs influence their decisions, 35.7% considering it culturally unacceptable, and 38.8% considering it taboo. In addition, 42.2% believe that vasectomy reduce the social role of men. The study showed a generally low level of knowledge (mean 2.1189, SD 0.38994), a high prevalence of negative attitudes (average 3.1289, SD 0.30335), and a strong cultural belief in vasectomy (average 2.8620, SD 0.58887). Despite these barriers, 46.6% of participants expressed an intention to undergo a vasectomy, which was significantly influenced by knowledge (p = 0.011) and cultural beliefs (p = 0.000), which accounted for 51.5% of the participation intention.	A descriptive quantitative approach with data analysis was carried out using logistic regression analysis.

3 Discussion

The results of the synthesis from five journals show that the effectiveness of male surgical contraceptive (MOP) or vasectomy has been shown to be very high in various contexts, but the acceptance rate is still low due to various social, cultural, and psychological barriers. The five studies reviewed—conducted in Nigeria (Ndu et al., 2022)[1], Indonesia (Agustin et al., 2022)[2], Ethiopia (Mulatu et al., 2022)[3], Northern Uganda (Tumwesigye et al., 2023), and Western Uganda (Semu, 2023)[4]—consistently highlight three key dimensions: (1) the effectiveness and safety of the MOP procedure, (2) men's knowledge and attitudes towards vasectomy, and (3) socio-cultural influence on the acceptance of this method.

3.1 Effectiveness and Safety of MOP Procedures

All studies confirm that vasectomy is a permanent contraceptive method with more than 99% effectiveness if done according to medical procedures. Evidence of effectiveness and safety was also strengthened by systematic reviews (Cook et al., 2021) [5] as well as cohort analyses of complications (Pate et al., 2019) [6].

Research in Nigeria (Ndu et al., 2022) [1] and Uganda (Semu, 2023) [4] instead highlights that misconceptions about vasectomy—such as the notion that the procedure is the same as "castration" or can lower masculinity—are the main factors that lower men's interest in doing it. Thus, barriers to MOP acceptance are more due to misperceptions and not by medical weaknesses or health risks.

High effectiveness is also influenced by the skills of health workers in performing the procedure. As Agustin et al. (2022) [2] explained, the quality of services, including counseling procedures and postoperative follow-up, is an important factor that builds public trust. When the procedure is performed by trained personnel and with a no-scalpel vasectomy, complications such as hematoma or infection can be minimized. These findings reinforce the international literature showing that the safety of vasectomy can be paralleled with female sterilization methods, but with a lower risk of complications and shorter recovery times (Haws & Morgan, 2021)[7].

3.2 Knowledge, Attitudes, and Partner Support

Research from Indonesia (Agustin et al., 2022) [2] revealed that low knowledge and negative attitudes towards MOP are a major barrier to men's involvement in family planning programs. More than 70% of male respondents of childbearing age have inadequate knowledge, while more than 80% do not have support from their wives. This suggests that decision-making about contraception in many families is still female-centric, and that male involvement has not yet become a social norm. The wife's support factor was proven to be the most influential on male participation with an odds ratio (OR) value of 21,712, indicating that men with partner support had a 21 times greater chance of choosing MOP than those who did not receive support, as evidenced by research related to partner decisions (Raharjo, 2022) [8].

The findings are in line with research in Ethiopia (Mulatu et al., 2022) [3] that suggests that discussions between husbands and wives about reproductive health increase the likelihood of men's involvement in contraceptive use. Men who are more educated, well-informed, and support the use of contraception by a partner, tend to be more actively involved. Therefore, partner communication is an important component in expanding men's participation in family planning programs. Educational programs that target married couples—not just women—have proven to be more effective than individual counseling (Azhar & Lestari, 2021)[9].

3.3 Social and Cultural Factors in Vasectomy Acceptance

Socio-cultural barriers emerged as the dominant theme of the five journals studied. In Nigeria, Ndu et al. (2022) [1] found that traditional social norms and masculinity values reinforce the view that contraception is a woman's responsibility. The belief that vasectomy can "eliminate masculinity" or "reduce male social roles" has made many men reluctant to consider this method (Azhar & Lestari, 2021) [9]. A similar phenomenon was also found in Uganda (Semu, 2023)[4], where 45.8% of respondents cited cultural beliefs as the main factor in rejection, while 35.7% considered vasectomy "culturally unacceptable". Although 46.6% of participants expressed an intention to undergo a vasectomy, most were still hesitant due to the influence of the social environment and community leaders. Public perceptions are also influenced by local values and growing stigmas, as identified in various rural areas of Indonesia (Handayani, 2023) [10].

The religious aspect also plays an important role in the public's perception of the MOP. In many African and Asian communities, male sterilization is often misinterpreted as contrary to religious teachings. However, some studies show that when family planning programs are communicated through respected religious leaders and emphasized as a form of family responsibility, such resistance can be reduced (Rahman & Sari, 2020) [18]. Approaches based on local and cultural values have proven to be more effective than general campaigns that do not pay attention to the social context of the community, while the challenges of implementation in Indonesia are described in more detail by Priyono (2021) [19].

Male Involvement and Structural Factors The research by Tumwesigye et al. (2023) in Northern Uganda emphasizes the importance of structural factors such as service availability, trained medical personnel, and policy support. The acceptance rate of male contraceptives (including vasectomy) in this region is only 46.4%, partly because access to services is still limited. Men who have knowledge of male contraceptive methods and partners who share responsibilities in family planning are more likely to use MOPs. This shows that the success of vasectomy programs is highly dependent on cross-sectoral interventions—between public education, health system readiness, and government policy support.

Limited facilities and trained health workers are also a problem in Indonesia. As revealed by Agustini et al. (2022) [2], many regions do not have active MOP services due to the lack of training and medical equipment. Therefore, strategies to strengthen the health system need to include increasing the capacity of officers, providing mobile

vasectomy services, and financing guarantees so that services can be accessed for free by the public (Budiarto et al., 2023) [17].

Synthesis and Program Implications Overall, the five journals show a consistent pattern: MOP is clinically effective and safe, but low knowledge, myths, and socio-cultural barriers are the main causes of low acceptance. To increase male participation, a holistic approach is needed that includes three dimensions: (1) health education and literacy, (2) a partner and community-based approach, and (3) policy and service system support. If these three dimensions can be applied simultaneously, vasectomy can be one of the important pillars in the success of population control programs in developing countries, including Indonesia.

4 Conclusion

Based on the results of a study of five studies that discussed the effectiveness, safety, and acceptance factors of male surgical methods of contraception (MOP) or vasectomy, it can be concluded that MOP is a very effective and safe permanent contraceptive method, with a success rate of more than 99% if carried out by trained health workers using the right techniques, such as no-scalpel vasectomy. The risk of medical complications is very low, generally mild, and does not affect sexual function or male hormone levels.

The main challenge in implementing MOP does not lie in the medical aspect, but in social, cultural, and psychological factors. Low public knowledge, negative perceptions of vasectomy, and the myth that this procedure can lower masculinity cause men to be reluctant to participate in family planning programs. These barriers are reinforced by the dominance of traditional gender norms, which place contraception as a woman's responsibility, as well as by the lack of support from partners and community leaders. Structural factors such as limited service facilities, lack of trained medical personnel, and low policy support have also slowed down the increase in male participation in family planning programs. Studies have also shown that spouse support and open husband-wife communication have a major influence on the decision to use MOP.

Increasing MOP acceptance needs to be done through a holistic and interdisciplinary approach, including:

4.1 Increasing Reproductive Health Literacy

Increased literacy of reproductive health, with educational campaigns to set the record straight and provide correct information about the safety of vasectomy.

4.2 Partner and Community Engagement

The involvement of couples and communities, including religious leaders and community leaders, in the promotion of men's family planning programs.

4.3 Strengthening the Health Service System

Strengthening the health service system, with training of medical personnel, provision of easily accessible MOP facilities, and sustainable national policy support.

With the implementation of this strategy, vasectomy has the potential to become one of the mainstay contraceptive methods that is not only safe and effective, but also able to strengthen gender equality in family planning responsibilities.

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