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Perceptions influencing selection of sterilization contraceptive methods among couples of reproductive age in Indonesia: Analysis of the 2017 IDHS

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Abstract

Family planning is essential for fertility management in Indonesia, where population increase is still a multifaceted problem. Using data from 2017 Indonesian Health Survey (IDHS), this study examines the perceptions that influence couples to choose sterilization contraception due to its low adoption rate and female domination. The design was cross-sectional with a sample of 8,344 couples of reproductive age. Analysis was conducted univariate, bivariate, and multivariate the using logistic regression. The results showed that only 3.8% of PUS used sterilization, with a significant gender disparity (female: 4.5%; male: 0.1%). The perception was found to be significantly associated (OR Model 3 = 2.14; 95% CI: 1.555-2.956). This study demonstrates how male participation in sterilization is hampered by social norms and traditional gender roles, including the belief that contraception is a woman's responsibility. Sterilization adoption rates could be balanced and increased male participation in family planning encouraged by promoting gender equality through education and focused campaigns. *(Afr J Reprod Health 2025; 29 [12]: 51-65).*

Keywords: Contraception; sterilization; gender perception; family planning

Résumé

La planification familiale est essentielle à la gestion de la fertilité en Indonésie, où la croissance démographique demeure un problème multiforme. À partir des données de l'Enquête indonésienne sur la santé (IDHS) de 2017, cette étude examine les perceptions qui incitent les couples à opter pour la stérilisation, en raison de son faible taux d'adoption et de la domination féminine. L'étude était transversale auprès d'un échantillon de 8 344 couples en âge de procréer. L'analyse a été menée de manière univariée, bivariée et multivariée par régression logistique. Les résultats ont montré que seulement 3,8 % des femmes enceintes utilisaient la stérilisation, avec une disparité significative entre les sexes (femmes : 4,5 % ; hommes : 0,1 %). Cette perception était significativement associée (OR Modèle 3 = 2,14 ; IC à 95 % : 1,555-2,956). Cette étude démontre comment la participation des hommes à la stérilisation est entravée par les normes sociales et les rôles de genre traditionnels, notamment la croyance selon laquelle la contraception est la responsabilité des femmes. Les taux d'adoption de la stérilisation pourraient être équilibrés et la participation masculine accrue à la planification familiale pourrait être encouragée en promouvant l'égalité des sexes par l'éducation et des campagnes ciblées. *(Afr J Reprod Health 2025; 29 [12]: 51-65).*

Mots-clés: Contraception ; stérilisation ; perception du genre ; planification familiale

Introduction

The population growth rate in Indonesia has shown a downward trend in recent decades. Based on data from the Central Statistics Agency (BPS), in 2025 the population of Indonesia reach 281.6 million people.[1] The decline in population growth rate was recorded from 2.30% in the 1971-1980 period to 1.3% in the 2000-2005 period. However, this trend is not evenly distributed across Indonesia and even shows fluctuations in some provinces. In addition, data from the Indonesian Demographic and Health Survey (IDHS) shows that the Total Fertility Rate (TFR) stagnated at 2.6 between 2002 and 2012, and declined slightly to 2.4 in 2017-a figure that is still above the national population control target of 2.1.[2]

According to the latest BPS report, Indonesia's TFR was estimated at 2.18 in 2022, indicating a gradual improvement but still slightly above the replacement level.

One of the Indonesian government's main strategies to reduce the birth rate is through the Family Planning Program.

Although this program has contributed significantly to fertility control, challenges remain, particularly in terms of the distribution of contraceptive method use. To date, short-term contraceptive methods (such as pills and injections) still dominate, while the use of long-term contraceptive methods (LTCM), especially sterilization such as Female Operative Method (MOW) and Male Operative Method (MOP), remains very low.

Data from the IDHS,[3] shows that only 2.1% of couples of childbearing age in Indonesia use sterilization methods, much lower than other ASEAN countries such as Thailand (15.3%) and Vietnam (12.8%). Globally, according to the World Health Organization,[4] sterilization is one of the most effective contraceptive methods and is widely used in developed countries such as India (36% of women), Republic of Korea (15%), and China (33%), indicating a higher public acceptance of this method. This gap shows that the utilization of sterilization methods in Indonesia is not optimal, not only due to accessibility, but also influenced by social factors, culture, and public perception.[5]

Furthermore, the National Population and Family Planning Board data for 2021 states that the level of demand for family planning among women of childbearing age has only reached 74%, still far from the national target of 85%.[6,7] The number of LCTM family planning participants in 2022 was recorded at only 1,607,288, far below non-MKJP family planning participants at 4,123,035. The injectable method tops the list at 63.71%, followed by the pill (17.24%), while the use of Female Operative Method such as tubectomy is only 2.76%. This indicates a strong preference for short-term methods that are more accessible and reversible, despite their lower long-term effectiveness.

The low selection of contraceptive sterilization methods can be caused by various factors such as education level, understanding of the fertile period, partner preferences, the influence of the social environment, and limited information provided by health workers, media, and community leaders. Cost and access to medical treatment are also still became barriers for some couples of childbearing age.

International studies show that acceptance of contraceptive sterilization methods is strongly influenced by socio-cultural factors, including myths about decreased masculinity, fear of permanent side effects, and the influence of religious and gender norms.[8,9] In Indonesia, negative perceptions of sterilization are still strong, especially among men, as it is perceived to conflict with the traditional role of head of the family or breadwinner. However, global evidence shows that comprehensive counseling, partner participation in decision-making, and evidence-based education can significantly increase acceptance of this method.[4,10]

Unfortunately, most studies in Indonesia still focus on analyzing demographic factors such as age, parity, or education level, without delving deeper into how perceptions of sterile contraception are shaped by social norms, culture, and relationships between couples. Therefore, this study aims to fill this gap by exploring in more depth the perceptual model of couples of childbearing age towards contraceptive sterilization methods (MOW and MOP) in Indonesia. With a more comprehensive understanding of the determinants of these perceptions, it is hoped that the results of the study can form the basis for designing more effective and culturally-based communication strategies and family planning policy interventions.

Methods

This research uses a *cross-sectional* study design. The data used is secondary data from the 2017 IDHS where the dependent variable and the independent variable are taken at the same time. All couples of childbearing age (aged 15-49 years) in households selected as SDKI respondents in 2017 were taken as the population.

The 2017 IDHS sample consists of 1970 census blocks from urban and rural areas, 49,250 households, 59,100 female respondents of childbearing age (aged 15-49 years), 24,625

unmarried male adolescent respondents aged 15-24 years, and 14,193 married male respondents aged 15-54 years. The 2017 SDKI sample frame uses the Census Block Master Sample from the 2010 Population Census results, while the household sample frame uses a list of ordinary households from the results of updating households from selected census blocks**.** The sample size in this study was 8344 couples of childbearing age. Data were collected using the standardized 2017 Indonesia Demographic and Health Survey (IDHS), implemented by Statistics Indonesia (BPS). The survey employed structured, pretested questionnaires adapted from the global DHS model to reflect local context, administered face-to-face in Bahasa Indonesia by trained female and male interviewers between July and September 2017. All responses were self-reported by eligible participants (women aged 15–49 and married men aged 15–54) during household interviews. Figure 1

Figure 1 shows the sample identification flow regarding contraceptive use in a total sample of 8,344 respondents. A total of 69% used modern contraceptives, but only 5.5% of them were sterilisation. Of those who used contraceptive methods, 44.2% had heard of male sterilisation, while 55.8% had never heard of it. Furthermore, of those who were aware of it, only 13% considered male sterilisation, while 87% did not consider it for various reasons, including the availability of other methods that were considered less invasive (28.7%), the desire to have more children (23.1%), religious objections (13.0%), perceptions of health risks (12.9%), and other factors such as concerns about sexual function, safety, cost, spousal disapproval, and fear of remarriage.

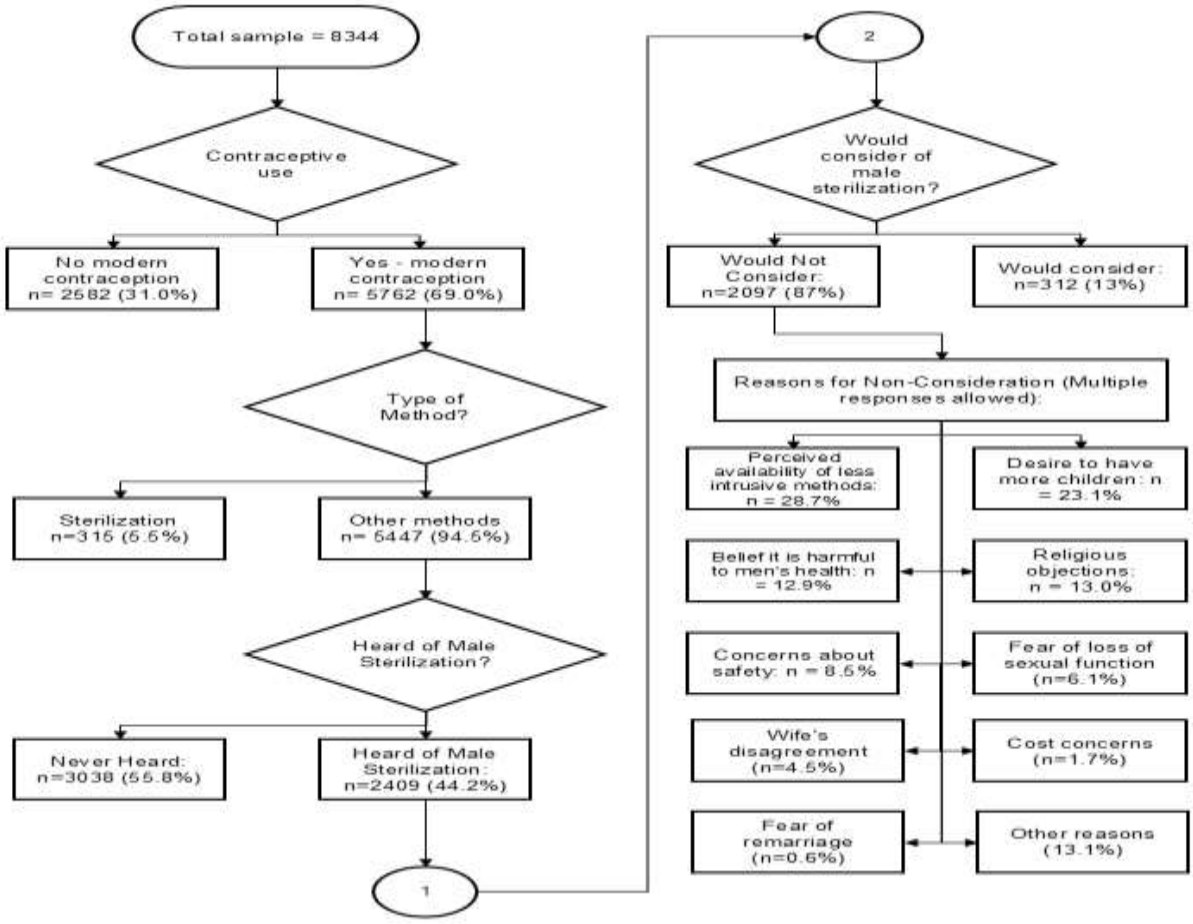

Figure 1: Sample identification flowchart

Univariate, bivariate, and multivariate analyses were conducted. Univariate analysis was used to obtain the frequency distribution and percentage of each variable. Bivariate analysis used to see the relationship of the dependent variable, namely the selection of sterilization contraceptive methods with independent variables. In this analysis, the *Chi-Square* test was conducted with an error tolerance of 0.05 or 95% confidence. If the analysis test results produce a *p-value* <0.05 from the analysis of the dependent and independent variables, it can be concluded that there is a relationship between the two variables. To assess the degree of association between the two variables, the *Odds Ratio* (OR) association measure was used. And multivariate analysis with multiple logistic regression tests to obtain the model. The DHS MEASURE website granted permission to use the 2017 IDHS data.

Results

Table 1 presents the results of the study, it was found that 69% of respondents used contraception, while the other 31% did not. Of the group that used contraception (n=5,762), only 5.5% used sterilisation methods, while the majority, 94.5%, chose other methods of contraception. This shows that the use of sterilisation is still very low compared to other methods of contraception. Among the group of non-sterilisation contraceptive users (n=5,447), approximately 44.2% had heard of vasectomy/male sterilisation, while more than half (55.8%) had never heard of it. This fact indicates that public awareness of vasectomy as a permanent contraceptive option is still low. Furthermore, among those who had heard of male sterilisation (n=2,409), only 13% said they were willing to consider vasectomy, while 87% refused to consider it. This figure shows a large gap between knowledge about vasectomy and willingness to use it.

Based on the research results shown in the Table 2, it can be seen that the main reasons respondents did not consider vasectomy were because they still wanted to have more children (23.1%) and the assumption that there were other contraceptive methods that were simpler or less invasive (28.7%). These two reasons confirm that reproductive considerations and contraceptive method preferences are dominant factors in the rejection of vasectomy. Meanwhile, other reasons that also emerged but with smaller proportions were related to religion (13.0%) and concerns that vasectomy could have adverse effects on men's health (12.9%). This shows that although religious and health issues still exist, neither is a major factor in rejection. A small proportion of respondents also associated vasectomy with the risk of losing sexual function (6.1%) or not obtaining their wife's consent (4.5%). These two factors indicate that there are still misconceptions and dynamics in couple relationships when making contraceptive decisions. Another reason that had little influence was cost (1.7%) and the possibility of remarrying (0.6%), so it can be concluded that economic factors and future marital status were not significant barriers. Some respondents also gave other reasons that were not classified, accounting for 13.1%.

Table 3. present the relationship model of perception of sterile contraception. Among the sterilized, it was found that husbands disagreed with the statements that male sterilization is the same as castration (4.1%), women should be sterilized because they can get pregnant (3.5%), sterilized women can practice promiscuity (3.8%), and contraception is a woman's business (4.2%). The perception of husbands of sterilized women was most likely to agree that women should be sterilized because they can get pregnant (6.8%). Perceptual variables that were statistically significantly associated (p-value <0.05) with the implementation of sterilization were sterilization for men is the same as castration and women are the ones who should be sterilized.

The results of multivariate analysis showed a variety of perception models related to sterilization. The first model indicated an association between the perception that women should be sterilized due to childbirth and the use of sterile family planning among child bearing age, after controlling for the variables of wife and husband's age, place of residence, wife and husband's education, wife and husband's occupation, welfare index, and parity. Husbands who agreed that women should be sterile had 2.36 times greater odds (95% CI: 1.723-3.228) of childbearing age using sterile family planning

Table 1: Awareness, non-consideration, and barriers to male sterilization

Variables	Frequency	Percentage	Percentage (95% CI)
Contraceptive Use			
No	2582	31	29.7 – 32.2
Yes	5762	69	63.1 – 75.0
Among Contraceptive Use (n=5762)			
Sterilization	315	5.5	4.9 – 6.1
Other Methods	5447	94.5	93.9 – 95.1
Among Use of Other Methods (n=5447)			
Heard of sterilization	2409	44.2	(42.9 – 45.5)
Never heard of sterilization	3038	55.8	(54.5 – 57.1)
Among those who heard of male sterilization (n=2,409)			
Would consider male sterilization	312	13	(11.4 – 14.7)
Would not consider male sterilization	2097	87	(85.3 – 88.6)

Table 2: Reasons for not considering male sterilization among those who would not consider (n=2,097)

Variables	Frequency	Percentage	Percentage (95% CI)
Against religion			
No	1824	87.0	85.0 - 88.8
Yes	273	13.0	11.2 - 15.0
Bad for man's health			
No	1827	87.1	85.2 - 88.8
Yes	270	12.9	11.2 - 14.8
Operation not safe			
No	1919	91.5	89.8 - 92.9
Yes	178	8.5	7.1 - 10.2
Less intrusive ways available			
No	1496	71.3	68.5 - 74.0
Yes	601	28.7	26.0 - 31.5
May want more children			
No	1612	76.9	74.2 - 79.3
Yes	485	23.1	20.7 - 25.8
May remarry someday			
No	2084	99.4	98.9 - 99.7
Yes	13	0.6	0.3 - 1.1
Costs			
No	2062	98.3	97.6 - 98.9
Yes	35	1.7	1.1 - 2.4
Loss of sexual function			
No	1969	93.9	92.4 - 95.1
Yes	128	6.1	4.9 - 7.6
Wife doesn't agree			
No	2003	95.5	94.0 - 96.6
Yes	94	4.5	3.4 - 6.0
Others			
No	1824	86.9	85.0 - 88.7
Yes	273	13.1	11.3 - 15.0

compared to those who disagreed. The second model shows that husbands who agree that women should be sterile have 2.12 times greater odds (95% CI: 1.571-2.866) of using sterile family planning compared to those who disagree with the statistical result that there is an association between the perception that women should be sterile due to childbirth and the use of sterile family planning

Table 3: Relationship model of perception of sterile contraception

Perception	**Sterilization**			**OR (95% CI)**	**OR (95% CI)**	**OR (95% CI)**
	No	**Yes**	**Total**	**Model 1**	**Model 2**	**Model 3**
	n (%)	n (%)	n			
Sterilizing a man is the same as being castrated.						
Disagree	5041(95.9)	217 (4.1)	5259	Reff	Reff	Reff
Agree	874 (95.4)	42 (4.6)	917	0.801 (0.521-1.232)	0.757 (0.505-1.135)	0.713 (0.461-1.101)
Don't know	2112 (97.4)	56 (2.6)	2168	1.015 (0.666-1.547)	0.962 (0.636-1.454)	1.008 (0.658-1.544)
A woman is a pregnant person, so she is the one who should be sterilized						
Disagree	4875 (96.5)	177 (3.5)	5052	Reff	Reff	Reff
Agree	1596 (93.2)	116 (6.8)	1712	2.358 (1.723-3.228)*	2.122 (1.571-2.866)*	2.144 (1.555-2.956) *
Don't know	1557 (98.6)	22 (1.4)	1579	0.470 (0.243-0.907)	0.548 (0.292-1.029)	0.547 (0.283-1.056)
Sterilized women may engage in promiscuity						
Disagree	7685 (96.2)	307 (3.8)	7991	Reff	Reff	Reff
Agree	128 (97.1)	4 (2.9)	132	0.581 (0.127-2.652)	0.576 (0.140-2.358)	0.573 (0.125-2.628)
Don't know	215 (97.8)	5 (2.2)	220	1.033 (0.447-2.388)	1.036 (0.423-2.537)	1.171 (0.481-2.852)
Contraception is a woman's business						
Disagree	5032 (95.8)	221 (4.2)	5253	Reff	Reff	Reff
Agree	2744 (96.9)	87 (3.1)	2831	0.828 (0.576-1.190)	0.838 (0.607-1.157)	0.941 (0.656-1.350)
Don't know	252 (97.2)	7 (2.8)	260	1.335 (0.591-3.013)	1.558 (0.731-3.321)	1.582 (0.656-3.811)
Age of Wife						
15-19	132 (100)	0 (0)	132	0.000 (0.000-0.000)*		0.000 (0.000-0.000)*
20-24	668 (100)	0 (0)	668	0.000 (0.000-0.000)*		0.000 (0.000-0.000)*
25-29	1202 (99.7)	4 (0.3)	1206	0.109 (0.026-0.460)*		0.111 (0.027-0.464)*
30-34	1566 (97.9)	34 (2.1)	1600	0.421 (0.222-0.798)*		0.413 (0.218-0.783)*
35-39	1793 (95.3)	87 (4.7)	1880	0.585 (0.351-0.976)*		0.598 (0.598-0.996)*
40-44	1477 (93.4)	105 (6.6)	1582	0.849 (0.574-1.255)		0.835 (0.564-1.237)

Perception	**Sterilization**			**OR (95% CI)**	**OR (95% CI)**	**OR (95% CI)**
	No	**Yes**	**Total**	**Model 1**	**Model 2**	**Model 3**
	n (%)	n (%)	n			
45-49	1189 (93.2)	86 (6.8)	1276	Reff		Reff
Age of Husband						
15-19	26 (100)	0 (0)	26	1.361 (0.327-5.657)		1.999 (0.461-8.664)
20-24	250 (100)	0 (0)	250	0.000 (0.000-0.000)*		0.000 (0.000-0.000)*
25-29	811 (99.8)	1 (0.2)	812	0.507 (0.106-2.431)		0.521 (0.107-2.539)
30-34	1315 (99.2)	10 (0.8)	1325	0.552 (0.213-1.427)		0.565 (0.219-1.456)
35-39	1565 (96.7)	53 (3.3)	1618	1.207 (0.637-2.287)		1.238 (0.645-2.377)
40-44	1582 (94.6)	90 (5.4)	1672	1.428 (0.836-2.439)		1.409 (0.828-2.399)
45-49	1530 (93.6)	104 (6.4)	1634	1.264 (0.779-2.052)		1.227 (0.754-1.995)
50-54	950 (94.4)	57 (5.6)	1006	Reff		Reff
Place of residence						
Village	4175 (96.9)	135 (3.1)	4310	Reff		Reff
City	3854 (95.5)	180 (4.5)	4034	0.967 (0.684-1.368)		0.958 (0.675-1.360)
Wife's education						
No education	153 (98.9)	2 (1.1)	154	Reff		Reff
Primary	2698 (96.5)	97 (3.5)	2795	2.826 (0.973-8.204)		2.9834 (0.981-8.781)
Secondary	4238 (96.6)	147 (3.4)	4386	3.214 (1.106-9.345)*		3.087 (1.024-9.307)*
Higher	939 (93.1)	70 (6.9)	1009	6.710 (2.141-21.023)*		6.128 (1.883-19.940)*
Husband's education						
No education	140 (98.1)	3 (1.9)	143	Reff		Reff
Primary	2767 (97.1)	83 (2.9)	2849	1.101 (0.233-5.200)		1.056 (0.212-5.249)
Secondary	4144 (96.3)	158 (3.7)	4302	1.461 (0.317-6.739)		1.139 (0.234-5.540)
Higher	978 (93.2)	72 (6.8)	1049	1.827 (0.378-8.818)		1.294 (0.254-6.597)
Wife's occupation						
No.	3431 (96.7)	118 (3.3)	3550	Reff		Reff
Yes	4597 (95.9)	197 (4.1)	4794	1.009 (0.753-1.354)		0.990 (0.735-1.332)
Husband's occupation						
No.	158 (97.8)	4 (2.2)	162	Reff		Reff
Yes	7871 (96.2)	312 (3.8)	8182	2.016 (0.634-6.414)		1.951 (0.618-6.162)
Welfare Index						

Perception	**Sterilization**			**OR (95% CI)**	**OR (95% CI)**	**OR (95% CI)**
	No	**Yes**	**Total**	**Model 1**	**Model 2**	**Model 3**
	n (%)	n (%)	n			
Poorest	1404 (98.1)	27 (1.9)	1435	Reff		Reff
Poorer	1646 (97.5)	43 (2.5)	1689	1.202(0.670-2.158)		1.140 (0.639-2.032)
Middle	1707 (95.9)	72 (4.1)	1780	1.966 (1.123-3.444)*		1.790 (1.020-3.140)*
Richer	1655 (95.6)	77 (4.4)	1731	1.703 (0.962-3.016)		1.540 (0.865-2.741)
Richest	1616 (94.4)	96 (5.6)	1712	1.540 (0.853-2.781)		1.345 (0.736-2.458)
Parity						
None	487 (100)	0 (0)	487	0.000 (0.000-0.000)*		0.000 (0.000-0.000)*
1-2 Children	4887 (98.5)	75 (1.5)	4962	0.222 (0.151-0.326)		0.218 (0.148-0.321)
> 2 children	2654 (91.7)	241 (8.3)	2895	Reff		Reff
Contraceptive method knowledge (wife)						
Low	3870 (97.2)	110 (2.8)	3980		Reff	Reff
High	4158 (95.3)	205 (4.7)	4363		1.215 (0.885-1.669)	1.037 (0.733-1.467)
Contraceptive method knowledge (husband)						
Low	3995 (98.5)	63 (1.5)	4058		Reff	Reff
High	4033 (94.1)	253 (5.9	4286		3.556 (2.447-5.166)*	3.273 (2.166-4.947)*
Source of information (wife)						
Radio						
No	7295 (96.3)	280 (3.7)	7576		Reff	Reff
Yes	733 (95.4)	35 (436)	768		1.052 (0.648-1.707)	1.048 (0.622-1.768)
TV						
No	3441 (96.4)	127 (3.6)	3567		Reff	Reff
Yes	4588 (96.1)	189 (3.9)	4776		0.913 (0.667-1.251)	1.017 (0.736-1.405)
Newspaper/magazine						
No	7098 (96.5)	261 (3.5)	7359		Reff	Reff
Yes	930 (94.5)	54 (5.5)	985		1.269 (0.837-1.923)	1.177 (0.739-1.877)
Source of information (husband)						
Radio						

Perception	**Sterilization**			**OR (95% CI)**	**OR (95% CI)**	**OR (95% CI)**
	No	**Yes**	**Total**	**Model 1**	**Model 2**	**Model 3**
	n (%)	n (%)	n			
No	7133 (96.2)	279 (3.8)	7412		Reff	Reff
Yes	895 (96.1)	36 (3.9)	932		0.789 (0.502-1.241)	0.827 (0.507-1.351)
TV						
No	3825 (96.2)	151 (3.8)	3977		Reff	Reff
Yes	4203 (96.2)	164 (3.8)	4367		0.684 (0.514-0.909)*	0.699 (0.515-0.949)*
Newspaper/magazine						
No	6894 (96.5)	251 (3.5)	7146		Reff	Reff
Yes	1134 (94.7)	64 (5.3)	1198		1.241 (0.857-1.797)	1.020 (0.682-1.526)

among women, after controlling for the variables of knowledge of contraceptive methods in wives and husbands, and sources of information in wives and husbands. Model 3 describes the relationship between the perception that women should be sterile due to childbirth and the use of sterile family planning in child bearing age, after controlling for the variables of age of wife and husband, residence, education of wife and husband, occupation of wife and husband, welfare index, parity, knowledge of contraceptive methods in wife and husband, and source of information in wife and husband. Husbands who agreed that women should be sterile had 2.14 times greater odds (95% CI: 1.555-2.956) of childbearing age using sterile family planning compared to those who disagreed. Wives' education and husbands' high contraceptive knowledge played an important role in increasing the odds of sterile family planning use among childbearing age.

Discussion

The results of the study show that although most respondents have used contraception (69%), the use of male sterilisation or vasectomy is still very low, at only 5.5% of all contraceptive users. This indicates that vasectomy is not yet a primary choice in society, even though acceptance of contraception is generally quite high. Furthermore, among those who use contraception other than sterilisation, only 44.2% have heard of vasectomy, while more than half (55.8%) have never heard of this method. These findings confirm that limited information and knowledge are fundamental barriers. The low level of exposure to information about vasectomy means that this method is not considered by most couples. Interestingly, however, even among respondents who had heard of vasectomy, most still refused to consider it. Of the total 2,409 respondents who had heard of vasectomy, only 13% were willing to consider it, while the other 87% refused. This means that basic knowledge alone is not enough to increase acceptance; there are other factors that influence attitudes towards vasectomy.

This is in line with global findings that indicate a gender imbalance in the use of sterile contraception, with women bearing a greater burden due to social norms that consider family planning to be a female responsibility.[4] Cultural factors, such as the perception that vasectomy reduces masculinity or interferes with work productivity, also inhibit male participation. A study in Turkey also found that although awareness of vasectomy was high (similar to the findings of this study, where 28.88% of husbands had heard of it), its adoption remained low due to misinformation and lack of counseling support.[11]

The main reasons for rejection were related to the desire to have more children and the belief that there were other methods of contraception that were simpler or less invasive. This shows that the permanent nature of vasectomy is an important consideration for respondents, especially those who are unsure about the number of children they want to have. Other factors, such as the belief that vasectomy is contrary to religion, has a negative impact on health, or causes loss of sexual function, also emerged, although in relatively small numbers. However, such negative perceptions still have the potential to reinforce doubts and create stigma in society. Furthermore, the low percentage of respondents who cited cost or their wife's refusal as reasons indicates that the main barriers are not economic or relationship-related, but rather individual perceptions regarding reproductive needs and the permanence of the method. In other words, objections to vasectomy are more influenced by psychosocial and cultural factors than medical or financial factors.

Based on the table regarding the reasons for not considering vasectomy among respondents who rejected this method, it appears that the most dominant factors were the availability of other contraceptive methods that were considered less invasive and the desire to have more children. A total of 28.7% of respondents stated that they chose other methods that were simpler than vasectomy, while 23.1% cited the reason that they still wanted to have more children. These two factors confirm that the main considerations in rejecting vasectomy are not medical or religious issues, but rather reproductive preferences and the availability of contraceptive alternatives that are considered more flexible.

In addition, some respondents rejected vasectomy on the grounds that it was contrary to their religion (13.0%) or dangerous to men's health (12.9%). These two reasons indicate that there are

still negative perceptions and misconceptions in society about vasectomy. Concerns about medical aspects are also evident from the 8.5% of respondents who consider the vasectomy procedure unsafe, even though scientific evidence shows that vasectomy is a simple procedure with minimal risks. This perception is most likely influenced by a lack of knowledge and exposure to accurate information about the procedure and side effects of vasectomy. The *Health Belief Model* theory explains that low perceived benefits and high perceived barriers (such as concerns about side effects or discomfort of the procedure) are the main causes.[12] Recent research in Indonesia suggests that community-based interventions, such as education through male religious or community leaders, can increase acceptance of vasectomy.[13] Therefore, approaches are needed that not only increase knowledge but also change perceptions and gender norms through programs that actively involve men in family planning.

Interestingly, only a small proportion of respondents cited reasons related to loss of sexual function (6.1%), rejection by their wife (4.5%), or cost factors (1.7%). These small figures indicate that concerns about sexual function and economic factors are not major obstacles, even though these issues often arise in public discourse. Meanwhile, other unclassified reasons emerged in 13.1% of respondents, indicating additional factors that may be more personal or contextual in nature, such as social pressure, stigma, or personal experience.

Only 0.6% of respondents cited the possibility of remarrying as a factor for refusal, so this aspect can be said to be almost irrelevant in the respondents' considerations. In general, this pattern shows that refusal of vasectomy is more influenced by ongoing reproductive needs and a preference for non-permanent contraceptive methods than by structural barriers such as cost or access to services. Low interest in vasectomy is influenced more by perceptual and socio-cultural factors than by medical or economic factors. Health education that emphasises the safety of the procedure, the absence of any impact on sexual function, and the explanation that vasectomy is the right choice for couples who feel they already have enough children, is important in increasing acceptance of this method. Additionally, involving both partners in the decision-making process is crucial, as decisions regarding contraception ultimately concern joint family planning.

The results show that the perceptions of husbands in couples who choose sterilization are still influenced by traditional gender norms. Although most husbands disagreed with the myth that vasectomy is the same as castration (4.1%) or that female sterilization encourages promiscuity (3.8%), a higher percentage agreed that "women are the ones who should be sterilized because they can get pregnant" (6.8%). This indicates that the burden of contraception is still unequally placed on women due to biological perceptions (pregnancy) associated with gendered responsibilities. This finding is in line with research in India which found that female sterilization is often considered "natural" because it is considered a natural consequence of women's reproductive role, while male sterilization is perceived as a threat to masculine identity.[14]

Statistical significance ($p < 0.05$) on the two perception variables of male sterilization equals castration and female sterilization reinforces the evidence that social stigma and gender construction are major barriers to male participation in sterile contraception. Negative perceptions of vasectomy reflect a fear of loss of virility, which was also found in the Malawi study.[15]Meanwhile, the belief that sterilization is a woman's responsibility shows how patriarchal norms continue to dictate contraceptive choices. Policy recommendations based on these findings include gender-based education to deconstruct vasectomy myths, and couples counseling interventions that emphasize shared responsibility in family planning.[13]

The results of the multivariate analysis in this study consistently showed that the husband's perception of a woman's obligation to undergo sterilization due to childbirth was a strong predictor of sterile contraceptive use among couples of childbearing age. After controlling for demographic and socioeconomic variables (model 1), knowledge and information variables (model 2), and their combination (model 3), this perception continued to show a significant association with a stable odds ratio of around 2.1-2.4 times. This finding corroborates the Gender and Power theory, which

explains how the social construction of gender roles affects the division of reproductive responsibilities.[16] Similar studies have also found similar patterns, where traditional gender norms that place reproduction as the domain of women are the dominant factor in the choice of sterile contraceptive methods.[17]

The high consistency of the odds ratio (OR > 2) in all three models indicates that the effect of gender perception is robust, independent of demographic factors, knowledge, or access to information. This indicates that family planning program interventions need to move beyond conventional approaches that only focus on improving knowledge or access to services. This finding is in line with policy recommendations for gender transformative approaches in family planning programs, including early gender equality education, active involvement of men in family planning counseling, and training of health care providers to address gender bias.[4] The policy implications of these findings emphasize the need for the integration of a gender perspective in every level of the national family planning program, from planning to evaluation, to create an enabling environment for a more equal sharing of contraceptive responsibilities between men and women.

The gender imbalance in the choice of contraceptive sterilization method in Indonesia, where women dominate (4.5%) compared to men (0.1%), is influenced by socio-cultural factors, health policies, and community perceptions. Culturally, contraceptive responsibility is still considered a female domain, resulting in greater social pressure on women to undergo sterilization.[4] Health policies and services also reinforce this inequality. In Indonesia, family planning programs focus more on women with more health workers training for tubectomy procedures, while vasectomy is less promoted. The lack of education on the safety and convenience of vasectomy as a non-surgical procedure (NSV) exacerbates this imbalance.[13] Thus, the disparity in sterilization in Indonesia reflects the need for policy reforms that address gender bias through a holistic approach, including education and changing perceptions of masculinity.

Traditional masculinity plays a huge role in the rejection of vasectomy. A real man is often associated with his ability to provide offspring. The existence of vasectomy stands in stark contrast to this. In Muslim-majority countries, vasectomy is strongly avoided because it conflicts with men's responsibility as head of the family.[13] Supported by the research of Hatesh *et al*.[18] where 95% of respondents in Pakistan showed a high reluctance to have a vasectomy for religious reasons and the perception of loss of sexual ability. This study emphasized that vasectomy is highly taboo and against a man's nature.[18] Although not all religious authorities prohibit the application of vasectomy in households, traditional beliefs are more widely heard and believed by the common people. The absence of dialog between religious leaders and medical personnel also exacerbates the misunderstanding of the use of vasectomy.[19]

In a patriarchal culture, the perception that a man undergoing a vasectomy means he has been castrated is very strong, especially in communities with very conservative traditions of masculinity. This view creates a negative perception of vasectomy, where having a vasectomy will remove a man's masculinity or sexual ability. This view is in line with Sehnur's research which found that vasectomy is not only a reproductive health practice in controlling pregnancy but is also considered to touch a man's masculinity identity.[20] This triggers *panic masculinity* which causes resistance to male contraception. Many PUS, especially men, are reluctant to have a vasectomy for fear of losing their masculine identity.[20]

Vasectomy is perceived as a form of weakness that is incompatible with the role of dominance that should be performed by a man. Msoka *et al* showed that the perception of the husband as the king of the family is very much against the idea of voluntary sterility with vasectomy.[21] Men who choose the concept of sterilization in this way are considered weak and irresponsible.[18] The fear of losing control and power over their wives is the main reason for negative perceptions that lead to rejection of vasectomy.[21] The study of Pallangyo *et al*.[22] also shows that the fear of being rejected and not respected by the community is also one of the

reasons for the rejection of vasectomy use. This rejection of vasectomy does not only come from the husband but also from the wife. Msoka and Pallangyo *et al*.[23] study also noted that women also tend to refuse their partner's sterilization because they consider it socially embarrassing. The reason for this is the fear of the community's perception of the husband and his family.[24]

Besides the negative views, there are also some positive views on the use of vasectomy in society. Nicholas *et al*.[25] raised the topic of positive masculinity where men who choose vasectomy are considered responsible people. Where masculinity is not determined by the number of children but rather his role as a protector and supporter of the family. Stevenson, *et al.*,[26] in their research also stated that men who are actively involved in global family planning programs are men who participate in vasectomy programs. Thus, the narrative that vasectomy is a safe and honorable means of sexual control is accepted by society.

The findings of this study are in line with Choi's study,[27] which emphasized the role of education in facilitating more informed contraceptive method selection, particularly among more educated couples who are more likely to be aware of and utilize sterilization methods. Moon,.[28] also showed that women's education significantly influenced the decision to use sterilization methods. In addition, Irawaty and Gayatri also identified that education is a crucial factor in contraceptive decision-making, where women with higher levels of education have better access to information, and thus more control in choosing the appropriate method for family planning.[29] Knowledge of available method options reinforces the influence of education on contraceptive choice. As found by Sharma, a higher level of knowledge among both partners can facilitate the choice of contraceptive method, as they are more likely to know the side effects and benefits of it.[30]

Furthermore, Johnson *et al*.[31] and Mohsen *et al*.[32] provide insights into how education and knowledge can influence contraceptive decisions, particularly when viewed through a Health Belief Model (HBM) perspective. The application of the HBM suggests that women with higher levels of education are more likely to understand and manage the potential risks of contraception. Perceived benefits of contraception (such as health benefits and family planning control) were considered more than perceived barriers (such as side effects or difficulty in use). These women showed higher levels of self-efficacy in choosing contraceptive methods, suggesting that education increases confidence in managing reproductive health.[31] In Mohsen *et al*.[32] this study applied HBM to explore mothers' beliefs about birth spacing and contraceptive use. They found that after the implementation of an HBM-based intervention, women's beliefs about contraception improved significantly. Specifically, women in this study indicated an increase in perceived benefits of contraceptive use, such as improved maternal health, and a decrease in perceived barriers, such as difficulty in accessing contraception.

The importance of reproductive health literacy is increasingly seen as a critical factor that can strengthen contraceptive decisions. With increased knowledge of the benefits and risks of different contraceptive methods, couples are better able to make informed and confident decisions. Based on HBM, better literacy reduces perceived barriers and increases understanding of risks, ultimately strengthening the decision to choose the best contraceptive method. Therefore, theory-based interventions that educate individuals about the benefits, risks and alternatives of contraception can empower couples to make better decisions.

Limitations

This study's cross-sectional approach is one of its limitations since it makes it impossible to prove a link between sterilization decisions and perceptions. Recall bias may be introduced by the use of self-reported data from the 2017 IDHS, and the results' generalizability may be constrained by the low overall prevalence of sterilization, especially among men. Furthermore, the research could not completely account for unmeasured sociocultural and healthcare system characteristics that might affect sterilization decisions, such as provider biases or geographical variations in access.

Conclusions

This study shows that gender inequality in the use of sterile contraceptive methods in Indonesia is still very high, with the dominance of women in sterilization practices and minimal participation of men. The main factors influencing this condition are socio-cultural constructions of masculinity, negative myths about vasectomy, and the perception that reproductive responsibilities are entirely the burden of women.

Multivariate analysis showed that gender perceptions that place women as mandatory sterilizers remained a significant factor even after controlling for knowledge and demographic variables. This finding indicates that an information-based approach is not enough, but must be accompanied by a transformation of social norms and a paradigm shift in gender roles.

The policy implications of these findings are clear: family planning programs in Indonesia must transform from conventional approaches to gender equality-based approaches. Stronger public education, involvement of community and religious leaders in healthy masculinity campaigns, increased access to easy and safe vasectomy services, and training of health workers to overcome gender bias in contraceptive services are needed. Only with a holistic, integrative and transformative approach can the goal of equal, inclusive and equitable family development be achieved.

Competing interests

There are no competing interests.

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Authors contribution

E.K. was responsible for the conceptualization of the study, development of the methodology, and overall supervision. Y.A. conducted field data collection and contributed to formal data analysis. A.S. performed the literature review and assisted in drafting the initial manuscript. A.R. handled statistical analysis and interpretation of the findings. S.Z.N.H. and S.S.K contributed to manuscript review, final editing, and policy implication analysis. All authors have read and approved the final version of the manuscript for publication.

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