

## PREVALENCE AND DETERMINANTS OF ERECTILE DYSFUNCTION AMONG MEN ATTENDING NATUROPATHIC CARE CENTERS IN ASHAIMAN MUNICIPALITY, GHANA

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### ABSTRACT

**Background:** Erectile dysfunction (ED) has been identified as a prevalent condition globally, with several epidemiological studies revealing its widespread occurrence. This study aims to assess the prevalence, determinants, and the use of naturopathic treatments for ED among individuals attending naturopathic health centers in Ashaiman Municipality, Ghana. **Methods:** A cross-sectional study design was employed to estimate the prevalence of erectile dysfunction in naturopathic health centers. Participants aged 20 years and older were selected through simple random and purposive sampling, resulting in 250 respondents. Data were collected to analyze the relationship between ED and various potential determinants, as well as the naturopathic treatment approaches utilized. **Results:** The prevalence of ED among respondents was 80%, with the highest prevalence observed in the 20-40 years age group (48%). Key determinants associated with ED included age, financial challenges, hypertension, hypercholesterolemia, history of prostate and hormonal disturbances, alcohol abuse, and stress ( $p$ -value < 0.05). Despite challenges such as nausea and affordability, a majority of respondents opted for naturopathic treatments. The naturopathic approaches employed included dietary adjustments, clinical nutrition, homeopathy, botanical medicine, and acupuncture. **Conclusion:** The study found that 80% of the respondents reported experiencing erectile dysfunction. Contributing factors included financial difficulties, unemployment, chronic conditions such as hypertension, hormonal imbalances, prostate disturbances, elevated cholesterol, stress, and alcohol abuse. Naturopathic interventions, particularly diet, nutrition, homeopathy, botanical remedies, and acupuncture, were beneficial in improving the condition of the participants.

**KEYWORDS:** Erectile Dysfunction, Prevalence, Naturopathic Treatment, Ashaiman Municipality, Determinants.

## INTRODUCTION

Erectile dysfunction (ED) is the most common form of sexual dysfunction globally (Kessler et al., 2019), and sexual health significantly impacts quality of life. Approximately 1 in 10 men worldwide experience ED, with prevalence rates ranging from 10% to 71% among men over 70 years old (Goldstein et al., 2020). These wide-ranging statistics indicate that reliable data on the incidence and prevalence of ED is scarce, mainly because many men do not seek treatment. Notably, 25% of all men diagnosed with ED are under 40 years of age (Kessler et al., 2019).

Several treatment options are available for ED, including drug therapy, psychotherapy, self-injection therapy, and penile prosthesis implantation (Karakus & Burnett, 2020). However, each treatment option has its challenges. Drug therapy may cause side effects such as flushing, headaches, dyspepsia, transient visual changes, priapism, and even risk of death if combined with nitric oxide (Terentes-Printzios et al., 2022). Self-injection therapy also carries risks, including pain, fibrosis at the injection site, hypotension, and priapism, while penile prosthesis implantation is an expensive option fraught with complications such as mechanical failure, infection, and granuloma formation (Porst et al., 2024). Due to these side effects and complications, many men turn to alternative treatments or choose not to seek treatment altogether (Leisegang & Finelli, 2021).

Naturopathy, a major alternative medicine modality, offers a combination of nutritional, herbal, and other complementary therapies to treat ED (Myers & Vigar, 2019). Naturopathic medicine is a primary healthcare profession focused on health promotion, disease prevention, and the treatment of illness (Louise et al., 2017). Naturopathic doctors (N.D.s) aim to stimulate the body's self-healing capacity using a variety of therapeutic modalities, including botanical medicines, clinical nutrition, nutritional supplements, homeopathy, physical medicine, and psychological counseling (Fleming & Gutknecht, 2010). Naturopathy can complement or serve as an alternative to conventional medical treatments (Cottingham et al., 2015). The causes of ED are typically categorized into organic, psychogenic, or a combination of both (Dick et al., 2017). Organic causes include vascular, neurogenic, hormonal, anatomic, traumatic, and drug-induced factors, while psychogenic causes encompass depression, anxiety, and other emotional disorders (Ludwig & Phillips, 2014).

Despite substantial research on ED, further studies are needed to evaluate the efficacy of various naturopathic approaches to treating the condition. While naturopathic remedies are commonly sought by men with ED, the specific methods used in the Ashaiman context, along with the perceived effectiveness and challenges, remain underexplored. Understanding the naturopathic strategies for managing ED and the barriers to accessing these services is crucial for developing interventions to improve the sexual health outcomes of men in this area. Thus, the aim of this study was to assess the prevalence of ED and explore the naturopathic approaches used in the Ashaiman Municipality.

### 1.3 Objectives of the Study

The primary objective of this study is to assess the prevalence and determinants of erectile dysfunction among men aged 20 and above attending naturopathic health centers in the Ashaiman Municipality.

#### The specific objectives are as follows

1. To determine the prevalence of erectile dysfunction among men aged 20 and above attending naturopathic health centers in the Ashaiman Municipality.
2. To identify the determinants of erectile dysfunction among men in the study area.

3. To examine the naturopathic approaches used to manage erectile dysfunction in the Ashaiman Municipality.
4. To identify the challenges faced by men seeking naturopathic care for erectile dysfunction.
5. To suggest strategies for overcoming the challenges associated with adopting naturopathic methods for managing erectile dysfunction in Ashaiman Municipality.

#### **1.4 Research Questions**

1. What is the prevalence of erectile dysfunction among men aged 20 and above attending naturopathic health centers in the Ashaiman Municipality?
2. What are the determinants of erectile dysfunction among men aged 20 and above in the study area?
3. What naturopathic care methods are employed in the management of erectile dysfunction in Ashaiman Municipality?
4. What challenges do men with erectile dysfunction face when seeking naturopathic care in the study area?
5. How can the challenges of accessing and utilizing naturopathic care for erectile dysfunction in Ashaiman Municipality be addressed?

### **LITERATURE REVIEW**

#### **2.2 Theoretical Frameworks**

Two theoretical frameworks were adopted to guide this study: the Biopsychosocial Model of Sexual Health and the Health Belief Model.

##### **2.2.1 Biopsychosocial Model of Sexual Health**

The Biopsychosocial Model of Sexual Health served as a comprehensive theoretical framework for this study. This model emphasizes the intricate interplay between biological, psychological, and social factors that influence an individual's sexual health and functioning, particularly in the development and management of erectile dysfunction (Berry & Berry, 2013).

- **Biological Factors**

The Biopsychosocial Model posits that biological factors play a critical role in the development of erectile dysfunction. Pahwa & Foley (2017) suggest that biological determinants of ED include age, chronic medical conditions (such as diabetes, cardiovascular disease, and hypertension), hormonal imbalances, neurological factors, and lifestyle habits (e.g., physical activity, substance use). These factors can be assessed through self-reported data, medical history, and clinical examinations or laboratory tests conducted within naturopathic care settings.

- **Psychological Factors**

The model recognizes the significance of psychological factors in sexual health and erectile dysfunction. Psychological determinants include stress, anxiety, depression, body image concerns, and relationship satisfaction (Pahwa & Foley, 2017). These factors influence not only the onset of ED but also its management and treatment response.

- **Social and Interpersonal Factors**

Social and interpersonal influences on sexual health are emphasized in this model (Denman, 2017). In this study, social determinants such as relationship quality, cultural attitudes towards sexuality, socioeconomic status, education level, and employment status will be explored to understand their impact on erectile dysfunction.

### 2.2.2 Health Belief Model

The Health Belief Model (HBM) provides another key theoretical framework for this study, guiding the understanding of health behaviors and decision-making in relation to erectile dysfunction.

- **Perceived Susceptibility**

According to the HBM, an individual's perception of their susceptibility to a health condition, such as erectile dysfunction, influences their health-seeking behavior (Abraham & Sheeran, 2005). This study explores participants' perceived susceptibility to ED and how this shapes their decision to seek naturopathic care.

- **Perceived Severity**

The HBM also accounts for how an individual perceives the seriousness or severity of a health issue. In this study, the researcher assessed participants' perceptions of the severity of erectile dysfunction and how it influences their motivation to engage in naturopathic care services (Green et al., 2020).

- **Perceived Benefits**

The HBM emphasizes the perceived benefits of taking action to address a health issue (Green et al., 2020). This study examines the perceived benefits of utilizing naturopathic care for managing erectile dysfunction, such as improved sexual function, better quality of life, or greater cultural and social acceptance.

- **Perceived Barriers**

The model also acknowledges that individuals may face barriers preventing them from seeking treatment. Barriers in this study include cost, availability, cultural stigma, and a lack of trust in alternative therapies (Green et al., 2020).

- **Cues to Action**

The HBM suggests that individuals may need specific triggers or "cues to action" to seek healthcare (Hye-Jin & Kyung-Ah, 2017). This study investigates factors that prompt men to seek naturopathic care, such as recommendations from peers, family members, healthcare providers, or the onset of symptoms.

- **Self-Efficacy**

The HBM includes an individual's confidence in their ability to follow through with recommended health behaviors (Green et al., 2020). This study explores the participants' self-efficacy in managing erectile dysfunction through naturopathic care and how this impacts their utilization of these services.

By incorporating both the Biopsychosocial Model and the Health Belief Model, the study adopts a comprehensive theoretical approach to explore the complex factors influencing the prevalence, determinants, and treatment-seeking behaviors related to erectile dysfunction in the study context.

### 2.3 Conceptual Issues of Erectile Dysfunction (ED) and Naturopathy

Erectile dysfunction (ED) is the inability to achieve or maintain an erection sufficient for sexual activity. The International Society for Sexual Medicine (ISSM) defines ED as the consistent or recurrent inability to attain or maintain a penile erection adequate for sexual satisfaction (McCabe et al., 2016).

Naturopathy, as an alternative medical system, is based on the belief that diseases can be treated or prevented without drugs through natural methods, including dietary control, exercise, and massage (Murray & Pizzorno, 2012). Naturopathic medicine emphasizes natural remedies to help the body heal itself, incorporating therapies such as herbal medicine, massage, acupuncture, exercise, and nutritional counseling.

Prevalence refers to the proportion of a population affected by a specific condition within a given time period (McKinlay, 2000). In epidemiology, it measures the proportion of people experiencing a particular medical condition at a specific time. Determinants are factors that influence the nature or outcome of a condition (Andriopoulos, 2001). In the context of health, determinants include social, biological, and individual factors, which the study will focus on.

#### **2.4 Determinants of Erectile Dysfunction Among Men**

ED risk factors can be categorized into organic, psychogenic, or a combination of both (Pozzi et al., 2022).

- **Organic Causes**

Organic causes of ED involve conditions that physically impair blood flow to or retention within the erectile tissue of the penis (Yafi et al., 2016). The main organic factors include cardiovascular, endocrine, and neurogenic conditions (Nguyen et al., 2017).

- **Cardiovascular**

The most common cardiovascular issues linked to ED are focal artery occlusion and subclinical endothelial dysfunction. Focal artery occlusion can result from trauma, while thyroid dysfunction may play a role in restoring erectile function in affected individuals (Papagiannopoulos et al., 2015). Yao et al. (2012) note that subclinical endothelial dysfunction, including increased systolic blood pressure, C-reactive protein levels, and cholesterol, is associated with ED. Moreover, type 2 diabetes is strongly linked to ED, with some populations exhibiting prevalence rates as high as 75%. As the rate of early-onset diabetes rises, the prevalence of ED is also expected to increase.

#### **2.5 Naturopathic Approaches to Erectile Dysfunction**

Naturopathy understands that ED can be linked to cardiovascular conditions, and it strongly focuses on strengthening the cardiovascular system. In some cases, ED may stem from simple issues like zinc depletion. Other causes include nervous disorders, blood vessel hardening, sluggish circulation, spinal stiffness, and pelvic issues. Insufficient sleep can also contribute to ED in some cases. Natural therapies not only address these issues but often present fewer side effects while promoting overall health (Camacho & Reyes-Ortiz, 2005). Below are several naturopathic approaches used to manage ED.

##### **Diet and Clinical Nutrition**

L-arginine, an amino acid, is commonly used to boost nitric oxide production, which is essential for penile erection. Nitric oxide relaxes the corpus cavernosal tissue, allowing blood to flow into the area, thus leading to an erection. A high dose of 5g/day of L-arginine has been shown to improve sexual function in men with organic ED (Cho et al., 2013).

Zinc is often cited as a natural remedy for ED, though studies suggest its effectiveness is mostly seen in men with both kidney disease and zinc deficiency-induced ED (Chen et al., 1999). Fish oils are beneficial for blood circulation and

heart health, which can aid in directing blood flow to the penis to facilitate and maintain an erection (Meldrum et al., 2011).

Maca, a plant native to the Peruvian Andes, is traditionally used as an aphrodisiac, stress reliever, and fertility enhancer (Wang et al., 2007).

### **Botanical Medicine**

Pycnogenol, derived from the *Pinus pinaster* plant, increases nitric oxide levels similarly to L-arginine. Research has shown that 92.5% of men achieved an erection after taking 120 mg of pycnogenol in combination with L-arginine for three months (Sandquist, 2015). Damiana and Cordyceps, plants found in subtropical regions, have also shown efficacy in treating ED (Miller & Lynn, 2016).

Horny Goat Weed, containing icariin, is reputed to improve cardiovascular function and regulate hormones (Lee et al., 2017). Ginseng (*Panax ginseng*) works by enhancing nitric oxide production in penile tissue and may improve erection, sexual desire, and satisfaction (Aoki et al., 2012). Ginseng is also believed to act on the nervous system by influencing neurotransmitters such as GABA, glutamate, dopamine, and serotonin (Gillis, 1997).

### **Traditional Chinese Medicine and Acupuncture**

In Traditional Chinese Medicine (TCM), ED can be caused by either a full condition, such as dampness or blood stasis, or an empty condition, like heart-blood or kidney-yin deficiencies. Acupuncture points are selected based on these diagnoses. A study on acupuncture for psychogenic ED showed that it improved sexual satisfaction in 68.4% of participants and erections in 21% of men (Kernohan et al., 2015).

### **Homeopathy**

Homeopathic treatments target the root cause of ED, such as low testosterone, to stimulate hormone production. *Agnus Castus 30* is commonly used to address erectile dysfunction associated with low testosterone levels, flaccid genitals, and reduced sex drive (Tiwari, 2020).

### **Lifestyle Counseling**

Because factors like obesity, diabetes, heart disease, hypertension, and stress contribute to ED, lifestyle counseling can be highly effective. Studies show that regular exercise and dietary changes, such as following a Mediterranean diet, can significantly improve erectile function, especially in men with ED due to chronic conditions like diabetes or obesity (Engelhardt et al., 2003).

Counseling to address the emotional impact of ED on men and their partners is crucial. ED can lead to depression, anxiety, and low self-esteem in affected men, and also affects their relationships. Counseling can provide tools to help couples manage the emotional and relational aspects of ED (Safarinejad & Hosseini, 2009).

### **Acupuncture**

Acupuncture is also used to treat ED by stimulating nerve points and improving blood flow to affected areas, though it is not applied directly to the penis (Jayasuriya, 2002). Properly placed needles can aid in resolving issues related to erectile dysfunction (Hechtman, 2018).

## 2.6 Challenges of Naturopathic Approaches in Managing Erectile Dysfunction

### Side Effects

Some adverse effects of nutraceuticals may include digestive issues such as nausea, vomiting, and diarrhea, along with headaches, flushing, and hypotension (Singh et al., 2012). Damiana has been reported to cause side effects like diarrhea, headaches, insomnia, and hallucinations (Pittler et al., 2005). Yohimbe, which acts on the central nervous system (CNS), has a narrow therapeutic index and is associated with various side effects (Tam et al., 2001). Improper preparation of maca may lead to stomach upset (Wang et al., 2007). Additionally, certain supplements like Cordyceps should be avoided in individuals with cancer or diabetes, as they can affect blood sugar levels (Paterson, 2008).

### Sociodemographic and Socioeconomic Challenges

Unemployment among men has been linked to increased stress and mental health issues, such as depression and anger, which may exacerbate erectile dysfunction. Financial challenges resulting from unemployment can also hinder the ability to afford naturopathic remedies (Mark et al., 2018). Furthermore, geographical location can present obstacles in accessing certain foods and natural treatments, particularly in areas with limited availability of these resources. Additionally, a lack of awareness and limited access to naturopathic care may prevent patients from benefiting from natural therapies (Hechtman, 2018).

## METHODOLOGY

### 3.2 Research Design

The researcher employed a descriptive cross-sectional study design. According to Setia (2016), cross-sectional studies are effective for assessing the health needs of a population and are particularly valuable in guiding the planning, monitoring, evaluation, and allocation of health resources. These studies are also relatively fast and cost-effective. Therefore, this study utilized a cross-sectional survey to describe the prevalence of erectile dysfunction and the associated factors related to naturopathic practices in the Ashaiman Municipality.

### 3.4 Sources of Data

Data for the study were primarily gathered through fieldwork conducted by the researcher via interviews. The respondents included men aged 20 years and older who were using naturopathic methods to manage erectile dysfunction at various naturopathic centers in the Ashaiman Municipality. A list of registered naturopathic centers was obtained as secondary data, and further data were collected directly from these centers.

### 3.5 Study Population

The study population refers to the group of individuals the research aims to focus on (Majid, 2018). In this study, the target population included men aged 20 years and above who were affected by erectile dysfunction and using naturopathic methods of management at naturopathic centers within the Ashaiman Municipality.

#### 3.5.1 Determination of Sample Size, Sampling, and Sampling Technique

Sampling is the process of selecting participants or cases that provide rich data related to the phenomenon under investigation. It is an essential aspect of research, as the target population is often too large for comprehensive inclusion in a study (Moser & Korstjens, 2018). This research used a combination of purposive sampling (a non-probability sampling method) and simple random sampling (a probability sampling technique) to select sample units for the investigation.

Purposive sampling, as described by Habib et al. (2014), involves selecting individuals or situations that meet specific criteria of interest, which are likely to offer deeper insights into the research topic. In this study, purposive sampling was used to select four naturopathic centers within Ashaiman.

The sample frame consisted of 345 individuals, and a sample size of 250 was randomly selected from those using different methods of naturopathy in the study area. Simple random sampling was used to select participants from the various methods. The lottery method was employed: each member of the sampling frame was assigned a unique number, which was written on individual slips of paper. These slips were folded and mixed in a container. Blindfold selection was then made until the desired sample size was reached. The individuals corresponding to the drawn numbers formed the random sample (Trivedi & Bobbio, 2017), as shown in Table 3.1 below.

**Table 3.1: Random sample determination.**

Modality/ Method of naturopathy	Population/sample frame	Sample
Diet therapy and clinical nutrition	105	100
Botanical medicine (Herbalism)	80	50
Naturopathic physical medicine	60	30
Behavioural change (prevention and lifestyle counselling)	50	30
Acupuncture	50	40
<b>Total</b>	<b>345</b>	<b>250</b>

Source: Field survey, 2020

### 3.6 Data Collection Instruments

The instruments used for data collection were selected based on the type of data required for the study. For this survey, data were primarily obtained through questionnaires and an interview guide.

#### Questionnaires

The questionnaire was designed to collect quantitative data through structured questions, providing quick responses. This tool enabled the researcher to gather relevant information from respondents, including socio-demographic and economic determinants, characteristics of erectile dysfunction (both organic and psychogenic), patients' satisfaction with naturopathic care, and the challenges faced with various treatment methods (Dörnyei & Taguchi, 2009). To ensure the reliability and clarity of the questions, the questionnaire was pre-tested with 5% of the intended respondents. The pre-test helped identify any misunderstandings, incomplete coverage of concepts, inconsistent interpretations, or context effects, as noted by Collins (2003). Additionally, the questionnaire was translated and interpreted in Twi and Ga languages for patients in the study area, ensuring that language was not a barrier. After the pre-test, the responses were reviewed for accuracy and appropriateness.

#### Interviews

Interviews, defined as active interactions leading to context-based outcomes (Roulston & Choi, 2018), were conducted as part of the data collection process. The researcher used a combination of semi-structured, unstructured, and face-to-face verbal interviews. A set of questions, both open-ended and closed-ended, were developed based on themes related to naturopathic care for erectile dysfunction, including the roles each treatment method plays in managing the condition. The questionnaire included various sections:

- **Section A:** Socio-demographic and economic determinants, such as age, education level, employment status, locality, and other diseases (risk factors).

- **Section B:** Different methods/types of naturopathy used in managing erectile dysfunction in the four registered naturopathic centers in Ashaiman Municipality.
- **Section C:** Challenges associated with adopting naturopathic methods of management.
- The remaining sections sought respondents' suggestions on addressing challenges related to the adoption of naturopathic methods in Ashaiman Municipality.

### 3.6.1 Data Collection Procedure and Ethical Considerations

Approval and an introductory letter for the study were obtained from the authorities of Holistic and Naturopathic Medicine at Nyarkotey College of Holistic Medicine, which was then submitted to the naturopathic centers in the study area, where it was accepted.

The study adhered to the following ethical standards during data collection:

1. The dignity and welfare of all respondents were respected.
2. Respondents' freedom to decline participation was respected.
3. Confidentiality of all collected data was maintained.
4. Privacy of respondents was protected, and no violations occurred.
5. Respondents' identities were anonymized using code numbers rather than their names to analyze individual responses.

In line with Cooper & Schindler's (2001) recommendations, the study ensured that no respondents experienced intentional harm, discomfort, mental anguish, embarrassment, or loss of privacy.

### 3.7 Methods of Data Analysis and Presentation

Data analysis involves editing, cleaning, transforming, and modeling data to extract useful information, draw conclusions, and support decision-making (Adèr, 2008). The data collected from the field were edited and coded to ensure accuracy and consistency. Errors, non-responses, and any other discrepancies were addressed during the editing process. Coding facilitated data entry and ensured that comprehensive analysis could be performed.

Descriptive statistics were employed for data analysis, using the Statistical Package for the Social Sciences (SPSS) version 20. Descriptive statistics, including percentages, means, and standard deviations, were used to analyze relationships between erectile dysfunction and its determinants, satisfaction with naturopathic methods, challenges, and patient engagement. Inferential statistics, including chi-square correlation analysis (with Pearson value,  $p \leq 0.05$ ), were also conducted to explore relationships between variables.

## PRESENTATION OF SURVEY RESULTS

### 4.2 Socio-Demographic and Economic Characteristics of the Respondents

A total of 250 men aged 20 and above with erectile dysfunction participated in the study. The results, as shown in Table 4.1, reveal that approximately 48% of the respondents were aged between 20 and 40 years, while only 16% were aged 61 years and above. Regarding education, 60% of the respondents had no formal education, while 20% had attained tertiary education. Employment-wise, 60% of the respondents were unemployed, and only 16% were employed in the public sector. Additionally, a large majority (72%) of the respondents reported being dissatisfied with their financial situation related to their employment status.

### 4.3 Determinants of Erectile Dysfunction Among the Respondents

Table 4.2 presents the risk factors associated with erectile dysfunction among the respondents. Out of the 50 respondents assessed, more than half had been diagnosed with hypertension (60%), cardiac conditions (60%), diabetes mellitus (56%), hormonal disturbances (76%), hypercholesterolemia (60%), spinal cord injuries or surgeries (20%), and prostatic diseases (76%). On the other hand, a larger proportion of respondents had never been diagnosed with neurological diseases, stroke, liver diseases (80%), or pelvic injuries/surgeries (32%). In terms of lifestyle factors, 58% of the respondents reported never having smoked, while a larger number (80%) had consumed alcohol at some point in their lives.

**Table 4.1: Socio-demographic and economic characteristic of respondents.**

<i>Characteristic of respondent</i>		<i>Frequency</i>	<i>Percentage (%)</i>
<i>Age</i>	20-40	120	48
	41-50	50	20
	51-60	40	16
	≥61	40	16
<i>Educational level attained</i>	Uneducated	150	60
	Primary/JSS/JHS/SHS	50	20
	Tertiary	50	20
<i>Occupation</i>	Public sector work(government)	40	16
	Privately employed	30	12
	Entrepreneur	30	12
	Unemployed	150	60
	Other	-	-
<i>Are you satisfied financially with your job?</i>	Yes	70	28
	No	180	72
	Other	-	-
<i>Total</i>		<b>250</b>	<b>100</b>

Source: Field survey, 2024

**Table 4.2: Other risk factors of erectile dysfunction.**

<b>Characteristic</b>		<b>Frequency</b>	<b>Percentage (%)</b>
<b>Have you been diagnosed with:</b>			
Hypertension?	Yes	150	60
	No	100	40
Any cardiac disease?	Yes	150	60
	No	100	40
Stroke?	Yes	100	40
	No	150	60
Diabetes mellitus?	Yes	140	56
	No	110	44
Neurological disease?	Yes	90	36
	No	160	64
Chronic liver disease?	Yes	50	20
	No	200	80
Doctor diagnosed of Hormonal disturbances?	Yes	190	76
	No	60	24
Hypercholesterolemia?	Yes	150	60
	No	100	40
Spinal cord injury/surgery?	Yes	50	20
	No	200	80
Prostate disturbance/surgery?	Yes	180	72
	No	70	28
Pelvic injury/surgery?	Yes	80	32

	No	170	68
Genital injury / surgery?	Yes	20	8
	No	230	92
Smoked?	Yes	105	42
	No	145	58
Alcohol?	Yes	200	80
	No	50	20
<b>Total</b>		<b>250</b>	<b>100</b>

Source: Field survey, 2024

#### 4.4 Assessment of the problem and prevalence of erectile dysfunction among the respondents

From the table 4.3 below, more than half (56%) of the respondents rated to have a very low confidence in erection with more (40%) of them not able to keep erection to normal time expected of sexual intercourse, higher proportion (40%) of the respondents had difficulty maintaining erections during intercourse and a greater proportion (72%) were never satisfied with sexual intercourse. More than half (80%) of the respondents were experiencing stressful situations.

**Table 4.3: Assessment of erectile problems.**

Variable		Frequency	Percentage (%)
<b>Rate your confidence that you could get and keep an erection</b>	Very low	140	56
	Low	40	16
	Moderate	40	16
	High	20	8
	Very high	10	4
<b>How often were your erections hard enough for penetration?</b>	Almost never/never	120	48
	A few times (much less than half the time)	30	12
	Sometimes (about half the time)	50	20
	Most times (much more than half the time)	30	12
	Almost always/always	20	8
<b>How difficult was it to maintain your erection to completion of intercourse?</b>	Extremely difficult	50	20
	Very difficult	100	40
	Difficult	50	20
	Slightly difficult	30	12
	Not difficult	20	8
<b>How often was sex satisfactory for you</b>	Almost never/never	180	72
	A few times (much less than half the time)	20	8
	Sometimes (about half the time)	30	12
	Most times (much more than half the time)	10	4
	Almost always/always	10	4
<b>Do you experience severe stress?</b>	Yes	200	80
	No	50	20
<b>Total</b>		<b>250</b>	<b>100</b>

Source: Field survey, 2024

#### 4.5 Naturopathic care of erectile dysfunction among the respondents

From the table 4.4 below, all 250(100%) the respondents were naturopathic approaches in managing the various conditions. Majority (76%) of the respondents adopted diet therapy and clinical nutrition, more than half (96%) were using herbal medicine, a greater proportion (68%) adhered to homeopathic, while more than 80% adhered to life style counselling approaches, traditional Chinese medicine and more than half of them were using *acupuncture*.

**Table 4.4: Naturopathic approaches used by respondents.**

Variable		Frequency	Percentage
Naturopathic use	Yes	250	100
	No	-	-
Diet therapy and clinical nutrition	Yes	190	76
	No	60	24
Botanical medicine (Herbalism)	Yes	240	96
	No	10	4
Naturopathic physical medicine	Yes	50	20
	No	200	80
Homeopathic Medicine	Yes	170	68
	No	80	32
Behavioral change (prevention and lifestyle counselling)	Yes	220	88
	No	30	12
Traditional Chinese medicine / acupuncture	Yes	200	80
	No	50	20
<b>Total</b>		<b>250</b>	<b>100</b>

Source: Field survey, 2024

#### 4.6 Benefits of naturopathic methods of management

From the table 4.5 below, out of the 250 respondents, majority of the respondents were using the naturopathic methods of treatment for the reason that, it helped them felt better including managing emotions, anxiety, increase general sense of wellbeing (96%), helped them reduced their symptoms of erectile dysfunction with less side-effects (92%), it provided natural and healing therapies (100%), it made them felt positive and hopeful for the future (100%), they were looking for cure (100%). Meanwhile, a greater proportion (96%) of the respondents adhered to the naturopathic method of treatment not for the purpose of comfort from touch, talk and time with therapist.

**Table 4.5: Benefits of naturopathic approaches adhered by the respondents.**

Variable		Frequency	Percentage (%)
<b>Please why do you use the naturopathic methods</b>			
Help me feel better including emotions, anxiety, increase general sense of wellbeing	Yes	240	96
	No	10	4
Help reduce my symptoms with less side-effects	Yes	230	92
	No	20	8
Make me feel more control over my own health	Yes	200	80
	No	50	20
For its natural and healing therapies	Yes	250	100
	No	-	-
Comfort from touch, talk and time with therapist	Yes	10	4
	No	240	96
Make me feel positive and hopeful for the future	Yes	250	100
	No	-	-
Boosting my immune system	Yes	240	96
	No	10	4
Looking for cure	Yes	250	100
	No	-	-
Has condition improved	Yes	220	88
	No	30	12
<b>Total</b>		<b>250</b>	<b>100</b>

Source: Field survey, 2024

#### 4.7 Challenges in using naturopathic methods

From the table 4.6 below, out of the 250 respondents, majority 130 (52%) of them reported to have encountered challenges in the naturopathic methods. Out the 130 respondents with challenges, a greater proportion (38%) found it difficult affording the remedies, 23% experienced side-effects while a lesser percentage (23%) of them reported to have not seen improvement in their condition. Among a proportion of 30 respondents with side effects, a greater percentage (83%) experienced nausea, vomiting and stomach upsets and 57% experienced skin rashes and itches.

**Table 4.6: Challenges in using the naturopathic methods by the respondents.**

Variable		Frequency	Percentage (%)
Do you experienced challenges in using naturopathic methods?	Yes	130	52
	No	120	48
<b>Total</b>		<b>250</b>	<b>100</b>
Difficult affording the remedies	Yes	50	38
	No	80	62
Side effects	Yes	30	23
	No	100	77
Does not get healing/improvement	Yes	30	23
	No	100	77
Other...	Yes	-	-
<b>Total</b>		<b>130</b>	<b>100</b>
Side effects			
Nausea, stomach upsets, vomiting	Yes	25	83
	No	5	17
Skin rashes, itches	Yes	17	57
	No	13	43
Other, Specify	Yes	-	-
<b>Total</b>		<b>30</b>	<b>100</b>

Source: Field survey, 2024

#### 4.8 Prevalence and determinants of erectile dysfunction

McCabe et al. (2016) defined erectile dysfunction as the consistent or recurrent inability to attain and/or maintain penile erection sufficient for sexual satisfaction. From the above definition, 200 (80%) of the respondents met the criteria and hence the overall prevalence.

##### 4.8.1 Erectile dysfunction and socio demographic/economic determinants

Form the table 4.7 below, majority 170 (68%) of the respondents were within 20-50 age bracket. This age range was statistically (p. value =0.04) associated with ED. Educational status was not associated with erectile dysfunction (p. value= 0.35). Meanwhile occupation and financial satisfaction associated significantly(p=0.01) with ED.

##### 4.8.2 Erectile dysfunction and risk factors

From table 4.7 below, respondents who were ever diagnosed with hypertension and diabetes were associated (p. Value of 0.05) with ED while and hypercholesterolemia did not associate strongly with ED, a higher proportion of respondents with hypercholesterolemia had complained of erectile difficulties. Others were, those with prostate disturbances (p. value=0.03) and alcohol abusers were also strongly associated (p. value=0.02) with the condition.

### 4.8.3 Erectile dysfunction and naturopathic use

All the respondents adopted naturopathic method of treatment. This was statistically significant with the condition, ED (Pearson value of 0.01), diet and clinical nutrition, botanical medicine, herbs and lifestyle counselling were the most utilized methods. The respondent encountered challenges but this was statistically insignificant ( $P=0.06$ ). Meanwhile, majority of the respondents had their condition improved by using the naturopathic methods with statistically significant of p value of 0.001.

**Table 4.7: Determinants of erectile dysfunction and naturopathic use.**

Variable	Erectile dysfunction	Test statistic
Age range	Total/ Yes (%)	
20-50	170(68)	*0.04
≥ 51	80(32)	0.23
Level of education		
Educated	100(40)	0.35
Uneducated	150(60)	0.25
Occupation		
Employed	100(40)	0.08
Unemployed	150(60)	*0.05
Financial satisfaction		
Yes	70(28)	0.07
No	180(72)	*0.01
Hypertension		
Yes	150(60)	*0.05
No	100(40)	0.34
Diabetes		
Yes	140(56)	*0.06
No	110(44)	0.63
Hypercholesterolemia		
Yes	150(60)	*0.05
No	100(40)	0.54
Prostate disturbances		
Yes	180(72)	*0.03
No	70(28)	0.45
Alcohol		
Yes	200(80)	*0.02
No	50(20)	0.35
Naturopathic use		
Yes	200(100)	*0.01
No		
Diet and nutrition counseling		
Yes	40(60)	*0.04
No	10(40)	
Challenges of naturopathy		
Yes	30(60)	0.06
No	20(30)	
Improved condition		
Yes	40(80)	*0.002
No	10(20)	

\* = statistically significant

Source: Field survey, 2024

## DISCUSSION OF SURVEY RESULTS

### 5.2 Socio-Demographic and Economic Characteristics of the Respondents

Erectile dysfunction (ED) is often linked to factors such as age, educational background, economic stability, and various sociodemographic and health behaviors (Mark et al., 2024). In this study, respondents between the ages of 20 and 50 were significantly affected by the condition. A 2013 study by Capogrosso et al. (2013) revealed that out of 439 men with ED, 26% were younger than 40, with nearly half of these young men experiencing severe ED. However, this finding contrasts with the study by Moreira Júnior et al. (2002), which reported a higher prevalence of ED (45.9%) among men older than 40 in Brazil. The prevalence of ED in this study was inversely correlated with educational attainment, with the respondents' level of education not significantly affecting their experience of erectile difficulties. Financial dissatisfaction was strongly associated with the condition ( $P = 0.001$ ). This finding contradicts Martins & Abdo (2010), who found an inverse correlation between educational level and ED prevalence. Unemployment, poor financial satisfaction, and increasing stress were also linked to higher rates of ED. Bodenmann et al. (2006) explored the effects of critical life events and daily stressors, finding that financial struggles and stress had a significant impact on ED.

### 5.3 Erectile Dysfunction and Risk Factors

Several risk factors for ED were identified, including hypertension, hypercholesterolemia, diabetes, spinal cord injuries, prostate issues, hormonal disturbances, alcohol consumption, and stress. A study by Van Vo et al. (2017) identified disease history, weight-related problems, hormonal imbalances, alcohol consumption, and anxiety as key contributors to ED. Additionally, Yao et al. (2012) noted that hormonal deficiencies or imbalances are significant causes of ED. The findings of this study align with Heidelbaugh (2010), who suggested that anxiety can lead to increased heart rate, blood pressure, and fatigue, all of which contribute to ED.

### 5.4 Erectile Dysfunction and Naturopathic Use

A high proportion of the respondents reported using naturopathic treatments, which may have contributed to the improvement in their condition. According to Espinosa & Esposito (2017), naturopathic medicine, including herbal remedies, lifestyle counseling, acupuncture, and homeopathy, is an effective treatment for ED.

## CONCLUSION AND RECOMMENDATION

### 6.1 Conclusion

Eighty percent (80%) of the respondents in this study reported experiencing erectile dysfunction. The contributing factors included age, financial difficulties, unemployment, stress, and medical conditions such as hypertension, prostate problems, high cholesterol, and alcohol abuse. Many respondents turned to naturopathy, and their condition showed improvement. The naturopathic treatments used included homeopathy, botanical/herbal remedies, lifestyle counseling, acupuncture, and clinical nutrition. Despite facing challenges such as affordability, minor side effects, and in some cases, a lack of improvement, the respondents continued to use naturopathic methods. Some respondents suggested that practitioners lower the cost of treatments and increase public awareness through educational programs.

## 6.2 Recommendation

The study recommends the following:

1. Naturopathic professionals should enhance public education and awareness of naturopathic practices and remedies.
2. Naturopathic practitioners should advance their research and education to improve understanding of erectile dysfunction and its treatment options.
3. Further research should be conducted by naturopathic research institutions in Ghana to evaluate and refine various naturopathic methods for treating erectile dysfunction. It is also recommended that similar studies be conducted nationwide to validate the findings of this study.

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## DECLARATIONS

- **Competing interests**

The authors declare no competing interest

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## Authors' contributions

GA- Study conception, design, draft manuscript preparation, analysis and interpretation of results

RNO reviewed the results and approved the final version of the manuscript.

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