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Investigating the Beliefs towards Traditional Medicine Use and the Effectiveness of Herbal Products for Managing Male Infertility in the Greater Accra Region of Ghana

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Abstract

***Background*:** Male infertility is a significant reproductive health concern affecting millions of couples worldwide. While conventional medical interventions offer viable solutions, an increasing number of individuals are turning towards traditional medicine, specifically herbal products, as an alternative approach to managing male infertility. ***Methods*:** The study employed a mixed-methods approach, combining quantitative and qualitative data collection methods. A survey questionnaire was administered to 100 consented adult men with fertility issues to explore their beliefs about traditional medicine and the effectiveness of the herbal products they used. ***Results*:** Out of the 100 participants recruited, about 74% preferred herbal products over orthodox medicines to manage infertility. The majority (75%) thought that herbal products were effective in managing male infertility, 41% of them noticed a change in their sperm parameters after using the herbal product of interest, and (33%) thought that the herbal product was responsible for them impregnating their partners. Most respondents (93%) did not experience any side effects after using the herbal products, with only a few of them (7%) reporting side effects. ***Conclusions*:** People's beliefs about traditional medicine vary based on their personal experiences and those of others. Based on research findings, herbal products' effectiveness in managing male infertility has shown promising results and should be investigated further.

Keywords: male infertility, herbal products, perceptions, beliefs, effectiveness, Accra.

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INTRODUCTION

Infertility is a condition in which pregnancy cannot be achieved after at least 12 months of regular unprotected sexual intercourse between a male and a female [1]. In 2020, about 48 million couples and 186 million people struggle with infertility worldwide, according to the World Health Organization [2]. Infertility due to male causes accounts for roughly 50% of the overall cases reported [3]. A study conducted in Ghana indicates that male infertility is more common, with a prevalence rate of 15%, as compared to females with a prevalence of 11% [4]. These statistics do not fully represent the pattern of male infertility around the world, particularly in Ghana, where cultural differences make men more reluctant to seek healthcare for fear of being labelled as less "masculine" because of their infertility [5].

The causes of male infertility may be grouped into congenital (genetic), acquired causes, idiopathic and other risk factors [6]. Some of the acquired causes include varicocele, testicular trauma, sexual dysfunction (erectile or ejaculatory dysfunction) and testicular torsion [3]. Chromosomal abnormalities, Y chromosome microdeletions, Kallmann syndrome, Klinefelter syndrome and idiopathic oligoasthenoteratozoospermia

(iOAT) are examples of congenital and idiopathic causes of male infertility [3]. Other risk factors like smoking, alcoholism, illicit drug use, low levels of physical activity, obesity, psychological stress, diet, and caffeine consumption may decrease one's fertility [7]. Pharmacotherapy like hormonal replacement agents, antioxidants, and dopamine antagonists, among others and assisted reproductive techniques such as intracytoplasmic sperm injection (ICSI), intrauterine insemination (IUI), and in vitro fertilization (IVF) are conventional methods which have been used over the years to help couples conceive [3-8]. There has been a surge in interest in the use of alternative medicine for the management of infertility, and this reflects the desire of many couples to explore other treatment options regarding infertility. The beliefs and perceptions of traditional medicine use may influence this. Cultural background, personal experiences, family traditions, and exposure to diverse sources of knowledge can affect people's choices when choosing the type of treatment they want [9].

Objectives of the Study

In this study, we sought to explore Ghanaian men's attitudes and beliefs towards the use of herbal products to manage male infertility, determine their effectiveness in managing male infertility, and identify any potential adverse effects following their use.

METHODS

Research Design

The study design employed was a cross-sectional study. This type of study entails collecting data from a specific population at a particular time. It does not follow the study participants over time but simultaneously focuses on the population's characteristics.

Study Area

The research was conducted at herbal fertility clinics, namely, Jaggrey Fertility and Natural Health Clinic, Balsam of Gilead Herbal Hospital, Cathedral Herbal and Fertility Clinic, Paa Dan Herbal Clinic, Zoe Royal Hospital and Amen Scientific Herbal Hospital. These facilities were in Madina, Adenta, Darkuman, Dome, Kasoa, Teshie and its environs in the Greater Accra Region of Ghana. These herbal fertility clinics are facilities that use modernized diagnostic techniques in assessing their patients but rely solely on alternative medicine when it comes to the management of infertility in both males and females.

Sample Size Calculation

The sample size used for this study was determined using Cochran's sample size formula.[10] The arbitrary proportion of 15.8% was obtained as the prevalence rate of male infertility in a study conducted in Ghana.[4] The sample size was calculated using the formula:

$n_0 = \frac{Z^2 p(1-p)}{d^2}$

n_0 = sample size

Z = z value (1.96) for a confidence level of 95%

p = expected prevalence 0.158 (15.8%)

d = precision set at 0.06 (6%)

$n_0 = \frac{(1.96)^2 \times (0.158) \times (1-0.158)}{(0.06)^2}$

n_0 = 142 participants

Sampling and Sampling Procedure

A convenient sampling technique was used to select participants. This is a non-probability sampling method where data is obtained from participants because of their availability and accessibility. Due to the nature of the study, participants were explicitly chosen from herbal fertility clinics.

Inclusion Criteria

The study admitted participants aged 18 years and above, diagnosed with male infertility and living in Accra, and those who had used or were currently using herbs or herbal products for managing male infertility.

Exclusion Criteria

Participants who declined to take part in the study, those who lived outside Accra and those who were using orthodox medicines to manage male infertility were excluded from the study.

Instrument for Data Collection

A well-structured and developed online questionnaire was employed as the instrument for data collection. The questionnaire was sectioned and labelled into four parts, each containing simple questions requiring simple answers. The first part sought to collect data on participant demographic characteristics. The second part asked questions about the participants' fertility history. The third part consisted of questions about the participants' beliefs and perceptions towards traditional medicine used for managing male infertility, and the last part had questions on the effectiveness of herbal products used to manage male infertility.

Data Analysis

The Statistical Package for Social Sciences (IBM SPSS) version 25 was used to analyze the data collected using descriptive statistics, percentages, frequency tables, pie charts, and bar charts, which served as the basis for conclusions.

Ethical Considerations

Ethical clearance was obtained from the University of Ghana School of Pharmacy Ethics Committee (UGSOPEC/AC2022-2023/013) for research permission. A consent form was handed over to the participants to seek their consent before recruiting them and proceeding with the research. The participants were also informed that any data or information provided would be solely used for research and nothing else.

Regulations concerning confidentiality and anonymity of participants' medical information were strictly adhered to.

RESULTS

This section outlines and presents the study's results, represented by well-ordered and presentable tables and charts. Out of a sample size of 142 from the six herbal clinics, 100 participants agreed to participate in this study.

Socio-Demographic Profile of Respondents

Table 1 presents data on the demographic profile. Most respondents were between 30 and 49 years (71%). Respondents between 18-29 years (9%) were the least, and the age group 50-69 years represented (20%) of the respondents. Data on the educational level revealed that most respondents (46%) had an educational level up to the tertiary level, with the least (17%) representing respondents with basic education. The marital status of the respondents revealed that 75% of the respondents, which was the majority, were married, and 12% co-habit, while the rest, which represented 13%, were single.

Table 1: Socio-demographic profile of respondents

	Frequency(N)	Percentage
Gender		
Males	100	(100%)
Age		
18-29	9	9.0
30-49	71	71.0
50-69	20	20.0
Total	**100**	**100**
Educational level		
Basic	17	17.0
Secondary	37	37.0
Tertiary	46	46.0
Total	**100**	**100**
Occupation		
Professional	28	28.0
Self-employed	26	26.0
Vocational / Technical	21	21.0
Business	20	20.0
Managerial	3	3.0
Unemployed	2	2.0
Total	**100**	**100**
Marital status		
Married	75	75.0
Single	13	13.0
Co-habitation	12	12.0
Total	**100**	**100**
Religion		
Christian	82	82.0
Muslim	17	17.0
Atheist	1	1.0
Total	**100**	**100**

Cause of Infertility

Data on the cause of infertility can be seen in Figure 1. The data collected showed that erectile dysfunction (over 37%), oligospermia (over 37%), azoospermia (30%), low libido (over 22%), premature ejaculation (over 17%) and teratospermia (5%) were the causes among the participants.

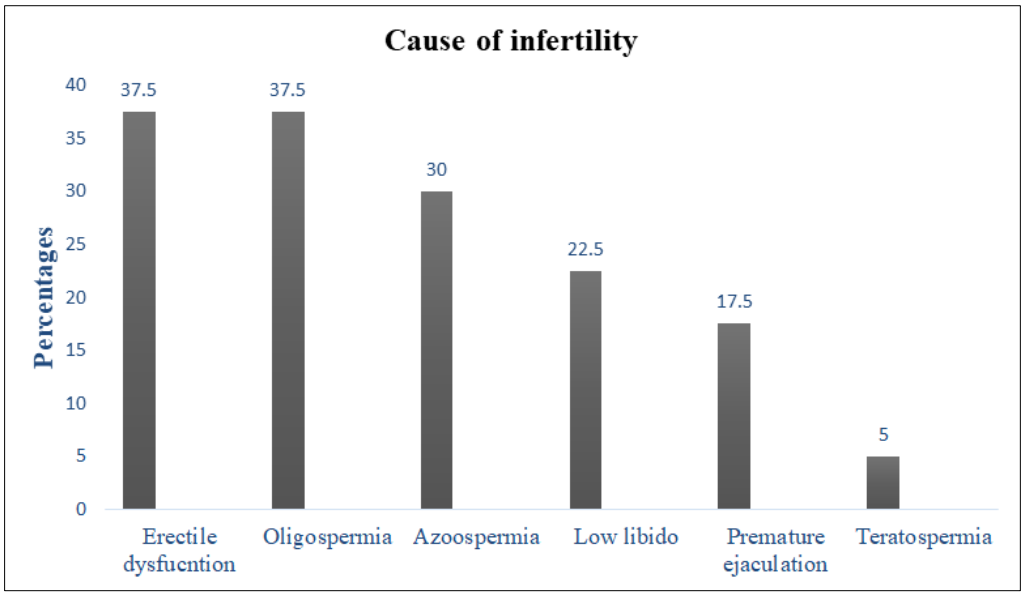

Figure 1: Causes of infertility

Type of Fertility Test Used for Diagnosis

Data revealed that most of the respondents (36%) used semen analysis, and the least type of test used by the respondents was the post-coital test (2%). Additionally, 18% did not recall the kind of test they took as their fertility test (See Table 2).

Table 2: Fertility testing

Which fertility tests were performed?	Frequency(N)	Percentage (%)
Semen analysis	36	36.0
Hormonal analysis	19	19.0
Semen culture	9	9.0
Scrotal ultrasonography	8	8.0
Post-coital test	2	2.0
Anti-sperm antibody test	8	8.0
I don't remember	18	18.0
Total	**100**	**100**

Knowledge, Beliefs and Perceptions of Using Herbal Products for Managing Male Infertility

Data collected on the knowledge and beliefs of using herbal products for infertility are shown in Table3.

Knowledge of Herbal Products

Most respondents (70%) knew about traditional or herbal products used to treat infertility, and 30% did not know about such remedies.

Safety of Herbal Products

Also, 61% of the respondents agreed that herbal products for managing male infertility were safer alternatives to conventional medicines, while none disagreed. About 34% of the respondents did not know whether herbal medicines or conventional medicines were safer, and 5% preferred not to answer that question.

Beliefs on Preference and Effectiveness of Using Herbal Products

Furthermore, 74%, which was the majority, answered that they would prefer to use herbal products for managing male infertility, while the lowest proportion of respondents (2%) chose otherwise. About 75% of the respondents thought that herbal products for managing male infertility were effective, while 25% felt that they were not effective.

Beliefs on the Cost of Herbal Products

Regarding cost, 50% of the respondents believed that herbal products for male infertility were cheaper than orthodox medicines, 27% thought otherwise, and 17% did not know whether herbal medicines were cheaper than orthodox medications.

Recommending Herbal Products

Lastly, 64% were confident in herbal medicines and would most likely recommend them to others, 9% would not and 23% did not know whether they would recommend it.

Table 3: Knowledge, beliefs and perceptions of using Herbal Products

	Frequency(N)	Percentages (%)
Do you have knowledge about herbal products being used for infertility?		
Yes	70	70
No	30	30.0
I don't know.	0	0.0
I prefer not to answer.	0	0.0
Total	**100**	**100**
Do you think that herbal products are a safer alternative to pharmaceutical medications for treating male infertility?		
Yes	61	61.0
No	0	0.0
I don't know	34	34.0
I prefer not to answer	5	5.0
Total	**100**	**100**
Would you prefer the use of herbal products for treating male infertility?		
Yes	74	74.0
No	2	2.0
I don't know	22	22.0
I prefer not to answer.	2	2.0
Total	**100**	**100**
Do you think that herbal products are effective in managing male infertility?		
Yes	75	75.0
No	0	0.0
I don't know	25	25.0
I prefer not to answer.	0	0.0
Total	**100**	**100**
Do you think herbal products for managing male infertility are cheaper compared to orthodox medicines?		
Yes	50	50.0
No	27	27.0
I don't know	17	17.0
I prefer not to answer.	6	6.0
Total	**100**	**100**
Would you recommend herbal products to others experiencing infertility?		
Yes	64	64.0
No	9	9.0
I don't know	23	23.0
I prefer not to answer.	4	4.0
Total	**100**	**100**

Use and Effectiveness of Herbal Products for Male Infertility

Table 4 displays information on the use of herbal products for male infertility. In this section, 80% of the respondents have personally used herbal products for infertility, and 20% responded that they had not used herbal products for infertility.

Name and Type of Herbal Product

The data collected on the names and types of herbal products used in treating infertility revealed that 50% of the respondents remembered the names of the products they used, while the other 50% did not.

Duration of Use

A total of 40 respondents (50%) used the herbal product for just 1 to 3 months, and over 2% used it for more than 12 months. About 25% of the respondents used it for 3 to 6 months, over 12% used it for 6 to 12 months, and 10% used it for less than a month.

Who Recommended the Herbal Product?

Table 4 shows the data on who recommended the herbal products. Most respondents (about 58%) had family and friends recommend them, while 18% had herbalists recommend them.

Side Effects

Figure 2 displays the side effects of traditional products. Over 90% of the respondents did not experience any side effects while taking the medication, while just 7% experienced notable side effects.

Table 4: Use of herbal products for managing male infertility

	Frequency (N)	Percentage (%)
Have you personally used any herbal products for treating male infertility?		
Yes	80	81.0
No	20	19.0
I don't know.	0	0
I prefer not to answer.	0	0
Total	**100**	**100**
Name of the herbal product		
Addyzoa capsules	6	7.50
Speman tablets	1	1.25
Aphrodisia powder	5	6.25
Balsam capsules	3	3.75
Campa-T	1	1.25
Fertiza man	5	6.25
Ginger	1	1.25
Ginseng capsules	7	8.75
Vigomax	2	2.50
Moringa	1	1.25
I don't remember	40	50.0
Others (herbal infusions and decoctions)	8	10.0
Total	**80**	**100**
How long did you use/ have you used the herbal product in question?		
Less than 1 month	8	10.0
1 – 3 months	40	50.0
3 – 6 months	20	25.0
6 – 12 months	10	12.5
More than 12 months	2	2.5
Total	**80**	**100**
Who recommended the herbal product to you?		
Physician	12	14.5
Pharmacist	3	3.6
Family and friends	45	54.2
Herbalist	15	18.1
No one	8	9.6
Total	**83**	**100**

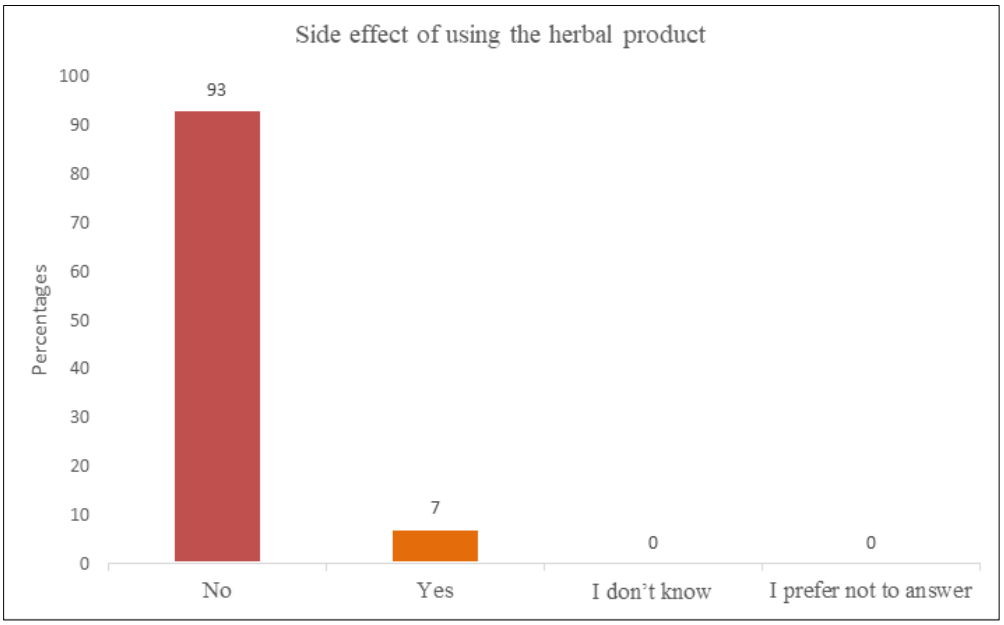

Figure 2: Side effects of using the herbal product

DISCUSSION

Infertility is gradually becoming a global health concern since millions of couples around the world are affected. When it comes to the causes of infertility, both couples, i.e., the male and female factors, may be implicated. This research aimed to explore the beliefs and attitudes towards traditional medicine use in addressing male infertility, as well as investigate the effectiveness of herbal products commonly employed for this purpose.

The results showed that most respondents (71%) were between the 30 – 49 age group, followed by those within the 50 – 69 age group. Studies have shown that sperm quality and sperm parameters decline as a man ages Durairajanayagam [7]. In a meta-analysis study, it was found that the decline in sperm parameters became significant as a man aged throughout the years (Johnson *et a*l.,) [11]. The findings of that study and this research are consistent. Additionally, these age groups showed up at the herbal clinics to seek treatment. Analysis of the cause of infertility revealed that most of the respondents suffered from erectile dysfunction (over 37%) and oligospermia (over 37%). Gyasi-Sarpong *et al*., [12], also conducted a study on 110 infertile males in Ghana, and it was revealed that most of them had severe oligospermia and other sperm parameter abnormalities like the ones obtained in this study.

About 70% of the respondents in our study knew about herbal products being used to treat infertility, and 30% did not know of such remedies. Although the beliefs recorded varied, most of the responses showed a positive perception towards herbal products concerning their safety, cost, availability, preference and respondents' thoughts on their effectiveness. The belief towards herbal products for male infertility varies among different populations, and that was seen in this study. Research by Shahid *et al*., [13], highlighted that numerous couples go in for complementary and alternative medicines (CAM) for infertility because they are affordable, accessible, and readily available. It is also worth noting that the participants' beliefs were centred around one's personal experiences of using these remedies together with the experiences of others, as they greatly influence and affect a person's perception and choice of herbal products. Also, the beliefs of the respondents concerning herbal products for male infertility are not supported by strong scientific evidence. A Cochrane systematic review by Showell *et al*., [14], found insufficient evidence suggesting that giving antioxidants to sub-fertile males may enhance birth and pregnancy rates. Many may choose complementary and alternative medicines, including herbal interventions, due to their availability and affordability, personal experiences, and the experiences of others. Investigations into its safety and efficacy are still underway, and more research is needed to validate their use.

Our findings on the effectiveness of herbal products for male infertility were similar to those reported in a systematic review by Shahid *et al*., [13], which proved the effectiveness of herbal interventions, particularly Hochu-ekki-to and *Withania. somnifera*, in men with infertility caused by sperm abnormalities. Furthermore, another review by Niazi *et al*., [15], discussed the potential of herbal therapies like vitamins, herbal remedies, and hormones to enhance male reproductive capability and semen quality. The majority of the respondents (50%) were able to impregnate their partners after using the herbal product. Research by Ekaluo *et al*., [16], showed that tiger nut extract has properties capable of increasing testicular and epididymal weights and sperm parameters. These imply that the herbal products used by the respondents have some activity in improving pregnancy rates. Alternatively, well over 21% of the respondents were not able to impregnate their partners after using the herbal product. The success of herbal product use varies widely across the world. A study found that Saffron did not substantially improve semen parameters in infertile men with iOAT (Safarinejad *et al*., [17]. The study emphasized the need for rigorous scientific investigations to document the safety and efficacy of herbal remedies for male infertility. Although most of the respondents experienced positive outcomes, there is no doubt that from the results, a sizeable number of respondents did not experience positive outcomes. This emphasizes that these herbal products must be thoroughly investigated before conclusions on their effectiveness can be drawn.

In this study, well over 90% of the respondents did not experience any side effects while taking the herbal product, while just 7% (6) experienced notable side effects. Most of the respondents mentioned that they would recommend herbal products to others because they were natural, safe, perceived to be effective and had no side effects. Natural does not mean safe, and although the herbal products yielded no side effects for most of the respondents, Brunetti *et al*., [18], revealed that some herbal sex enhancers were involved in psychiatric and neurological disorders. A study conducted by Manortey *et al*., [19], showed that the consumption of alcohol-based herbal aphrodisiacs could be potentially detrimental to the health of the user, especially those with high alcohol content.

CONCLUSION

The research findings highlight the potential of herbal products in managing male infertility, with quite a notable percentage of respondents reporting positive outcomes following the use of herbal products for managing their condition. Again, from the findings, it is evident that the beliefs and perceptions towards traditional medicine use vary based on one’s personal experiences and from what others have seen, largely centred around its effectiveness in helping males conceive or impregnate their partners. Most respondents

also reported that they did not experience any side effects after taking the products. Although they appear safe, many studies into their safety need to be conducted.

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