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# Female healthcare professionals' knowledge of vasectomy and attitudes toward partner uptake: A cross-sectional analysis of physicians and nurses

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## Abstract

**Background:** Permanent contraception is a key method used by individuals who have completed their families or do not seek to have children. Common methods include bilateral tubal ligation in females and vasectomy in males. Vasectomy involves cutting and sealing each of the vas deferens to prevent sperm movement, leading to sterilisation. Despite being safer, more effective, relatively cheaper, and associated with fewer complications, vasectomy is not as commonly utilised as bilateral tubal ligation. The reasons for this disparity are unclear.

**Objective:** The study assessed female doctors and nurses/midwives' knowledge of vasectomy and determined their acceptance of this procedure as a permanent contraceptive method for their male partners.

**Methods:** This cross-sectional study involved the completion of self-administered online questionnaires by 308 female doctors and nurses/midwives at the Korle-Bu Teaching Hospital. Data were collected in Microsoft Excel and analysed using IBM SPSS version 25. The data was analysed by using descriptive statistics, Chi-square tests, and multiple logistic regression. A p-value < 0.05 was considered statistically significant.

**Results:** The 308 participants had a mean age of  $32.7 \pm 6.6$  years. Nurses/midwives comprised 55.8%, and the rest were doctors. Only 33.8% of the participants demonstrated good knowledge of vasectomy (defined as a knowledge score greater than 80%). Thirty-nine percent were willing to allow their partners to undergo a vasectomy. Factors associated with this willingness included their inclination to recommend vasectomy as a contraception method generally, adjusted odds ratio of 13.01 (95% CI 4.66, 36.33), and having family members indifferent about their partners undergoing vasectomy, adjusted odds ratio of 2.01 (95% CI 1.02, 3.97).

**Conclusion:** There is low knowledge of vasectomy among female doctors, nurses and midwives. Only about two-fifths of female doctors and nurses/midwives were willing to allow their male partners to undergo the procedure, and factors associated with this willingness included their inclination to generally recommend vasectomy as a contraception method and family indifference towards the procedure. More education on vasectomy is needed, including its incorporation into medical and nursing training curricula.

**Keywords:** Vasectomy, Female healthcare professionals, Partner attitudes, Knowledge

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## INTRODUCTION

Unintended pregnancy rates varied widely across geographical regions, from 35 per 1000 women in

Europe and Northern America to 91 per 1000 women in sub-Saharan Africa in 2015 - 2019. In this same period, the global abortion rate remained relatively stable at 39 per 1000 women. Notably, the proportion of unintended pregnancies ending in abortion increased from 51% to 61% over the same period [1,2]. These high rates of unplanned pregnancies and, consequently, unsafe abortions contribute

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significantly to poor neonatal and maternal health outcomes [3,4]. For couples who have completed their families, permanent contraception methods offer a reliable solution to prevent unplanned pregnancies. Vasectomy is a surgical procedure that prevents the normal flow of sperm by occluding the vas deferens, serving as a safe method for male sterilisation [5]. Female sterilisation, or tubal ligation, is an alternative permanent method. Compared to female sterilisation, vasectomy is markedly less invasive, typically performed under local anaesthesia in an outpatient setting, resulting in reduced surgical risks and a shorter recovery period. It is also more cost-effective. Despite its effectiveness, safety, and relative affordability, vasectomy remains underutilised compared to female sterilisation methods. Data from the United States 2006 - 2008 National Survey of Family Growth revealed that among married individuals aged 15 - 44 years, 13.1% of men reported having a vasectomy, while 21.1% of women reported having a tubal ligation. Interestingly, vasectomy was more common among those with higher education and income, whereas tubal sterilisation was more prevalent among those with lower incomes and educational levels [7]. In Ghana, about 30% of currently married women want no more children. Incidentally, the most commonly used modern methods are injectables and implants (8% each), pills (4%) and female sterilisation (3%).

In contrast, less than 0.5% of the partners of women opt for vasectomy [8]. Studies have also shown varying attitudes towards vasectomy in Ghana. A qualitative study in the Western and Central regions revealed that many women opposed vasectomy, citing religious reasons, concerns about male promiscuity, fears of reduced sexual gratification, and beliefs that the procedure weakens men physically and reduces their productivity [9]. However, another study in the Central Region found that while initial knowledge of vasectomy was low (32%), after receiving information, 66.3% of women preferred their partners to undergo vasectomy compared to 50% before the study [10]. Modern studies have also focused on healthcare workers' knowledge and perceptions regarding vasectomy and other contraceptive methods. This emphasis is crucial because healthcare professionals are presumed to have more comprehensive knowledge about reproductive health and contraception. Their understanding, attitudes, and recommendations can significantly influence patients' contraceptive choices and can provide insights into potential barriers to vasectomy acceptance within the medical community itself. This study sought to establish the perceptions of female doctors and nurses concerning the uptake of vasectomy as a permanent method of contraception, potentially influencing its underutilisation.

## MATERIALS AND METHODS

### Study design and setting

This analytical cross-sectional study was conducted among female doctors and nurses/midwives at Korle Bu Teaching Hospital - the largest healthcare facility in Ghana and the

primary tertiary referral centre for the country's southern region. KBTH is a public teaching hospital in the Ablekuma South Metropolitan Assembly, Accra, affiliated with the University of Ghana Medical School (UGMS). Established on October 9th, 1923, KBTH is currently the third-largest referral centre in Africa. The hospital has about 2000 beds in capacity, 21 clinical and diagnostic departments, and three centres of excellence. This expansive and diverse clinical setting, therefore, allowed access to a wide range of female healthcare professionals across various specialties and departments.

### Study population

The study population consisted of female doctors and nurses at Korle Bu Teaching Hospital. The inclusion criteria were

- Being female doctors, nurses and midwives
- Being currently married or in a sexual relationship

Female doctors, nurses, or midwives whose partners had already undergone vasectomy were excluded.

### Sample size determination and sampling method

The sample size for this study was determined using the Cochran formula:

$$n = [Z^2\alpha/2 * p(1-p)] / d^2$$

Where:

n = required sample size

$Z^2\alpha/2 = 1.96$  (for 95% confidence level)

p = proportion of the study sample who accept vasectomy as a permanent procedure

d = absolute error or precision as 0.05

From a study by Ohn Mar et al. [11], 76% of clinical medical students accepted vasectomy as a permanent method of contraception,  $p = 0.76$ .

Using this formula, the minimum required sample size was calculated to be 280. The number was increased by 10% to account for potential non-response, resulting in a final targeted sample size of 308. A purposive sampling technique was employed to recruit participants for this study. Female doctors and nurses were selected from various departments across Korle-Bu Teaching Hospital.

### Data collection method and instruments

An online questionnaire was developed using Google Forms and distributed via various digital platforms accessible to female doctors and nurses at Korle-Bu Teaching Hospital. Responses were collected electronically through a designated email address. Respondents used their initials rather than their full names to ensure participant anonymity. All data retrieved was stored on a password-protected personal laptop to maintain confidentiality and data security.

### Data processing and analysis

Initial data organisation and summarisation were performed using Microsoft Excel 2010. Subsequent statistical analysis was conducted using IBM SPSS software (version 25). The study examined several key variables. The primary

outcome variable was the knowledge of female doctors and nurses regarding vasectomy. The secondary outcome variable was the acceptance of vasectomy by male partners of female doctors and nurses as a permanent contraceptive method. Determinant variables included socio-demographic characteristics such as age and occupation, as well as obstetric and gynaecological characteristics, particularly parity and vasectomy-specific characteristics such as source of information on vasectomy.

The data analysis proceeded in three stages. First, univariate analysis was conducted to determine the frequencies and percentages of participant responses, providing a descriptive overview of the data. Subsequently, bivariate analysis was performed using the chi-square test. This allowed for the examination of associations between the primary outcome variable (female doctors' and nurses' acceptance of vasectomy by their male partners as a permanent method of contraception) and various determinant variables, including the socio-demographic, obstetric, and gynaecological characteristics of the respondents. Finally, to adjust for possible confounding factors, multiple logistic regression was used to determine the factors associated with female doctors' and nurses' acceptance of vasectomy by their male partners as a permanent method of contraception. Throughout all statistical analyses, a p-value < 0.05 was considered statistically significant.

## RESULTS

The study included 308 female healthcare professionals, with a mean age of 32.7 (SD 6.6) years. The majority (54.2%, n = 167) were between 30 and 39 years old. Nurses/midwives comprised 55.8% (n = 172) of the participants, while doctors comprised 44.2%. Most participants (58.8%, n = 181) were married, and most (94.5%, n = 291) identified as Christian. A significant proportion (71.9%, n = 164) were living with their partners (Table 1). Regarding parity, 43.8% (n = 135) of participants had no children, while 22.7% (n = 70) had two children. Among participants with children, 66.5% (n = 107) had fewer than three children with their current partner. Over half of the participants (61.4%, n = 189) reported using contraception previously, with pills 25.4% (n = 48) and IUDs (31.2%, n = 59) being the most common methods (Table 2). Only 14.9% (n = 46) of participants knew a male who had undergone a vasectomy. The primary sources of information about vasectomy were literature (48.7%, n = 150) and other health workers (34.4%, n = 106). Regarding family approval of vasectomy, 37.7% (n = 116) believed their families would disapprove, while 31.8% (n = 98) were unsure (Table 3). The study assessed vasectomy knowledge using a 14-item questionnaire. Only 33.8% (n = 104) of participants scored above 80%, indicating good knowledge. Most participants correctly identified vasectomy as a permanent (94.5%, n = 291), effective (95.8%, n = 295) method, and it does not affect sexual performance (89.9%, n = 277). However, there were

notable knowledge gaps. For instance, 62.7% (n = 193) incorrectly believed all vasectomies involved a scalpel, and 57.8% (n = 178) could not correctly identify the typical duration of the procedure (Tables 3 and 4). Only 39% (n = 120) of participants were willing to allow their partners to undergo a vasectomy. The main reasons for opposition included concerns about promiscuity (17.9%), religious beliefs (12.9%), and the desire for more children in the future (10.1%) (Tables 3 and 5). In the adjusted analysis, participants who were willing to recommend vasectomy as a contraceptive option had 13 times higher odds of accepting it for their partners compared to those who were not willing to recommend it, [aOR 13.01 (95% CI 4.66, 36.33)].

Participants who perceived their families to be indifferent towards vasectomy had twice the odds of accepting compared to those who did not know whether their family members would approve of it or not [aOR 2.01 (95% CI 1.02, 3.97)]. No statistically significant associations were found between vasectomy acceptance and the department professionals belonged to, the cadre of the professional, [aOR 1.23 (95% CI 0.65, 2.36)], source of vasectomy information, or vasectomy knowledge score, [aOR 1.12 (95% CI 0.59, 2.14)] (Table 6).

Table 1. Socio-demographic characteristics of participants

Variable	Frequency (n = 308)	Percentage
Age, in years: Mean (±SD)		32.7 (± 6.6 years)
Age, in years		
20-29	102	33.1
30-39	167	54.2
40+	39	12.7
Department		
O&G	70	22.7
Surgery	103	33.4
Child Health	49	15.9
Medicine	57	18.5
Polyclinic	15	4.9
Dental	5	1.6
Other	9	2.9
Occupation		
Doctor	136	44.2
Nurse	172	55.8
Relationship Status		
Single	80	26
Married	181	58.8
In a relationship	47	15.3
Living partner		
Yes	164	71.9
No	64	28.1
Religion		
Christian	291	94.5
Islam	15	4.9
Agnostic	2	0.6

Table 2. Obstetric and contraceptive characteristics of participants

Variable	Frequency (n = 308)	Percentage
<b>Parity</b>		
0	135	43.8
1	45	14.6
2	70	22.7
3+	58	18.8
<b>Participants with children</b>		
< 3	115	66.5
>= 3	58	33.5
<b>Used contraception</b>		
Yes	189	61.4
No	119	38.6
<b>Past Contraceptive Method</b>		
Pills	48	25.4
IUD	59	31.2
Injectables	19	10.1
Implant	24	12.7
Condom	26	13.8
BTL	2	1.1
Natural	11	5.8

Table 3. Vasectomy-specific characteristics of participants

Variable	frequency	Percentage
<b>Knowledge of any male who has had a vasectomy</b>		
Yes	46	14.9
No	262	85.1
<b>Source of information about vasectomy</b>		
Mass Media	25	8.1
Friends & Family	3	1.0
Health workers	106	34.4
Literature	150	48.7
School	24	7.8
<b>Perceived family approval of vasectomy</b>		
I do not know	98	31.8
They will approve of it	13	4.2
They will be indifferent	81	26.3
They won't approve of it	116	37.7
<b>Willing to recommend vasectomy to others</b>		
Yes	235	76.3
No	73	23
<b>Vasectomy knowledge score &gt; 80%</b>		
Yes	104	33.8
No	204	66.2
<b>Participant's desire for partner or future partner to undergo vasectomy</b>		
Yes	120	39
No	188	61

Table 4. Vasectomy knowledge questionnaire: item analysis and response patterns

Vasectomy knowledge assessment items	Correctly answered: n (%)
Vasectomy increases the risk of Prostate cancer	213 (69.2)
Vasectomy is the same as castration	235 (76.3)
Will a man need to use another contraceptive method after a vasectomy is done to prevent pregnancy in the first 3 months?	183 (59.4)
Vasectomy is a permanent method of contraception	291(94.5)
Vasectomy affects sexual performance	277 (89.9)
Vasectomy can cause Erectile dysfunction	252 (81.8)
Performing a vasectomy will reduce testosterone levels	197 (64.0)
All vasectomies involve the use of a knife or scalpel	115(37.3)
Vasectomy does not prevent sexually transmitted infections	280 (90.9)
How long does a vasectomy procedure usually take?	130 (42.2)
Vasectomy has less complications than Bilateral tubal ligation	135 (43.8)
Vasectomy is an easily reversible procedure	237 (76.9)
Vasectomy is for couples who want to have more children	303 (98.4)
Vasectomy is a very effective procedure	295 (95.8)

Table 5. Reasons influencing female doctors and nurses' opposition to partner vasectomy

Reasons for not accepting vasectomy	n (%)
No reason	69 (36.7)
He will be promiscuous	25 (13.3)
It is against my religious beliefs	18 (9.6)
We may want to have more children in the future	14 (7.5)
Not necessary (I will do BTL, I'm in my menopause, there are less invasive options available, I will do family planning)	12 (6.4)
It is expensive	9 (4.8)
I do not like it	9 (4.8)
The procedure has too many complications	9 (4.8)
He will lose his physical strength	6 (3.2)
It's irreversible	4 (2.1)
My partner won't be interested	4 (2.1)
Personal preference	3 (1.6)
Haven't thought about it	3 (1.6)
It's his decision	2 (1.1)
It might undermine his ego	1 (0.5)

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## DISCUSSION

Vasectomy is a safe and effective surgical procedure for male sterilisation, involving the occlusion of the vas deferens to prevent sperm flow [5]. This study evaluated the knowledge of vasectomy among female doctors and nurses and assessed their acceptance of this method as a permanent contraceptive option for their male partners. Our findings reveal important insights into healthcare professionals' perspectives on vasectomy and highlight areas for improvement in education and promotion of this contraceptive method.

### Knowledge of vasectomy

Our study revealed limited knowledge of vasectomy (33.8%) among participants, primarily sourced from the literature. This finding contrasts with research from diverse cultural contexts. In Nigeria, studies among health professionals showed higher vasectomy knowledge among health workers [12,15]. Similarly, research from Latin America, particularly among medical students, demonstrated varied but generally more comprehensive understanding across different countries [16]. While our Ghanaian sample showed limited knowledge, the discrepancy might be attributed to differences in population characteristics, educational curricula and information dissemination strategies across various healthcare systems. Our study also revealed knowledge gaps similar to those in less-resourced contexts. These gaps may reflect participants' professional backgrounds; most of the study participants were nurses with limited specialised training. Only 42.2% (n = 130) correctly identified the vasectomy procedure duration, and merely 43.8% (n = 135) recognised its lower complication rate compared to bilateral tubal ligation (BTL). This is consistent with a study where non-surgical residents demonstrated similar knowledge limitations compared to the surgical professionals, although overall knowledge was high in their study [17].

### Acceptance of vasectomy

Compared to tubal ligation, vasectomy remains underutilised despite its effectiveness. Notably, vasectomy is more commonly observed among individuals with higher education and income in high-resource settings [7]. Our study, however, presents a remarkable contrast, which highlights that higher education does not correlate with greater acceptance of vasectomy in low-resource settings. Despite being healthcare professionals with advanced medical knowledge, 61% of participants were unwilling to consider vasectomy for their partners. This finding aligns with a study conducted in Nigeria among female health workers, where only 21.0% of the respondents would encourage their spouses or partners to undergo vasectomy after completion of family size [18]. In another Nigerian study, despite the reasonable level of knowledge among their respondents, acceptance of vasectomy as a contraceptive method also remained low. A combined 60% of respondents would not recommend vasectomy to patients or were unsure about recommending it [12].

This discrepancy between professional status and personal acceptance of vasectomy was attributed to several factors in this study: a lack of clear motivation (36.7%, n = 69), fear of promiscuity by partners (13.3%, n = 25), religious influences (9.6%, n = 18), desire for more children (7.5%, n = 14), irreversibility and personal preference for reversible methods (2.1%, n = 4). These correlate with several sociocultural, religious, and psychological reasons reported for vasectomy aversion in multiple studies in Nigeria [14,15]. Interestingly, while our study focused on practising female healthcare professionals, it is worth noting the contrast with medical students' attitudes towards vasectomy. Although not yet fully-fledged health workers, medical students are immersed in the medical field and often demonstrate a different pattern of acceptance. Studies have shown that medical students' acceptance of vasectomy is typically less influenced by sociocultural factors and more closely aligned with their knowledge of the procedure [19,20]. This suggests that their views are shaped primarily by the scientific information they receive during their training. The researchers, however, acknowledged that despite good knowledge and acceptance, undetected variables may influence this decision and are worth investigating.

### Factors influencing vasectomy acceptance

Two key factors were significantly associated with the acceptance of vasectomy among female healthcare professionals for their partners. Firstly, participants who were willing to recommend vasectomy as a contraceptive method were 13 times more likely to accept it for their partners compared to those who were not willing to recommend it. This strong association suggests that overcoming personal biases to recommend vasectomy professionally may also facilitate personal acceptance. Secondly, participants who perceived their families to be indifferent towards vasectomy were twice as likely to accept it compared to those who did not know whether their families would approve or disapprove of it. This finding underscores the persistent influence of family attitudes on contraceptive choices, even among healthcare professionals. Notably, our study found no statistically significant associations between vasectomy acceptance and factors such as the department they worked in, the cadre of the professional, the source of vasectomy information, or the vasectomy knowledge score. This lack of association between knowledge and acceptance aligns with our earlier discussion about the disconnect between clinical knowledge and personal acceptance of vasectomy. It reinforces the understanding that sociocultural factors, rather than mere knowledge, play a crucial role in the aversion to vasectomy.

This study was limited to female health workers in Korle Bu Teaching Hospital and may not represent all hospitals in Ghana or accurately reflect knowledge and acceptance of vasectomy among the general population. Self-reported data through online questionnaires could introduce

response bias, while the sample, predominantly young nurses/midwives, might skew attitudinal findings.

### Conclusion

This study evaluated the knowledge of vasectomy among female doctors and nurses and assessed their acceptance of this method as a permanent contraceptive option for their male partners. Our findings reveal that both knowledge and acceptance of vasectomy were generally low among the study population. A significant proportion of female healthcare professionals expressed reluctance towards their partners undergoing vasectomy, which may contribute substantially to the underutilisation of this contraceptive method among couples. Two key factors were found to be associated with the willingness of female doctors and nurses to consider vasectomy for their partners: their likelihood to recommend vasectomy as a contraceptive method to others and the presence of indifferent family views towards vasectomy. These findings underscore the complex interplay of personal, professional, and social factors influencing attitudes toward vasectomy among female healthcare providers.

These results highlight the need for improved education about vasectomy among healthcare professionals, as well as broader efforts to address cultural and social barriers to its acceptance. Future interventions should focus on enhancing knowledge, challenging misconceptions, and promoting open discussions about vasectomy as a viable contraceptive option, both within the healthcare community and the broader population.

### DECLARATIONS

#### Ethical consideration

This study was conducted per established ethical guidelines. Administrative approval was obtained from the Korle-Bu Teaching Hospital (approval number: ADM/00114/2022). Furthermore, the research protocol was reviewed and approved by the University of Ghana Medical School Department of Community Health Research Committee (Approval ID: UGMS-CHDRC/071/2023). These approvals ensured that the study adhered to institutional and ethical standards for conducting research involving human subjects

#### Consent to publish

All authors agreed on the content of the final paper.

#### Funding

None

#### Competing Interest

The authors declare no conflict of interest.

#### Author contribution

AOK and BOT designed and conducted this study. AOK, BOT, GA, TMS, BT, NM, and MK did data analysis and interpretation. The manuscript was drafted by AOK, BOT, and TMS and reviewed for

intellectual content by BT, NM, and MK. All authors read and approved the final version of the manuscript.

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### Availability of data

Data is available upon request to the corresponding author.

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