

Original Research Article

Male Factor Infertility: Knowledge, Attitude, and Health-Seeking Behavior of Men in a Cosmopolitan Setting - A Cross-Sectional Study in Calabar, Cross River State, Nigeria

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Abstract: Background: Male factor infertility contributes to nearly half of all cases of couple infertility globally, yet men's knowledge, attitude, and health-seeking behavior towards it remain understudied in Sub-Saharan Africa, where socio-cultural norms often place the burden of infertility on women. This study assessed the knowledge, attitude, and health-seeking behavior of men towards male factor infertility in Calabar, a cosmopolitan capital city in Cross River State, Nigeria. Methods: A descriptive cross-sectional study was conducted among 384 adult men aged 18–60 years, selected by multistage sampling across the two urban local government areas of Calabar metropolis. Data were collected using a semi-structured, interviewer-administered questionnaire covering sociodemographic characteristics, knowledge of male infertility, attitude towards it, and health-seeking behavior. Data were analyzed using SPSS version 26, with descriptive statistics and chi-square tests of association at a 5% significance level. Andersen's Behavioral Model of Health Services Use guided the analysis of predisposing, enabling, and need-based determinants of health-seeking behavior. Results: Overall, 24.0% of respondents demonstrated good knowledge, 41.8% fair knowledge, and 34.2% poor knowledge of male factor infertility. While 61.7% agreed that men should have semen analysis when a couple fails to conceive, 46.9% still viewed male infertility as a source of shame, and 38.3% believed traditional or spiritual remedies could cure it. Among men who had ever had fertility-related concerns, only 31.5% first sought care at a hospital or fertility clinic, while the remainder consulted traditional healers (24.8%), religious/spiritual centres (19.6%), patent medicine vendors (15.2%), or sought no care at all (8.9%). Educational attainment and knowledge level were significantly associated with orthodox health-seeking behavior ($p < 0.05$). Conclusion: Despite residing in a cosmopolitan urban setting with access to modern health facilities, men in Calabar demonstrate suboptimal knowledge and predominantly non-orthodox health-seeking behavior regarding male factor infertility, driven by persistent stigma and socio-cultural beliefs. Targeted male-focused reproductive

health education and integration of male infertility services into routine primary and andrology care are recommended.

Keywords: Male infertility; Knowledge, attitude and practice; Health-seeking behavior; Cosmopolitan setting; Calabar; Nigeria

INTRODUCTION

Infertility, defined as the failure to achieve a clinical pregnancy after twelve months or more of regular, unprotected sexual intercourse, affects an estimated 186 million people worldwide and remains a significant global reproductive health and public health concern [1,2]. Global Burden of Disease analyses indicate that the age-standardized prevalence of male infertility has risen steadily over the past three decades, with the male-specific global prevalence estimated at over 55 million cases in 2021, and with Western Sub-Saharan Africa recording among the highest age-standardized prevalence and disability rates of male infertility of any region [1,3,4].

Contrary to longstanding societal assumptions that infertility is exclusively a female reproductive health problem, male factors are now recognized to contribute to approximately 40–50% of all cases of couple infertility, either in isolation or in combination with female factors [5,6]. Recognized causes of male infertility range from correctable urological conditions such as varicocele, which is present in up to 40% of men presenting with primary infertility, to obstructive and non-obstructive azoospermia, endocrine disturbances, genital tract infections, erectile dysfunction, and lifestyle-related factors such as smoking, alcohol use, and occupational heat exposure [6–9].

In many Sub-Saharan African settings, deep-rooted pronatal social norms place a high premium on childbearing as a marker of marital success, adult identity, and masculinity, yet these same norms tend to disproportionately assign blame for childlessness to women, even in couples where the male partner is the identified or contributing cause [10,11]. Qualitative accounts from The Gambia, Malawi, and other African settings describe how a diagnosis of male infertility can threaten men's sense of masculinity, trigger internalized stigma, social isolation, and psychological distress, and discourage men from disclosing fertility concerns or presenting for care [10,12,13]. A systematic review of infertility-related stigma across Africa further noted that men's experiences of infertility remain comparatively under-researched relative to women's, limiting the evidence base needed to design gender-responsive reproductive health interventions [13].

In Nigeria, available evidence on male knowledge and perception of infertility, though still limited, paints a picture of persistent misconceptions and low awareness. A cross-sectional survey among adult males in Ibadan found that less than half of respondents could correctly define infertility, and a substantial minority still attributed it to witchcraft or other supernatural causes [14,15]. A similar cross-sectional survey among infertile men attending clinics in Lagos found that only about one in nine men were aware that infertility

could be a male factor problem [16]. In the South-South geopolitical zone, a tertiary-institution-based survey similarly reported suboptimal knowledge and attitude towards male infertility among staff and associated populations [17]. Beyond clinic-based or institutional populations, however, there remains a paucity of data describing knowledge, attitude, and health-seeking behavior towards male infertility among men in the general population of urban, cosmopolitan Nigerian cities such as Calabar.

Calabar, the capital of Cross River State, is a rapidly urbanizing, cosmopolitan city that hosts a culturally and ethnically diverse population, a growing private and public health sector, and an active tourism and administrative economy that draws residents from across Nigeria and beyond. This cosmopolitan character creates a setting in which exposure to modern biomedical health information coexists with strongly held traditional and religious beliefs about fertility and childbearing, making it a valuable context in which to examine how urbanization, education, and socio-cultural belief systems jointly shape men's knowledge, attitude, and health-seeking behavior regarding male factor infertility [11,18]. Where men do act on fertility concerns, evidence from Nigerian studies indicates that a substantial proportion first seek care from traditional or spiritual healers rather than orthodox health facilities, a pattern associated with delayed diagnosis, prolonged suffering for couples, and increased cost of eventual treatment [19–21].

This study was therefore designed to assess the level of knowledge, attitude, and health-seeking behavior of men towards male factor infertility in Calabar metropolis, and to identify the sociodemographic and health-system determinants of orthodox health-seeking behavior, using Andersen's Behavioral Model of Health Services Use as a guiding analytical framework [22,23]. Findings are intended to inform the design of targeted, male-inclusive reproductive health education and service-delivery strategies in Calabar and comparable cosmopolitan Nigerian settings.

METHODS

Study Design and Setting

This was a descriptive cross-sectional study conducted in Calabar metropolis, comprising Calabar Municipality and Calabar South Local Government Areas of Cross River State, Nigeria. Calabar is the administrative capital of Cross River State and one of the most cosmopolitan cities in the South-South geopolitical zone, characterized by a mixed population of indigenes, students, traders, and civil servants.

Study Population

The study population comprised adult men aged 18–60 years, resident in Calabar metropolis for at least six months prior to the study, and who provided informed consent to participate. Men who were unable to communicate in English or the local language, or who had a pre-existing diagnosis of a condition precluding reproduction (e.g., prior vasectomy, bilateral orchiectomy), were excluded.

Sample Size and Sampling Technique

The minimum sample size was determined using the Cochran formula for cross-sectional studies, based on an estimated proportion of good knowledge of male infertility of 50% , a 5% margin of error, and a 95% confidence level, yielding a minimum sample size of 384 after adjustment for a 10% non-response rate. A multistage sampling technique was employed: in stage one, the two urban local government areas were purposively selected; in stage two, wards were selected by simple random sampling; in stage three, streets/enumeration areas were selected by systematic sampling; and in the final stage, households and eligible male respondents were selected by systematic random sampling, with one eligible man interviewed per household.

Data Collection Instrument

Data were collected using a semi-structured, interviewer-administered questionnaire adapted from previously validated instruments used in comparable Nigerian and Sub-Saharan African studies on male infertility knowledge, attitude, and health-seeking behavior [14,16,17]. The instrument comprised four sections: (i) sociodemographic characteristics, (ii) knowledge of male factor infertility (causes, definition, and risk factors), (iii) attitude towards male infertility and male involvement in fertility care, and (iv) health-seeking behavior, including first point of call for fertility-related concerns and reasons for care choices. The questionnaire was pretested among 30 men in a comparable but non-study neighborhood, and content validity was reviewed by public health and reproductive health experts.

Scoring and Theoretical Framework

Knowledge was assessed using a set of scored items, with respondents scoring <60% classified as having poor knowledge, 60–80% as fair knowledge, and >80% as good knowledge. Attitude items were scored on a three-point scale (agree, neutral, disagree). Health-seeking behavior was analyzed descriptively and in relation to sociodemographic and knowledge variables, guided by Andersen's Behavioral Model of Health Services Use, which conceptualizes health-service utilization as a function of predisposing factors (e.g., age, education, beliefs), enabling factors (e.g., income, access, health insurance), and need factors (e.g., perceived and actual fertility problems) [22,23]. This framework informed the selection of explanatory variables examined in relation to men's health-seeking behavior for fertility-related concerns.

Data Analysis

Data were entered and analyzed using IBM SPSS Statistics version 26. Descriptive statistics (frequencies and percentages) were used to summarize sociodemographic characteristics, knowledge, attitude, and health-seeking behavior. The Chi-square test of association was used to examine relationships between sociodemographic/knowledge variables and orthodox health-seeking behavior, with statistical significance set at $p < 0.05$.

Ethical Considerations

Ethical approval was obtained from the Research Ethics Committee of the University of Calabar Teaching Hospital prior to commencement of data collection. Written informed consent was obtained from all participants, confidentiality and anonymity of responses were assured, and participation was entirely voluntary, with no financial inducement offered.

RESULTS

A total of 384 men completed the questionnaire, giving a response rate of 100%. The sociodemographic, knowledge, attitude, and health-seeking behavior characteristics of respondents are presented below.

Sociodemographic Characteristics

Table 1: Sociodemographic Characteristics of Respondents (n = 384)

Variable	Frequency (n)	Percentage (%)
Age group (years)		
18–27	86	22.4
28–37	133	34.6
38–47	100	26.0
48–60	65	17.0
Marital status		
Single	108	28.1
Married	251	65.4
Divorced/Separated	16	4.2
Widowed	9	2.3
Highest education		
No formal education	14	3.6
Primary	33	8.6
Secondary	134	34.9
Tertiary	203	52.9
Occupation		
Civil/public servant	92	24.0
Trader/business owner	114	29.7
Artisan	69	18.0
Professional	61	15.9

Variable	Frequency (n)	Percentage (%)
Unemployed	48	12.4
Religion		
Christianity	339	88.3
Islam	33	8.6
Traditional/Other	12	3.1
Monthly income (₦)		
< 50,000	119	31.0
50,000–150,000	163	42.4
> 150,000	102	26.6

Knowledge of Male Factor Infertility

Table 2: Respondents' Knowledge of Causes/Risk Factors of Male Infertility (multiple response, n = 384)

Perceived cause/risk factor	Frequency (n)	Percentage (%)
Low sperm count/poor sperm quality	235	61.2
Sexually transmitted infection	186	48.4
Excessive alcohol intake/smoking	211	55.0
Erectile dysfunction	153	39.8
Varicocele (scrotal vein swelling)	87	22.7
Hormonal imbalance	107	27.9
Spiritual/supernatural causes	129	33.6
Do not know any cause	57	14.8

Overall, using the composite knowledge score, 24.0% (n = 92) of respondents had good knowledge, 41.8% (n = 161) had fair knowledge, and 34.2% (n = 131) had poor knowledge of male factor infertility, as shown in Figure 1.

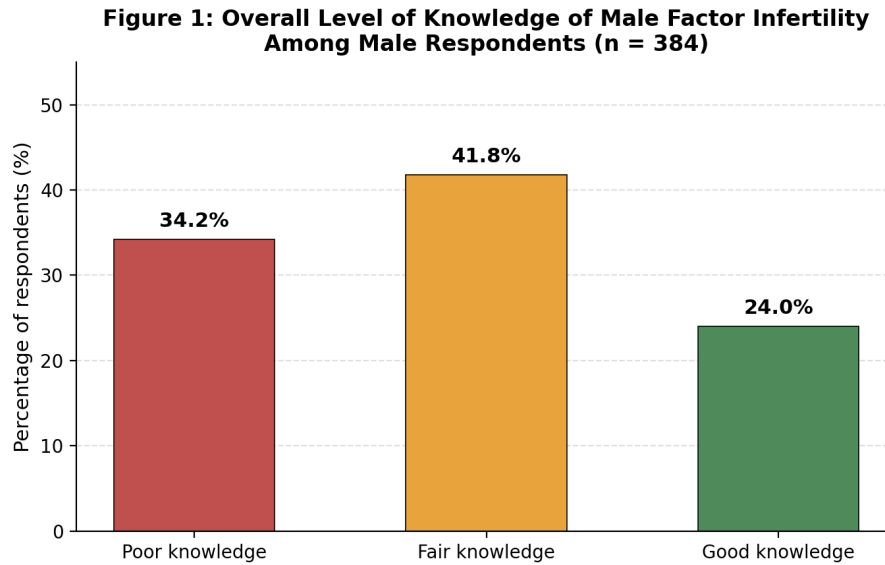


Figure 1: Overall Level of Knowledge of Male Factor Infertility Among Respondents
Attitude Towards Male Factor Infertility

Table 3: Respondents' Attitude Towards Male Factor Infertility (n = 384)

Attitude statement	Agree (%)	Neutral (%)	Disagree (%)
Infertility is solely a woman's problem	29.4	12.8	57.8
A man should have semen analysis done if a couple is not conceiving	61.7	15.6	22.7
Male infertility is a source of shame/embarrassment	46.9	18.0	35.1
Traditional/spiritual remedies can cure male infertility	38.3	21.6	40.1
I would be willing to openly discuss fertility concerns with a doctor	52.1	19.3	28.6
A man's worth is diminished if he cannot father a child	41.4	16.7	41.9

Health-Seeking Behavior

Among the 217 respondents (56.5%) who reported ever having had personal or couple-related fertility concerns, the distribution of the first point of call for care is shown in Figure 2. Only 31.5% first sought care at a hospital or fertility clinic; the remainder first consulted a traditional healer/herbalist (24.8%), a religious/spiritual centre (19.6%), a patent medicine vendor or pharmacy (15.2%), or sought no care at all (8.9%).

Figure 2: First Point of Call for Care Among Men Reporting Fertility-Related Concerns (n = 384)

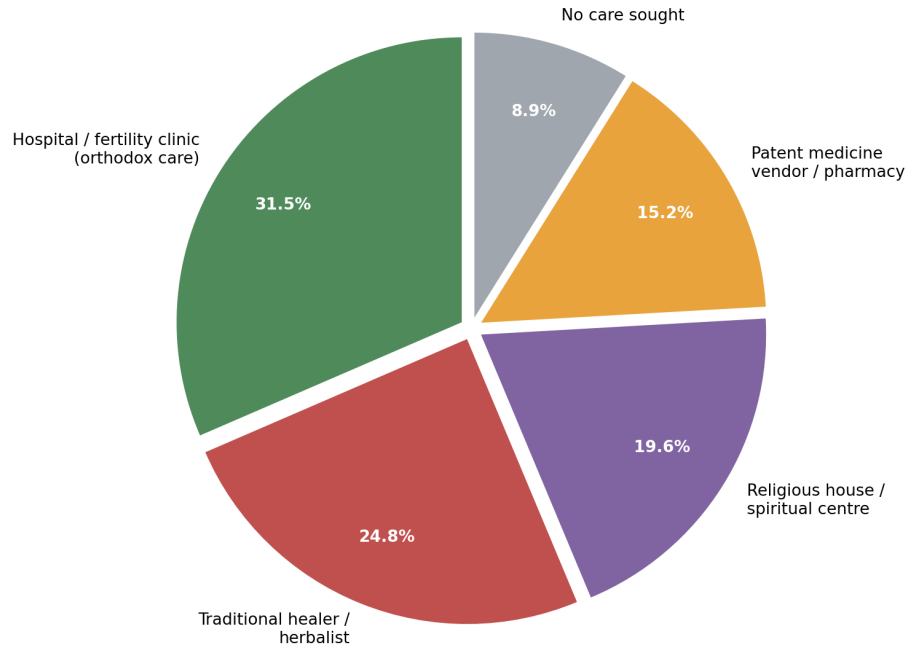


Figure 2: First Point of Call for Care Among Men Reporting Fertility-Related Concerns

Table 4: Association Between Selected Predisposing/Enabling Factors and Orthodox Health-Seeking Behavior (n = 217)

Variable	Sought orthodox care n (%)	Did not seek orthodox care n (%)	p-value
Tertiary education	54 (44.6)	67 (55.4)	0.011*
Below tertiary education	14 (14.6)	82 (85.4)	
Good/fair knowledge	58 (39.7)	88 (60.3)	0.004*
Poor knowledge	10 (14.1)	61 (85.9)	
Monthly income > ₦150,000	39 (46.4)	45 (53.6)	0.018*
Monthly income ≤ ₦150,000	29 (21.8)	104 (78.2)	
Age ≥ 38 years	35 (33.3)	70 (66.7)	0.372
Age < 38 years	33 (29.5)	79 (70.5)	

*Statistically significant at $p < 0.05$, Chi-square test.

DISCUSSION

This study found that only about one-quarter of men in Calabar demonstrated good knowledge of male factor infertility, with over a third demonstrating poor knowledge. This finding is broadly consistent with the earlier South-South Nigeria tertiary-institution-based survey, which similarly reported suboptimal knowledge and attitude towards male infertility

[17], and with findings from Ibadan, where less than half of respondents could correctly define infertility and a considerable minority attributed it to witchcraft [14,15]. It also mirrors the low awareness of male-factor infertility reported among infertile men attending fertility clinics in Lagos, where only about one in nine men correctly identified infertility as potentially a male problem [16]. Taken together, these findings suggest that low knowledge of male infertility persists across diverse Nigerian settings regardless of urbanization or clinic attendance status, indicating a widespread information gap that general population-based health education has not yet closed.

Despite residing in Calabar's cosmopolitan environment, nearly half of the respondents still regarded male infertility as a source of shame, and over a third believed traditional or spiritual remedies could cure it. These attitudes echo qualitative findings from The Gambia and other African settings, where infertility is described as threatening men's sense of masculinity and triggering internalized stigma and psychosocial distress [10,12]. A recent systematic review of infertility-related stigma in Africa similarly found that societal expectations around masculinity shape men's experience of, and willingness to disclose, infertility [13]. The persistence of such attitudes in a cosmopolitan setting like Calabar suggests that urban residence and exposure to modern health information alone are insufficient to dislodge deeply rooted socio-cultural beliefs about fertility and manhood, consistent with observations that pronatal social norms in Sub-Saharan Africa continue to shape reproductive health behavior even amid urbanization [10,11].

The finding that fewer than one in three men with fertility concerns first sought care at a hospital or fertility clinic, while roughly a quarter first consulted traditional healers, is consistent with prior Nigerian evidence that a substantial proportion of infertile persons and couples patronize traditional and complementary medicine practitioners before, or instead of, orthodox care [19,20]. Ethnobotanical surveys in Nigeria have documented an active traditional pharmacopeia specifically targeted at male infertility, underscoring the cultural entrenchment and continued demand for non-orthodox remedies [21]. Consistent with the broader literature on traditional healing in Nigeria, this pattern of care-seeking is associated with delayed presentation for effective orthodox treatment, and, in the context of correctable causes such as varicocele or infections, may allow potentially treatable conditions to persist untreated for longer than necessary [8,9,19].

In line with Andersen's Behavioral Model of Health Services Use, this study found that both predisposing factors (educational attainment, knowledge level) and enabling factors (income) were significantly associated with orthodox health-seeking behavior, while age was not [22,23]. This suggests that interventions to promote appropriate health-seeking behavior for male infertility in Calabar should prioritize improving general knowledge and awareness, and addressing cost-related barriers to accessing fertility services, rather than assuming that age or general urban residence alone will drive appropriate care-seeking.

CONCLUSION AND RECOMMENDATIONS

Men in Calabar, despite living in a cosmopolitan urban setting with relatively better access to modern health facilities, demonstrate suboptimal knowledge, ambivalent attitudes,

and predominantly non-orthodox health-seeking behavior towards male factor infertility, driven substantially by persistent stigma, socio-cultural beliefs, and cost-related barriers. Based on these findings, the following are recommended: (i) design and implementation of targeted, male-inclusive reproductive health education campaigns addressing common misconceptions about the causes of male infertility; (ii) integration of male infertility screening and counselling into routine primary healthcare and workplace health programmes to normalize male engagement with fertility care; (iii) community-level engagement with religious and traditional leaders to address stigma and encourage timely referral to orthodox care; and (iv) subsidization or insurance coverage of basic andrology services, such as semen analysis, to reduce cost-related barriers to care-seeking.

Limitations of the Study

This study relied on self-reported data, which is subject to social desirability and recall bias, particularly for a sensitive topic such as fertility. The cross-sectional design also precludes causal inference regarding the relationship between knowledge, attitude, and health-seeking behavior. Findings may not be fully generalizable beyond Calabar metropolis or similarly cosmopolitan Nigerian urban settings.

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