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**KNOWLEDGE AND PERCEPTIONS ABOUT MALE INFERTILITY IN THE
KUMASI METROPOLIS**

BY

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DECLARATION

I, Golda Ataa Akuffo, hereby declare that, this dissertation is my original work and has not been presented anywhere for a degree either in whole or in part. Apart from other researchers' work referenced to which I have duly acknowledged.

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DEDICATION

I dedicate this work to my Lord God Almighty, maker of heaven and earth.

ACKNOWLEDGEMENT

I thank God Almighty for his grace that has brought me this far in my academics.

I wish to express my sincerest gratitude to my academic supervisor, Dr. Agnes Kotoh, of School of Public Health University of Ghana, for her guidance, contribution and mentorship.

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ABSTRACT

Introduction: Infertility is the inability of a couple to conceive after one year of regular unprotected sexual intercourse. In the Ghanaian society women bear the brunt for a couple's inability to have children. Studies put male factors and female factors on the same level of causation. There seem to be little knowledge about male infertility in our communities. This study sought to assess knowledge about male infertility, identify some of the factors associated with knowledge about male infertility and explore some perceptions about male infertility. It also determined the factors that influenced people's perception about male infertility in the Kumasi metropolis.

Methods: The study was a cross-sectional quantitative study. Multistage sampling method was used in selecting respondents. Two hundred participants from the Kumasi metropolis were involved in the study. A structured questionnaire was used to collect data on participants' socio-demographic information, knowledge about male infertility and perceptions about male infertility. Data was entered with Microsoft Excel. STATA software version 14 was used to perform chi square test for associations and multivariate logistic regression analysis.

Results: Sixty-six percent of the respondents had poor knowledge about male infertility. Over sixty-two percent of women had good knowledge about male infertility compared with men. Married respondents were six times more likely to have good knowledge about male infertility. Fifty eight percent thought male infertility was not common. Over 70% thought men were embarrassed to discuss male infertility issues. Over 80% thought that men did not put in effort to preserve their fertility and would not avail themselves for fertility diagnosis.

Conclusion: These findings suggest that more effort should be put into educating the public on male infertility. This will reduce the prevalence of male infertility and reduce the stigma and emotional turmoil women in childless marriages go through.

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LIST OF ABBREVIATIONS

| | |
|------|-------------------------------------|
| ART | Assisted Reproductive Technology |
| NGO | Non-Governmental Organization |
| WHO | World Health Organization |
| GSS | Ghana Statistical Service |
| TFR | Total fertility rate |
| IUCD | Intra uterine contraceptive devices |
| OCP | Oral contraceptive pills |
| FSH | Follicle Stimulation Hormone |
| IVF | In-vitro Fertilization |
| LH | Luteinizing hormone |
| STD | Sexual Transmitted Diseases |
| TESE | Testicular Sperm Extraction |
| TRUS | Trans rectal Ultrasonography |
| TSH | Thyroid Stimulating Hormone |
| UMI | Unexplained Male Infertility |
| EDCs | Endocrine-disrupting chemicals |

DEFNITION OF TERMS

- Infertility Inability to conceive after one year of regular Unprotected sexual intercourse.
- Male factor infertility Infertility due to male related causes.
- Female factor infertility Infertility due to female related causes.
- Oligospermia Low sperm count.
- Asthenospermia Low number of fast moving sperm cells.
- Azoospermia Total absence of sperm cells per ejaculate.

- Cryptospermia Hidden sperms cells
- Necrospermia Dead sperm cells
- Teratospermia Abnormally shaped sperm cells

CHAPTER ONE

INTRODUCTION

1.1 Background

In years past, infertility was a topic not much discussed and researched into. In Africa, governments channelled resources into decreasing population rather than increase it, with the intent of boosting development (Bergstrom, 1992). With the HIV pandemic, more effort was put into contraceptive use especially condom (Ghartey, 2008), this further took attention away from infertility. However, with modernisation, women pursuing a career and marrying late, infertility has gained attention because it is on the ascendancy (Stanford & Hatasaka, 2002).

In recent years, infertility has gained grounds and attention as a significant public health issue (Parrott, 2014). Non-governmental organizations (NGOs) have sprung up to support infertile couples. In Ghana, there is an association of childless couples with a membership of 1,500. It seeks to provide low cost Assisted Reproductive Technology (ART) services to its members (Osei. 2014).

It is estimated that 70 million couples globally experience infertility (Dyeret et al. 2002). In the United States of America, the total fertility rate (TFR) dropped from 3.7 in 1965 to below 3.0 in the early 1970s. It dropped further to 2.1 in 2007. In Ghana the case is no different. The Ghana Demographic Health Survey in 2014 stated that fertility declined in Ghana from 6.4 per cent to 4.2 per cent in twenty six years; from 1988 to 2014. The prevalence of infertility is higher in the developing world than in the advanced world. This is due to the high prevalence of infectious diseases in the developing world (Green & Vessey, 1990).

Infertility is the inability of a couple to conceive after one year of regular unprotected sexual intercourse (Tabong & Adongo, 2013). The consequences of infertility in this part of the world are enormous as compared to the western world (Dyer et al 2004). In Africa, children are a heritage and barren couples are stigmatised and frustrated by the society. Women are blamed the most for a couples' inability to conceive. They suffer depression, ridicule, exclusion and serious economic deprivation. In the Ghanaian society women bear the brunt for a couple's inability to have children (Tabong & Adongo, 2013). Research on infertility often focuses on women with little attention on men, but infertility could be due to male factors.

The ability of a couple to conceive is attributed predominantly to the female partners age (Bhattacharya, 2007). Age below 30 years enhances a woman's chance of conception. The older the woman, the more difficult it is for her to conceive (Green & Vessey, 1990). As good a determinant of infertility as the female age is the male sperm count. The lower the sperm count the more difficult it is to impregnate a woman (Glover et al. 1999).

Recent studies have revealed that the male partner contributes equally to the problem of infertility among couples as the female. Each contributes 30% to 40% (Geelhoed et al., 2002) to couples' childlessness. Knowledge about male infertility in our communities seems to be limited. If people were made aware of the existence of male infertility and the contribution of male factors to infertility, it will reduce the amount of stigma women suffer in our communities for infertility.

A couple may be at risk of infertility if the age of the female partner is above 30 years. A sperm count of below 20 million sperm per ml in a man is a risk factor for infertility. When any of the partners or both have experienced an untreated sexually transmitted infection (STI) or any pelvic inflammatory disease, they are at risk of infertility. A male partner with a

history of alcoholism or smoking increases the risk of couple's infertility. If he is used to wearing tight clothing and under garments or sits for long hours especially due to job related reasons, he is at risk of infertility. A man may be at risk of being infertile if he experienced mumps in his lifetime or had an undescended testis (Richthoff et al., 2007).

Male factor infertility can be diagnosed by performing a semen analysis on the ejaculate produced by the man. Sperm count less than 20million sperm per ml (20×10^6 sp/ml) is regarded as low; a factor of male infertility (WHO, 2016). Low sperm count is grouped into azoospermia (no sperm cell), oligospermia (low number of sperm cells) and asthenospermia (low motility) among others (Kumar & Singh, 2015). Another sperm abnormality that can lead to male infertility is necrospermia an instance where the sperm cells produced are dead or not viable. There is always a chance of correcting male infertility (Geelhoed, Nayembil, Asare, Leeuwen, & Roosmalen, 2002).

The treatment for male factor infertility ranges from lifestyle changes to assisted reproductive technology (ART). There is also the option for adoption of a child. Because of the perception that infertility is a female problem, many men are not aware of treatment options available to them if they face infertility. Many do not avail themselves to be tested for male infertility.

It is thus prudent to investigate knowledge and perceptions about male infertility; to inform policy and interventions that will create awareness about the phenomenon and help people develop positive attitudes towards male infertility and reduce its prevalence.

1.2 Statement of the Problem

There is generally little knowledge about male infertility (Sohrabvand & Jafarabadi, 2005) in Ghanaian society. This has led to worsening health conditions at individual and societal level. This research sought to assess the knowledge and explore some perceptions about male infertility in the Kumasi metropolis. This research will bring to the fore people's knowledge of male infertility. It will help throw more light on male infertility. It will help men adjust their lifestyles to reduce the prevalence of male infertility in our community. This research will further help reduce the stigma, abuse and psychological turmoil women in childless marriages face.

When a couple cannot have a child, it is often the female that is considered to be the cause (Dyer et al. 2005). Umelo et al. (2015) state that infertility is rarely attributed to men. In Ghana, it is the female partner who bears the brunt for a childless marriage, because the woman is perceived always to be the malfunctioning one (Tabong et al., 2013). Women go through a lot of stigmatisation and psychological turmoil if their marriages have not produced any children. Some women are ostracized from their marital homes by in-laws etc. Many are abused for this same reason. In rural Ghanaian setting, a woman whose marriage has no children is called a witch and is blamed for eating up all her unborn children (Dyer et al., 2002; Janet, 2012).

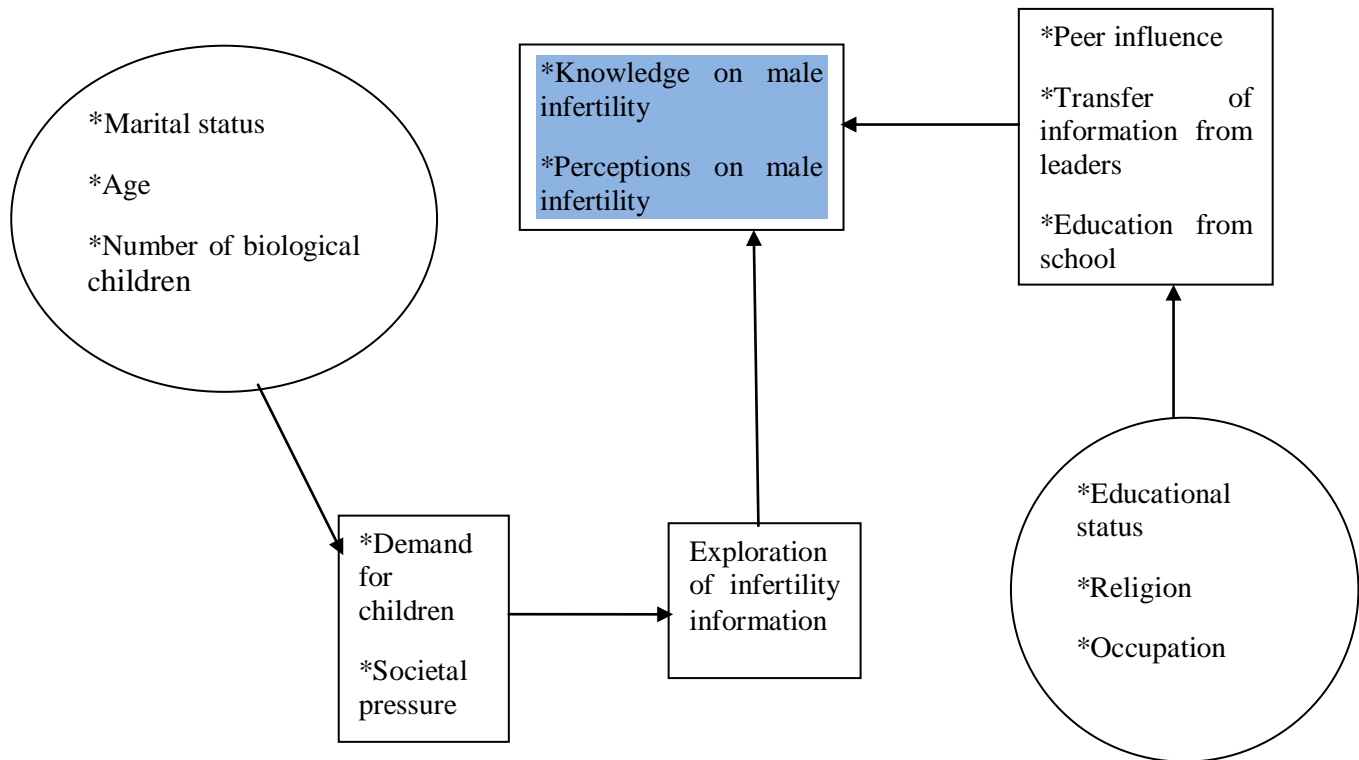
Research has shown that generally male infertility accounts for equal the percentage of female factors among a childless couple (Kumar & Singh, 2015). The lifestyles of many men have caused them to become infertile due to little knowledge they have on male infertility. Some have also failed to avail themselves for tests and seek treatment.

This research will go a long way to correct these misconceptions.

1.3 Conceptual Framework

This section describes the conceptual framework for this study.

Figure 1: **The Conceptual Framework**



AGE

As people age and reach their adult years, they tend to think more about getting married and starting families. They begin to probe and find out why they are not successful at conception and how to improve their stake. This increases their knowledge on male infertility. When people get married it is expected of them to start having children. The society frowns on a couple who cannot have children (Geelhoed et al., 2002). The pressure from the society drives people to seek knowledge on male infertility, this influences their perceptions on male infertility as well.

NUMBER OF BIOLOGICAL CHILDREN

It is believed that children are a security. How many children you have will determine how well you will be taken care of in your old age. The number of biological children one has boosts one's image in the society. Because of this people desire larger family sizes in the traditional Ghanaian setting (Tabong & Adongo, 2013). People with fewer children seek information on increasing fertility. The increased demand for children boosts the knowledge on male infertility and shapes their perceptions about it.

RELIGION AND OCCUPATION

Upon interaction with peers and leaders in workplaces and religious settings, certain information such as infertility is transferred from one person to another. Education on infertility is given in religious groups by their leaders. Many churches and corporate institutions organize health promotion week etc. where members are taught all sort of health topics including infertility. This information outlines people's knowledge and perceptions about male infertility. One's occupation and religion influences knowledge in male infertility.

EDUCATION

Education level has been known to inspire peoples' knowledge and perceptions about male infertility. In school, education is given on reproductive health which encompasses de infertility. As people go higher in the education ladder they gain access and are exposed to an array of information including that on male infertility. It is known that the higher the educational level the more knowledgeable one is about infertility and thus male infertility (Ali et al., 2011).

1.4 Justification

The emotional burden associated with infertility is enormous and should not be borne solely by one individual. However, the female partner is made to carry the burden of couple infertility alone, often because of the assumption that the woman is solely responsible for it. Many women go through emotional and even physical abuse for infertility. Some are even ostracized and sent out of their marital homes because of it (Umelo et al., 2015). This is because of the little knowledge people have about male infertility in our society. The society is not aware that the male partner could be the reason (Noumi et al., 2011) for a couple's childlessness. Research has shown that the male and female partners share equal blame for a couple's inability to have a child (Kumar & Singh, 2015). A study performed in Cameroon states that 76.5% of the couples, who presented at a fertility centre had their infertility related to semen anomalies in the male partner (Noumi et al., 2011). Furthermore, because of the little knowledge about male infertility, many men who suffer it are not able to access treatment for the male infertility even though treatment is available (Geelhoed et al., 2002). Many continually engage in activities and lifestyles that put them at risk of male infertility (Macaluso et al., 2008).

This research seeks to explore the knowledge and perceptions of the Kumasi populace about the male partner's contribution to infertility. This research will inform the society on the input males have in infertility and reduce the stigma women in childless marriages face.

It will improve the quality of life of such women and improve their productivity. The research will also serve as a guide for men to prevent infertility and to recognise male infertility. It will encourage them to avail themselves for diagnosis and treatment. This work will change the perception that infertility is a female cross to bear and help conscientize men to share in the burden of infertility. The results from this work will inform policy on interventions to reduce infertility as a whole and improve education on infertility.

1.5 Research Questions

1. What are the knowledge levels of male infertility in the Kumasi Metropolitan Area?
2. What are the perceptions of people in the Kumasi Metropolitan Area about male infertility?
3. What factors are associated with knowledge of male infertility?
4. What are the factors associated with perceptions of male infertility.

1.6 Objectives

1.6.1 General Objectives

- To assess knowledge and explore perceptions about male infertility in the Kumasi Metropolitan Area.

1.6.2 Specific Objectives

- To determine the level of knowledge of male infertility in the Kumasi Metropolitan Area.
- To examine factors associated with level of knowledge of male infertility.
- To explore the perceptions about male infertility in the Kumasi Metropolitan Area
- To examine the factors those influence the perceptions about male infertility.

CHAPTER TWO

LITERATURE REVIEW

This chapter provides a thorough review of literature concerning male infertility, knowledge and perceptions concerning male infertility.

2.1 Infertility

The WHO defines infertility as a disease of the reproductive tract, which affects both males and females (WHO, 2016). It is the inability for a couple to conceive after one year of regular (3 to 4 times per week) sexual intercourse without contraception (Noumi et al., 2011). Infertility is different from sterility in that infertility is reversible (Kumar et al., 2015). It is estimated that 25% of regularly sexually active couples will achieve pregnancy after the first month. Sixty three per cent, in six months and 80% in a year. In two months 90% of most sexually active married women would have normally achieved pregnancy (Tabong et al., 2013). Epidemiologically infertility can be defined as inability to achieve pregnancy after two years regular sexual intercourse without contraception (Tabong et al., 2013). There are two types of infertility: Primary and Secondary infertility.

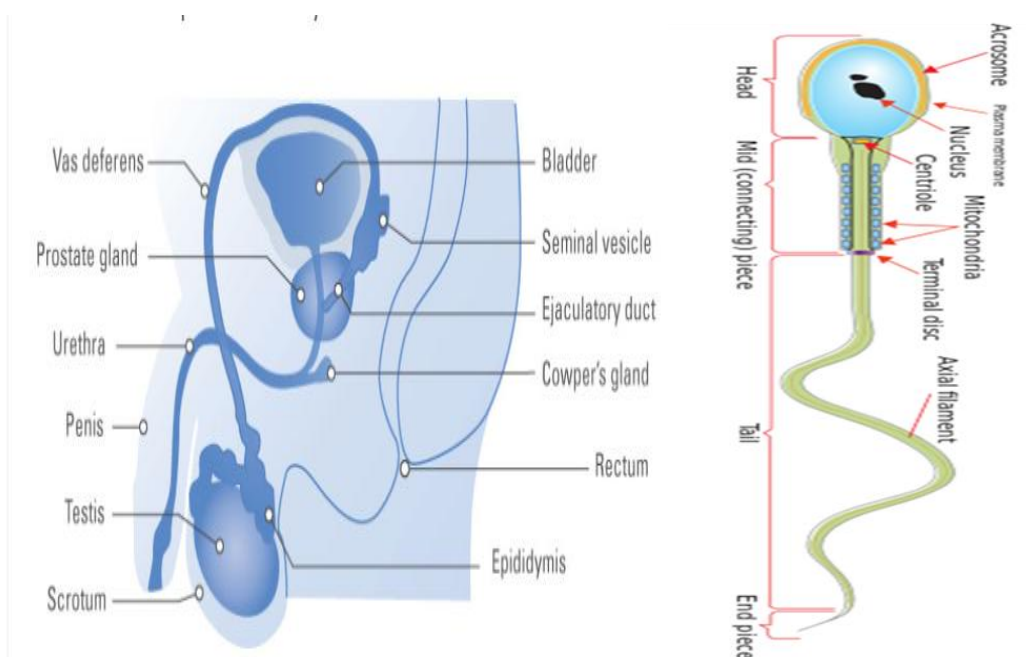
Primary infertility is when a couple who face infertility have never achieved a pregnancy. Secondary infertility is when a couple face infertility after a previous pregnancy. Infertility could be due to male factors 30% to 40% of the time. It may be due to female factors 30% to 40% of the time and 10% to 20% of the time due to combined male and female factors. There is a 10% chance infertility may be due to unexplained causes (Geelhoed et al., 2002). Related to infertility is the term sub-fertility. Sub-fertility refers to the least form of reduced fertility resulting in a protracted time of conception (Adamson & Baker, 2003). This is a minor form of infertility which could resolve with or without an intervention. In females infertility presents as an inability to conceive. In men it is an inability to impregnate a woman.

2.2 Male infertility

Male infertility is the inability of a man to impregnate a woman after one year of unprotected regular sexual intercourse. Male infertility is due to sperm production disorders 30% to 50% of the time (Noumi et al., 2011). Ukpai et al. (2015) states that male infertility is on the rise in Africa. The prevalence is higher than in the western world. It is known that male infertility has risen drastically worldwide in the past 50 years due to industrialization. It is believed that toxins from industries hinders sperm production (Eze & Okonofua, 2015).

Pregnancy is achieved when the male sperm cell successfully meets and fertilizes the female ovum. The embryo goes through cellular development resulting in pregnancy. The sperm cell which are about 100 million sperms per ejaculate are deposited into the vagina by the penis during sexual intercourse (WHO, 2016). Any occurrence that prevents the sperm from meeting the egg and fertilizing it will cause infertility. Any abnormality in the male reproductive system can also lead to male infertility. Furthermore any abnormality in the characteristics of the sperm cell could also delay conception.

Figure 2: **Diagrams of the male reproductive system and sperm cell**



2.2.1 Causes of Male Infertility

Risk factors such as Sexual Transmitted Diseases (STD) cause changes in semen quality. Chronic infections of the genital tract lead to a block of the vas deferens or seminal vesicles (Megory et al., 1987). Mumps, though rare in adults, can result in azoospermia. The presence of anti-sperm antibody causes immunological infertility (Carlsen et al., 1992). Environmental contamination by heavy metals, estrogenic chemicals have been known to decrease sperm counts. Life style; including smoking, alcoholism can also affect gamete and embryo development, leading to subfertility or infertility (Eze & Okonofua, 2015).

Some other causes of male infertility include obstruction of the sperm delivery route, and retrograde ejaculation. Obstruction can occur at any region of the seminal tract. It could be either proximal; affecting the epididymis and scrotal portions of the vas deferens or distal; including inguinal pelvic and ampullary portions of the vas deferens, and ejaculatory ducts. Seminal tract obstruction may be congenital or acquired. Congenital causes include atresia (failure of normal opening) or stenosis (abnormal narrowing), as well as midline prostatic cystic lesions, e.g. utricular, Mullerian and ejaculatory duct cysts. Acquired causes may be of inflammatory or traumatic origin to the prostate, seminal vesicle or ejaculatory duct.

Anatomical conditions of the male reproductive system that can cause infertility are; Testicular torsion, which is a condition in which twisting of the spermatic cord results in progressive impairment of testicular venous drainage which ultimately leads to arterial ischemia and testicular infarction. Testicular torsion is one of the leading causes of male infertility accompanied by acute scrotal pain (Kumar & Singh, 2015). Hydrocele, is an abnormal collection of fluid in the scrotum. Hydrocele is the most common cause of painless scrotal swelling (Rubeistein et al., 2004). Primary hydrocele is usually of idiopathic etiology whereas secondary hydrocele can be caused by testicular torsion, infection, trauma, tumor etc

(Singh et al., 2012). Epididymal cyst or spermatocele is usually an associated finding but not contributing factor to infertility. Epididymal cyst may become obstructive resulting in oligoasthenospermia or azoospermia. Cryptorchidism is the absence of one or both testicles from the scrotum due to failure of descend through the normal anatomical pathway (Lee et al., 1995). Cryptorchidism can lead to infertility by affecting the sperm concentration and sperm count. Varicocele is the dilation of the network of many small veins draining the scrotum (Agarwal et al., 2009). It induces male infertility.

2.2.2 Diagnosis of male infertility

Ultrasonography

Many imaging techniques are offered to assess men with obstructive infertility. These include scrotal ultrasonography, Trans-rectal ultrasonography (TRUS), vasography, Magnetic Resonance Imaging (MRI), TRUS guided seminal vesiculography etc. These progressive, highly detailed imaging techniques have made it possible to identify specific abnormalities of the male reproductive system.

Semen Analysis:

This is the process of examining semen by physical characteristics (WHO, 2010); Coagulation, Liquefaction, Odour, Colour, Volume, pH. Semen is also examined microscopically to assess the sperm movement (motility), morphology (shape), Sperm Vitality and the sperm count.

Endocrine assessment:

In investigating male infertility, fertility hormones are also assessed in the lab. Values higher or lower than standard levels could be indicative of infertility. Some hormones that are

estimated include; Human follicle-stimulating hormone (FSH), Serum Luteinizing hormone (LH), Serum Testosterone, Serum Prolactin.

2.3 Prevalence of Male Infertility

The world over male infertility has increased. Infertility has become quite common with an estimated 18% global prevalence (Carlsen et al., 2008). Several reports have shown deterioration of male sperm quality worldwide. Africa records the highest rates. Infertility has been known to be more prevalent in developing countries (Ali & Sophie, 2011). This has been overlooked due to measures to decrease population numbers and boost development (Geelhoed et al., 2002).

Geelhoed et al in (2002) stated that the prevalence of infertility in sub-Saharan Africa is 30%, while some other reports peg it at 35% (Carlsen et al., 2008). This makes infertility a key public health concern in sub-Saharan Africa. The prevalence of infertility in Ghana is 11.8% among women and 15.8% among men.

Carlsen et al. (2008) carried out a meta-analysis of 61 studies published between 1938 and 1991 involving semen quality of 14,947 men with no history of infertility and showed that the sperm concentration of fertile males have dropped from a mean concentration of 133 million/mL in 1940 to 66 million/mL in 1990, indicating an average yearly decrease of 1%. Sperm morphology and motility abnormalities were also significantly increased. In addition, this report showed that sperm count declined to a mean of 71.2 million/ml in Ibadan, Nigeria, 54.6 million/ml in Lagos, Nigeria, and 65.0 million/ml in Salem, Libya, 66.9 million/ml in Tanzania and 57.4 million/ml in Copenhagen, Denmark.

Swan and colleagues re-evaluated Carson's publication and confirmed that sperm concentrations in fertile males have gradually declined overtime. In 2000, Swan and colleagues conducted another analysis based on 101 papers published between 1934- 1996, involving only English-language studies and concluded that the decline in sperm quality of fertile men were as previously reported. This continuous decline in human fertility worldwide has been attributed to many factors including activities of endocrine-disrupting chemicals (EDCs) such as mycotoxins and pesticides. Recent reports indicate that EDCs may affect the development and functioning of the reproductive system in both sexes, particularly in foetuses, causing developmental and reproductive disorders, including infertility.

2.4 Knowledge about Male Infertility

Knowledge of male infertility includes knowledge of risk factors of male infertility and available treatment. It also includes knowledge on prevention of male infertility and how to identify male infertility and among others (Sabarre et al. 2013). Lack of knowledge on male infertility is in its self a cause of infertility (Hampton & Mazza, 2013). Having knowledge on male infertility goes a long way in helping individuals preserve their fertility. Good knowledge on male infertility encourages for instance lifestyle changes and taking precaution (Foster et al. 2008) to prevent male infertility. There is evidence that knowledge about infertility is poor. The knowledge about male infertility seem to be also inadequate.

In a study conducted in Berekum a town in the Brong-Ahafo region of Ghana, out of over two thousand respondents, 46.5% of the respondents could identify any cause of infertility (Geelhoed et al., 2002). Umelo et al. (2015) reported that only 9.5% of their 400 respondents had good knowledge of infertility. Many participants were unaware of the common causes of

male infertility while only 9.5% have good knowledge of causes of male infertility (Fu et al., 2015).

Dyer et al. (2005) observed that when a couple is faced with infertility it was rarely attributed to men, due to the low knowledge of male infertility. Knowledge about male infertility is associated with education level. The higher the educational level, the more one knows about male infertility and vice versa (Bunting & Boivin, 2008). It is believed that marital status, age and religion also affect knowledge about male infertility. It was established that women had better knowledge on infertility than men (Geelhoed et al., 2002). In the study conducted by Geelhoed et al., (2002) and Umelo et al., (2015) the methodology used was the qualitative method. It explores more indebt knowledge and misconceptions people have about infertility.

2.5 Perceptions about male infertility

Generally, people have different perceptions about infertility and male infertility. These perceptions shape their attitudes towards male infertility. There is increase in the perception that male infertility is caused by the use of contraceptives especially female contraceptives (Upton, 2017). People are of the impression that men do not admit to being the cause of male infertility (Umelo et al., 2015). High rates of smoking, stress and drinking are believed to be contributory factors. Many men however are in denial about the risk of infertility and tend to believe that problems in conceiving are more of a responsibility to the woman. A recent survey found that while doctors were worried about the extent of male infertility, many men were unaware that they could have problems fathering a child.

There was association between general level of education and participants' perceptions. Participants with higher levels of education gave more accurate responses and believed less in myths about infertility (Geelhoed et al., 2002).

Educated participants gave more biologically correct explanations of causes, and subscribed to the modern explanation for infertility. It is believed that marital status, age and religion also affect the various perceptions about male infertility (Geelhoed et al., 2002).

CHAPTER THREE

METHODS

3.1 Introduction

This chapter emphasises on the methodology of the research, the study design, sample size and sampling methods. It also iterates how the data was collected and how the data obtained was analysed. It addresses ethical issues that arose in the cause of the study.

3.2 Study design

The study was a prospective cross-sectional quantitative study involving men and women 18 years and above.

3.3 Study location

The study was conducted in the Kwadaso Sub-Metro of the Kumasi Metropolitan Area.

Kumasi Metropolitan Area

The Kumasi Metropolis is the second largest Metropolis in Ghana. It has a population growth rate of 5.4% (KMA, 2016). According to Ghana Statistical Service in 2014, the total fertility rate (TFR) of the Kumasi Metropolis is 2.6. That is 1.6 times lower than the national TFR of 4.2. Ghansah, (2011) in his research discovered that the men in the Kumasi metropolis showed various degrees of sperm abnormalities. About 75% of men they examined had sperm abnormalities, which could lead to male infertility. This information would affect the inhabitants' knowledge and perceptions about male infertility. Kumasi has the highest number of couples in committed relationships (married and cohabiting couples)

(GSS, 2014). This kind of people are more interested in issues of infertility and could be a factor for the people to have some perception and knowledge on male infertility.

Kwadaso sub-metropolitan area

Kwadaso is one of the biggest of the ten sub-metropolitan Areas of the KMA with coordinates of 6°42'0" North and 1°39'0" West. It is an urban area with a population of 251,215. It has two tertiary institutions; SDA Nursing and Midwifery Training School and the Kwadaso Agricultural College. It has a senior high school and a number of public and private basic schools. According to the Ghana Statistical Service (GSS, 2014). Kwadaso is a heterogeneous population with varied religious beliefs, varied political ideas and occupations and high education levels.

3.3 Study Variables

Dependent

- Levels of knowledge about male infertility – low and high knowledge.
- Perceptions about male infertility.

Independent

- Marital status
- Sex
- Educational level
- Age
- Occupation
- Religion
- Number of biological children

3.4 Study population

The study involves men and women above 18 years who live in the Kwadaso sub-metro of the Kumasi metropolis.

3.4.1 Inclusion criteria

People living in the Kwadaso sub-metro, who are 18years of age and older.

3.4.2 Exclusion criteria

People living in the Kumasi metropolitan area who are 18 years of age or less.

Non – inhabitants of the Kumasi sub- metro are also excluded from the study.

3.5 Sampling

3.5.1 Sample size

The sample size was determined using the Cochran formula (Cochran, 1977)

$$N = \frac{(Z^2 * p * q)}{E^2}$$

Where

N = required sample size

Z = confidence level at 95% (standard value of 1.96)

p = knowledge of male infertility = 9.5% (Umelo et al., 2015)

$$q = (1-p)$$

E= confidence interval

The sample size was calculated using the following parameters.

p = 0.095 knowledge of male infertility

A 95% confidence level of (z) was assumed.

$$N = \frac{(1.96^2 * 0.095 * 0.905)}{0.05^2}$$

$$= 132$$

The sample size was rounded off to 200 to compensate for losses and non-response.

Sample size of 200 was be used.

3.6 Sampling method

Kumasi metropolitan area was purposively selected for the study due to its high numbers of couples in committed relationships. A multi staged sampling method was used in selecting respondents for the study. Kwadaso sub-metro was randomly selected from the ten sub-metros of the Kumasi metropolitan area using the Microsoft Excel random number generation system 2013 version. The names of all the towns in the Kwadaso sub-metro was obtained from the sub-metro office. One town was selected randomly for the study, using the Microsoft Excel random number generation system 2013 version.

The list of house numbers with their respective house numbers in the chosen community was obtained from the Kwadaso sub-metro office. Two hundred (200) house numbers were

randomly picked using the Microsoft Excel random number generation system 2013 version. One person each was chosen from the selected houses and interviewed for the study.

In each house, all eligible people were told about the study. Interested people were made to ballot. Only one person from each house was selected to be part of the study. In a house where no eligible respondent was found or no one agreed to participate, the next house was selected as a replacement.

3.6.1 Questionnaire

A structured questionnaire prepared in reference to Umelo et al. (2015) and Ali et al., (2011) was administered to participants for the study. It was in three parts, the first part asked questions pertaining to the socio-demographic information of the participants. The second contained nineteen questions used in assessing the knowledge levels of male infertility. The last part contained questions used to explore the perceptions of the participants about male infertility.

3.6.2 Grading of Questionnaire

The questions from the questionnaire were graded one mark each for a correct answer. A wrong answer merited no score. This approach of grading was adopted from Umelo et al. (2015). The scores were grouped into good knowledge and poor knowledge. Those who scored ten (10) and above were classified as having good knowledge, those scoring nine and below were classified as having poor knowledge. For the perceptions, the various responses were quantified into proportions as adopted by Ali et al., (2011).

3.7 Quality control

- The questionnaire was pretested in a Patasi, a suburb of Kumasi to check for its feasibility and ability to answer the research questions.
- Research assistants with the requisite background were recruited and trained to collect data.
- Data collected was checked daily to ensure that all information was properly collected and the questionnaires properly filled.
- Double data entry was done to ensure that the right information was entered from questionnaires.
- The questionnaire was translated to Twi for easy understanding by the participants.

3.8 Data Analysis

Data was entered into Excel and exported to STATA Version 14. Socio-demographic characteristics were presented as frequencies and percentages.

The levels of knowledge were obtained from the questionnaire. The classification was as follows; Low level of knowledge = 0- 9 points, High level of knowledge= 10-19 points.

The association between the independent variable and the knowledge levels was determined using Chi-square test of significance. All the variables found to be significantly associated were further analysed using to logistic regression. The various perceptions were quantified into proportions. The association between the independent variables and the perceptions was determined using chi square test of association.

3.9 Ethical Consideration

Ethical clearance was sought from the Ghana Health Service Ethical Review committee. At the district level, consent was sought from the Kwadaso Sub-Metropolitan Office. A consent form explaining the research, how data will be collected and handled etc. was explained to and administered to the eligible participants. Those who showed interest were asked to sign or thumb print the consent form if they agreed to take part in the study. In the case where the respondent could not read, the study was explained in the presence of a witness before the signing of the consent form. The respondents were assured of utmost confidentiality and anonymity. They were assured that their names will not appear on questionnaire but rather codes understandable to only the researchers will be used. The participants were assured that information collected will only be used for the purpose of this research only.

3.10 Training

A day's training session for the research assistants was organized on the 19th of June 2017. The aim of the training was to equip the trainees with the pre-requisite skills to perform their task of sample collection. The content of the training included a discussion of the purpose of the study, ethical issues and questionnaire administration.

3.11 Pre-test or Pilot

The data collection tools and techniques was pre-tested in the Patasi, an urban community in the KMA which had similar characteristics as the study area.

CHAPTER FOUR

RESULTS

This chapter presents the key findings of the research.

4.1 Socio-demographic characteristics of respondents

The mean age of the participants was 32 years. The oldest participant was 69 years whilst the youngest was 18 years. The majority were within the 18 to 35 year group (69.8%), followed by the 36 to 55 year group (25.6%). The minority year group was 56 to 70 (4.5%). Eleven per cent of the participants had no biological children. The mean number of biological children was two. The highest number of biological children was ten (10) children. Majority had 1 to 5 numbers of children (84.5%) (Table 1).

| Socio-demographic characteristics | N=200 (%) |
|--|------------------|
| Sex | |
| Male | 98(49.5) |
| Female | 102(50.5) |
| Marital status | |
| Unmarried | 110(55) |
| Married | 90(45) |
| Education status | |
| No formal | 7(3.5) |
| Primary | 50(24.8) |
| Jss/middle school | 21(10.4) |
| Secondary | 74(37.1) |
| Tertiary | 49(24.3) |

| Religion | |
|-----------------|-----------|
| Christian | 174(87.0) |
| Muslims | 19(9.4) |
| Others | 11.8(5.9) |

4.2 Knowledge about male infertility

Out of the 200 respondents, 131 respondents had poor knowledge about male infertility, 69 had good knowledge. The highest score was 15. The lowest score was 3. The average score was 8.7. There was statistically significant association between levels of knowledge about male infertility and sex, marital status and educational stat of respondents (Table 2).

Figure 3: **Knowledge Levels of Respondents about male infertility**

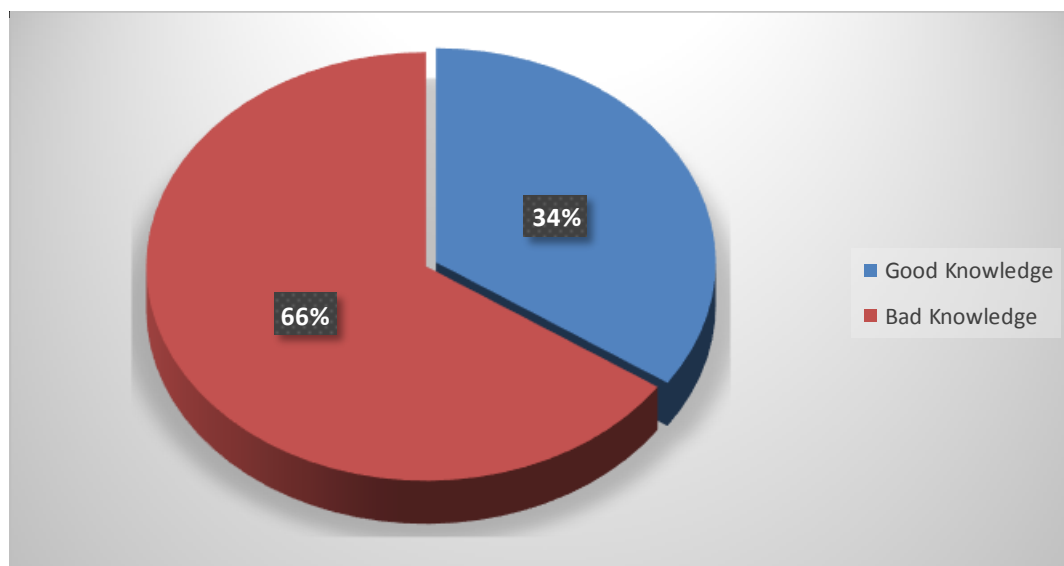


Table 2: Association between knowledge levels about male infertility and the independent variables

| Characteristics | Good Knowledge of infertility | Poor Knowledge of infertility | χ^2 P Value |
|---------------------------|-------------------------------|-------------------------------|------------------|
| Female | 43(62.3) | 59(45.0) | 0.02 |
| Male | 26(37.7) | 72(55.0) | |
| Religion | | | |
| Christian | 57(86.4) | 114(88.4) | 0.914 |
| Moslem | 7(10.6) | 12(9.3) | |
| Other | 2(3.0) | 3(2.3) | |
| Marital Status | | | |
| Single | 20(29.0) | 91(69.5) | <0.0001 |
| Married | 49(71.0) | 40(30.5) | |
| Educational status | | | |
| at least Primary | 45(14.5) | 45(34.4) | 0.000 |
| Primary | 10(14.5) | 40(30.5) | |
| JSS/Middle School | 2(2.9) | 19(14.5) | |
| Secondary | 28(40.6) | 47(35.9) | |
| Tertiary | 29(42.0) | 20(15.3) | |
| Occupation | | | |
| No employment | 9(13.0) | 25(19.1) | 0.22 |
| Formal sector | 2(2.9) | 12(9.2) | |
| Self Employed | 49(71.0) | 80(61.1) | |
| student/apprentice | 9(13.0) | 14(10.7) | |

Table 3: Respondents' responses to knowledge about male infertility questions

| Knowledge about male infertility | No (%) | Yes (%) | Correct Responses (%) |
|---|---------------|----------------|------------------------------|
| Man considered infertile after trying for 1 yr. without a child | 126(63) | 74(37) | 74(37) |
| Both Sexes contribute equally to infertility | 108(54) | 92(46) | 92(46) |
| Medical condition | 94(47) | 106(53) | 106(53) |
| Infection | 88(44) | 112(56) | 112(56) |
| Smoking | 108(54) | 92(46) | 92(46) |
| Supernatural Cause | 56(28) | 144(72) | 56(28) |
| Black magic | 72(36) | 126(63) | 72(36) |
| Regular Exercise | 150(75) | 50(25) | 150(75) |
| Psychological Stress | 110(55) | 90(45) | 90(45) |
| Obesity | 108(54) | 92(46) | 92(46) |
| Sitting for Long | 104(52) | 96(48) | 96(48) |
| Wearing Tight clothing | 104(52) | 96(48) | 96(48) |
| Alcohol | 130(65) | 70(35) | 70(35) |
| Male circumcision | 14(7) | 183(93) | 14(7) |
| Low sperm count | 64(32) | 136(68) | 136(68) |
| Drugs | 106(53) | 94(47) | 94(47) |
| Had mumps during child hood | 102(51) | 98(49) | 98(49) |
| Can Modern Drugs treat infertility | 110(55) | 90(45) | 90(45) |

4.3 Factors affecting knowledge about male infertility

Marital status was significantly associated with knowledge about male infertility. Married respondents were 6 times more likely to have good knowledge about male infertility than their unmarried counterparts after controlling for all other variables. Men were 54 times less likely to have better knowledge about male infertility than females. Respondents with secondary school level education were 3 times more likely to have better knowledge about male infertility than those who had at most primary school education. Those who had tertiary education were 7 times more likely to have better knowledge about male infertility than their colleagues with at most primary school education.

Table 4: **Multivariate analysis of factors affecting knowledge about male infertility**

| Variables | Unadjusted Odds Ratio | P-value | Adjusted Odds Ratio | P-value |
|-----------------------|------------------------------|----------------|----------------------------|----------------|
| Sex | | | | |
| Female | 1 | | 1 | |
| Male | 0.49 (0.27, 0.90) | 0.021 | 0.46(0.21, 1.24) | 0.065 |
| Religion | | | | |
| Christian | 1 | | 1 | |
| Moslem | 1.17 (0.44, 3.12) | 0.759 | 2.05 (0.59, 7.17) | 0.259 |
| Other | 1.33(0.22, 8.21) | 0.756 | 5.35 (0.25, 114.01) | 0.282 |
| Marital Status | | | | |
| Single | 1 | | 1 | |
| Married | 5.57 (2.94, 10.56) | <0.0001 | 5.74(2.84, 12.97) | *<0.0001 |
| Educational | | | | |

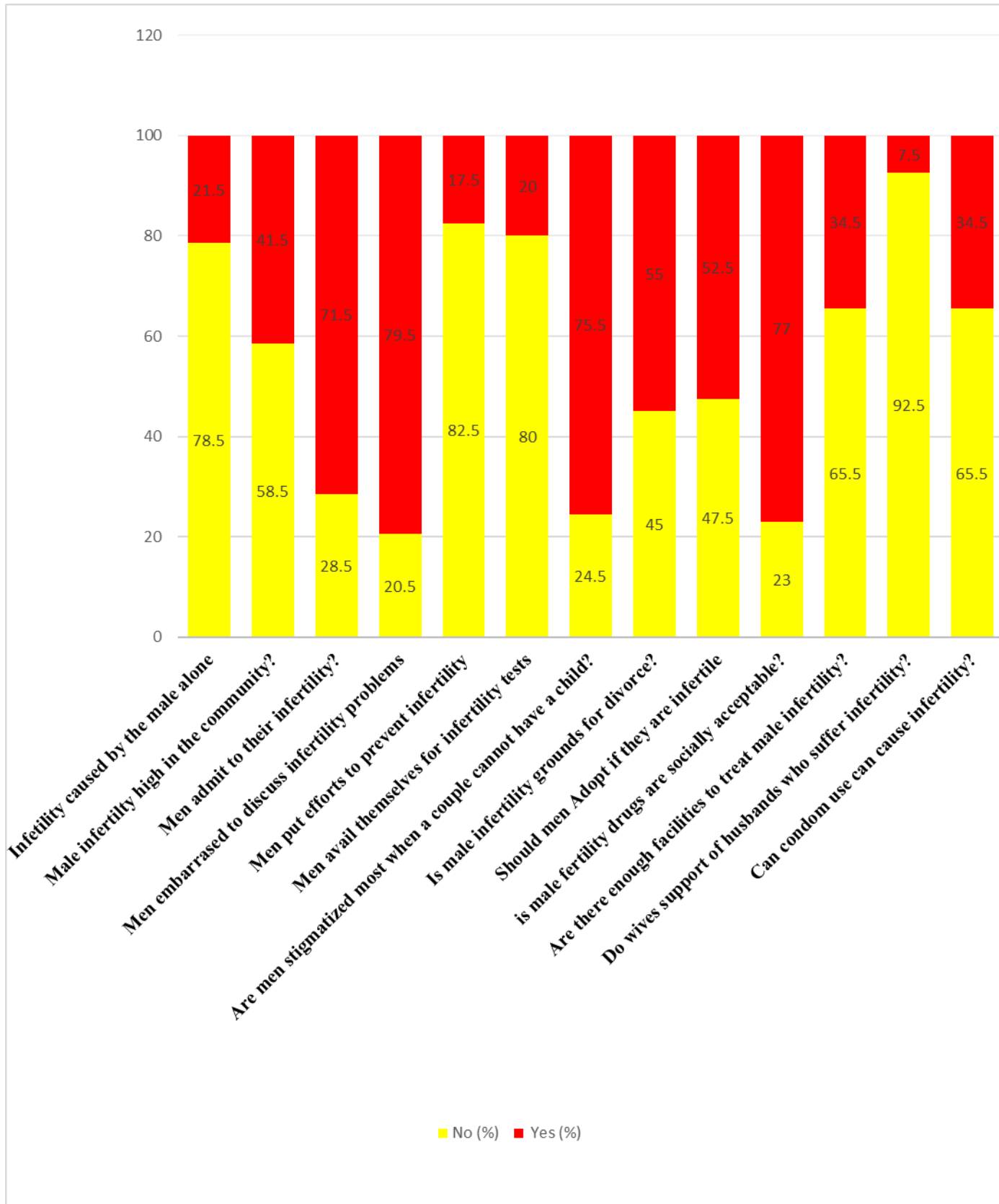
| status | | | | |
|--------------------|-------------------|--------|--------------------|----------|
| At least primary | 1 | 1 | 1 | |
| JSS/Middle School | 0.47 (0.09, 2.37) | 0.363 | 1.42 (0.22, 9.23) | 0.174 |
| Secondary | 2.68 (1.17, 6.15) | 0.02 | 4.36 (1.47, 12.96) | *0.008 |
| Tertiary | 6.53(2.68, 15.91) | <0.000 | 14.74(4.29, 50.71) | *<0.0001 |
| Occupation | | | | |
| No employment | 1 | | 1 | |
| Formal sector | 0.46 (0.09, 2.48) | 0.369 | 0.11 (0.01, 0.86) | *0.035 |
| Self Employed | 1.7 (0.78, 3.94) | 0.215 | 1.48 (0.50, 4.41) | 0.479 |
| Student/apprentice | 1.78 (0.58, 5.54) | 0.315 | 2.81 (0.69, 11.53) | 0.15 |

*Significant associations

4.4 Perceptions of Respondents on Male infertility

Fifty-eight per cent of the respondents thought male infertility was not common. More than 70% of the respondents thought infertility was not caused by male factor. Ninety-two per cent of the respondents thought men faced a lot more stigma for male infertility than women. They also thought women were not supportive of their infertile husbands. Meanwhile about 80% thought men did not put in effort in preventing male infertility and did not avail themselves for infertility diagnosis. Sixty-five per cent of the respondents were not aware of facilities to treat male infertility. But about 45% thought that an infertile man could explore adoption as an option. They also were of the view that male infertility should not be grounds for divorce.

Figure 3: Graph showing Perceptions of Respondents



4.5 Factors influencing perceptions about male infertility

Chi square test of association was run between the various perceptions and the independent variables. The following findings were made.

There were no statistically significant associations between Age, Number of Biological Children, marital status and the perceptions of respondents. However, there was statistically significant association between Sex, Religion, Education, Occupation of respondents and some perceptions of the respondents.

Education influenced the respondents' perception about men being the possible cause of infertility. It also significantly influenced respondents' view on high incidence of male infertility. Education level of respondents further influenced how they perceived men admitting to infertility, men putting in effort to prevent infertility and men availing themselves for male infertility diagnosis. Respondents' education level affected the perceptions that infertility was grounds for divorce. It also affected the perception of whether adoption was an option for male infertility. Respondents' perception about the social acceptability of fertility drugs was influenced by their educational level.

The religion of respondents had an effect on how they perceived males as being the cause of infertility. It further influenced the perception about male infertility having high prevalence. Occupation of respondents affected significantly the respondents' views on adoption as an option for male infertility. Gender of respondents influenced significantly their views on infertility being grounds for divorce.

4.5.1 Characteristics of factors influencing respondents' perceptions on Male Infertility

Male factor alone causes of infertility

About 78.5% of the respondents thought infertility was not caused by male factor. Whilst 21.5% believed it was. Ninety-eight per cent of respondents with at most primary education, thought male factor did not cause infertility among a couple. Over nine per cent of respondents with JSS/Middle school education thought likewise. About 48.8% of secondary school leavers and 7.0% of tertiary educated respondents thought male factor did not contribute to a couples infertility ($p < 0.05$). About 16.6% of unemployed respondents, 7.6% of formally employed respondents, 62.4% of self-employed respondents and 13.4% of students/apprentice, did not agree with this perception ($p < 0.05$). There was no statistically significant association between the various perceptions about male infertility and the other independent variables.

Male infertility is high in the community

More than Fifty-eight per cent of the respondents thought that male infertility was not common. About 63.2% Christians, 26.3% Muslims and 60.0% of other religion thought that male infertility was not common. Forty-two per cent of the respondents thought male infertility was common. More than 60.0% of respondents with at most primary education thought male infertility was common in the community ($p < 0.05$). About 52.0% with at most primary education, 33.3% JSS/Middle school leavers, 50.7% secondary school leavers and 18.4% tertiary educated respondents thought that male infertility was common ($p < 0.05$). There was no statistically significant association with the other independent variables.

Men admitting to being cause a couple's childlessness

Twenty-nine per cent of the respondents thought men do not admit male infertility. Whilst 71.5% agreed that men admitted if they were the cause of infertility. About 22.0% of respondents with primary education, thought men did not admit to being cause of infertility. Almost 60% of JSS/Middle school leavers, 77.3% of secondary school leavers and 40.8% of tertiary educated respondents did not agree to this perception ($p < 0.05$). Sex, marital status, occupation among others did not show any statistically significant association with the perceptions about male infertility.

Men put an effort in preventing infertility

Over eighty-two per cent of the respondents thought men did not put in effort to prevent male infertility. On the other hand 17.5% thought men put in effort to prevent infertility. Sixty-four percent of respondents with at most primary school education believed men did not put in effort to prevent infertility. About 81.0% of JSS/Middle school leavers thought same. Thirteen per cent of secondary school leavers and 6.1% of tertiary educated respondents thought men rather put in effort to prevent male infertility ($p < 0.001$). The rest of the independent variables did not show any statistically significant associations.

Men availing themselves for infertility tests easily

Eighty per cent of the respondents thought men readily availed themselves for infertility diagnosis. Twenty per cent thought otherwise. About 46.3% of respondents with at most primary education, 11.2% JSS/Middle school leavers, 36.3% secondary school leavers and 28.7% of tertiary educated respondents did not agree that men availed themselves easily for fertility diagnosis ($p < 0.05$). There was no statistically significant association between the knowledge on male infertility and the other independent variables.

Male infertility grounds for divorce

Forty-five per cent of the participants thought male infertility should not be biases for divorce. About 55% thought a man should be divorced if he suffers infertility. About 42.2% females and 57.8% males thought that infertile men should not be divorced ($p<0.025$). About 32.7% with primary education, 10.0% JSS/Middle school leavers, 41.8% secondary school leavers and 15.5% of tertiary educated respondents thought that infertile men should be divorced. ($p<0.05$). There was no association with all other independent variable.

Adoption during male infertility

About 47.5% of the respondents thought men should opt for adoption if faced with infertility. On the other hand, 52.5% also thought adoption should not be encouraged. Almost 80% of unemployed respondents, 85.5% of formally employed respondents, 31.5% self-employed respondents and 92.4% of students/apprentice agreed that adoption is an option to be considered when facing infertility ($p<0.036$). Age, sex, marital status and number of children had no association with this perception.

Fertility drugs are socially acceptable

About 23% of the respondents thought fertility drugs are acceptable. About 77% thought infertility drugs are not acceptable. About 33.2% of respondents with primary education, 9.7% JSS/Middle school leavers, 39.6% secondary school leavers and 16.9% of respondents with tertiary education agreed that fertility drugs were socially acceptable. For this perception only occupational status was significantly associated ($p<0.001$)

CHAPTER FIVE

DISCUSSION

This chapter discusses the findings of this study. It covers respondents' socio-demographic characteristics, knowledge about male infertility, factors associated with knowledge about male infertility, perceptions about male infertility and factors affecting knowledge levels about male infertility.

5.1 Socio-demographic characteristics

There were more females than males in the study population. There were more unmarried respondents than married. The study population was youthful with an average age of 32. The mean number of biological children was 2 children. The study participants were predominantly Christians. Most of them were employed. These findings agree with the Ghana Statistical Service's finding that the Kumasi Metropolitan Area is made up of a more youthful population, with females making up the majority. Regarding education, the findings contradict that of the Ghana Statistical Service (GSS), which stated that, the population was predominantly primary school leavers. Majority of the respondents in this study were secondary school educated. This could be because the community under study had an elite youthful population.

5.2 Level of knowledge about male infertility

The results of this study indicate that the study population had poor knowledge about male infertility. The mean score for the knowledge about male infertility was 8.7. Many of the respondents did not know that male infertility was the inability of a man to make a woman

pregnant after one year of unprotected sexual intercourse. More than half of the participants did not know that infertility is caused by both male and female factors. They also did not know that psychological stress played a role in reducing male fertility. This is similar to findings from Umero et al. (2015), which revealed that knowledge about infertility is generally low. Many of their respondents did not know what infertility was. This study's finding concurs with Padma et al., (2015) who conducted a study in India among infertile couples revealed that the study population did not know that male infertility was the inability of a man to make a woman pregnant after one year of unprotected sexual intercourse.

Majority of the study population thought that smoking and the use of certain medication did not cause male infertility. Interestingly in this study, it is observed that majority of individuals believed that supernatural forces caused male infertility. About 50% of the study population were not aware that IVF (in-vitro fertilization) and modern fertility drugs could be used to treat male infertility. This agrees with work done on infertility in Pakistan where majority of those respondents had similar perceptions (Ali et al., 2011). This low knowledge could account for the rising prevalence of male infertility (Eze & Okonofua, 2015), as men will delay in seeking help and may indulge in risky lifestyles that will predispose them to male infertility.

5.3 Factors affecting level of knowledge about male infertility

Findings from this study show that marital status and level of education significantly affected people's knowledge about male infertility. Those who were married and those with higher level of education had higher knowledge about male infertility. This was evident in Geelhoed et al., (2002) and Wang et al., (2008), who reported low knowledge on male infertility among uneducated respondents. As illustrated in the conceptual framework, when

people get married, there is a societal demand for children on them. This puts pressure on couples to pursue information regarding infertility and thus, improving their knowledge on male infertility. Also as people pursue education they become exposed to many kinds of information including that about male infertility.

Females had better knowledge about male infertility than men. This agrees with similar work done in Iran to assess men and women's knowledge about infertility (Talaiekhosani et al., 2016). This high knowledge about male infertility among women may be due to their higher sensitivity to infertility. It can also be due to the stigmatization and ordeal childless women face in the society. (Tabong & Adongo, 2013; Fledderjohann, 2012).

5.3 Perceptions about male infertility

Majority of the respondents did not believe the myth that male infertility is caused by condom use as its stated in (Bunting & Boivin, 2008.) This difference could be due to the higher educational status of the study sample. Majority of the respondents believed that men admitted that they could be the cause of a couple's infertility but saw it as an embarrassment to discuss male infertility issues. A few believed that infertile men were more stigmatized. This agrees with work done by Upton, (2017), where it was discovered that infertile men faced stigma. This stigma is the reason why men will not admit to male infertility or freely discuss it (Dyer et al., 2004). Majority of the respondents thought that men did not put in efforts to prevent male infertility and did not avail themselves for infertility diagnosis and treatments. From childhood through socialization, women are thought how to be a mothers. The desire to be a parent is imbibed in girls from infancy (Fledderjohann, 2012). This desire makes women put in more effort in preventing infertility. It also makes them avail themselves to treatment. Many believed that wives were not supportive of infertile husbands. This

contrasts a study which reported that infertile couples are supportive of each other (Dyer et al., 2004).

5.4 Factors affecting perceptions about male infertility.

It was observed that education influenced respondents' perceptions about male infertility most. The highly educated respondents were more open to other options of becoming a parent when suffering infertility, like adoption and fertility treatments. The educated respondents did not see divorce as an option to male infertility. This could be due to the high level of knowledge about male infertility the educated respondents had. They were more exposed to information about options available for male infertility. More males thought that male infertility should not be grounds for divorce. The respondent's perceptions was formed in favour of their gender.

Religion influenced the respondents' perception. From the conceptual framework people of the same religion upon interaction tend to develop similar perceptions about issues through socialization. The findings is similar to (Umelo et al., 2015).

5.5 Limitation of the study

This study was conducted among the inhabitants of the Kwadaso sub-metro. Infertility history of respondents was not collected due the difficulty in assessing clients at infertility clinics. It will be interesting to see the association of personal history of infertility with the level of knowledge about male infertility. It will also be interesting to know the perceptions of males alone about infertility. Because of the high sensitivity women have to infertility, their views shrouded that of the men. It will be better to have men's view alone. Due to the study design adopted, the research was limited to six variables. It will be good to add more variables to capture in detail what factors affects knowledge of infertility. A qualitative data collection and analysis method can be adopted to capture into detail all the possible perceptions respondents may have about male infertility.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusion

This study revealed that knowledge about male infertility is low in the Kumasi Metropolitan Area. Level of education and marital status affects people's knowledge on male infertility. Age, sex, occupation, number of Biological children and religion have no association with how much knowledge people had on infertility. This study revealed that a lot of misconceptions and myths are prevalent in the Kumasi Metropolitan Area about male infertility. People still believed that male infertility was caused by supernatural powers and Black magic. This indicates that people are ill informed about male infertility. Many were unaware that lifestyle played an important role in male infertility. Many thought that infertility was a woman's cross to bear. Educational level influenced people's perceptions about male infertility. Religion also had an effect on the perceptions on male infertility significantly.

If the misconceptions and low knowledge about male infertility is rectified, it will improve the quality of life of especially childless women and men in our society. It will also reduce the incidence and prevalence of male infertility in our society. This information will aid men in preserving their fertility.

6.2 Recommendation

Considering the findings of the study, the following recommendations were made to improve knowledge on male infertility. Education on male infertility should be increased in the community and the myths and misconceptions debunked. Effective pre-conception care clinic should be implemented. Where people are screened for male infertility and taught about it.

People will be thought causes and treatment options available would be encouraged. Gynaecologists and people involved in reproductive health services in their line of duty should discuss male infertility with their clients. As part of pre-marital counselling, churches should include sessions which should involve talks on male infertility, and how to deal with it. NGOs and passionate individuals should be encouraged and empowered to educate the public on male infertility. Mass media and social media channels should be employed in debunking myths about male infertility. In the long term, general improvement in the education system is recommended. A system where more people will have access to formal education should be created. This will improve their knowledge and boost their perceptions about many health issues including male infertility.

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APPENDICES

Appendix 1 - INFORMED CONSCENT

Research title – KNOWLEDGE AND PERCEPTIONS OF MALE INFERTILITY IN THE KWADASO SUB-METRO

Name of Researcher: Ms. GOLDA ATAA AKUFFO

Research Supervisor: DR AGNES KOTOH, Senior Lecturer, University of Ghana School of Public Health, Legon.

PART I: INFORMATION SHEET

Introduction

My name is Golda Ataa Akuffo a student of the University of Ghana reading Masters in Public Health. As part of the academic requirement, I am conducting a research titled “Knowledge and Perceptions about male infertility in the Kumasi metropolis” and I kindly invite you to join in this research work.

Details of this consent form will be explained to you so you understand what the study entails.

Purpose and Nature of the Study

This study will require that you answer some questions about your knowledge and perceptions on male infertility. Studies show that knowledge on infertility is high. However it is thought that only women suffer infertility. The information you will provide will help us to determine whether people are aware that men can also suffer infertility.

Potential Risks and Discomforts

In participating in this study, I will be asking you to share some personal information, views and experiences concerning male infertility with me and you may feel uncomfortable talking about some of the topics. You do not have to answer every question or take part in the research if you don't wish to do so. Again, you are free to withdraw from the study at any time that you wish without explanations. You can review your answers and change any responses that you want.

Additional Costs and Compensation

You will not have to pay money in partaking in this study and you will not be compensated for participating. If you agree to participate in the study, you can answer the questions at home or any place that you think is comfortable for you. You will only have to spare 30 minutes of your time to answer the questions I will ask.

Confidentiality

No information shared with me will be disclosed to anyone who is not part of the study team and I will not need your name in this study. The information that I will collect from this study will be used only for academic purpose. Hard copies will be locked in a cabinet and soft copies will be password protected.

Contacts for Additional Information

If you have any questions, you can ask them now or later. If you wish to ask questions later, you may contact me GOLDA ATAA AKUFFO, School of Public Health, Legon on this number 0249831331 or goldaakuffo@gmail.com or Dr. Agnes Kotoh, School of Public Health, University of Ghana, Legon amkotoh@ug.edu.gh, Hannah Frimpong GHS-ERC Administrator – 0243235225, Hannah.Frimpong@gmail.com.

PART II: CERTIFICATE OF CONSENT

I certify that the content of this study has been explained to me and I am satisfied with the answers to my questions. I voluntarily agree to be part of the study and understand I have the right to withdraw at any step of the study if I so wish.

Signature:

Date:

INVESTIGATORS STATEMENT AND SIGNATURE

I certify that the participant has been educated on the topic area and has also been allowed to read and learn about the study. All questions and clarifications raised by the participant have been addressed. The participant is not under any obligation or treat to be part of the study.

Signature:

Date:

Appendix 2 - QUESTIONNAIRE FOR ASSESSMENT OF KNOWLEDGE AND PERCEPTIONS ABOUT MALE INFERTILITY IN THE KUMASI METROPOLIS

Date of interview _____

Part I. Socio- demographic characteristics of the respondents

1. Code of the respondent: _____
2. Sex: 1. Male [] 0. Female []
3. Age : _____
4. Religion: 1. Christian [] 2. Muslim [] 3. Other (specify) _____
5. Marital status: 1. Married [] 0. Single []
6. Number of living Biological Children: _____
7. Educational status: 1. No formal [] 2. Primary [] 3. JSS/Middle school []
 4. Secondary [] 5. Tertiary []
8. Occupation: 1. Unemployed [] 2. Formal employment [] 3. Self-employed []
 4. Student/apprenticeship []

Part II. Questionnaire about Knowledge of Male infertility

| KNOWLEDGE ABOUT MALE INFERTILITY | YES=1 | NO=0 |
|---|--------------|-------------|
| K1. If a man does not have a child after 1 year of trying is he considered infertile? | | |
| K2. Do you think men and women contribute equally to infertility? | | |

| | | |
|--|--|--|
| What do you think is the cause of male infertility: | | |
| K.3 Some medical conditions? | | |
| K4. History of infections of genital tract in males | | |
| K5. Smoking | | |
| K6. Supernatural causes | | |
| K7. Black magic | | |
| K8. Regular Exercise | | |
| K9. Psychological stress | | |
| K10. Being obese | | |
| K11. Sitting for long hours | | |
| K12. Wearing tight clothing | | |
| K13. Alcohol | | |
| K14. Male circumcision | | |
| K15. Low sperm count | | |
| K16. Do you think some drugs causes infertility? | | |
| K17. Do you think if a man had mumps during childhood he might face infertility later in life? | | |
| K18. Can modern fertility drugs be used to treat? | | |
| K19. Can In-vitro fertilization be used to treat? | | |

III. Assessment of Perceptions about male infertility.

| PERCEPTIONS ABOUT MALE INFERTILITY | Yes | No |
|---|------------|-----------|
| P1. Do you think infertility is caused by male factor alone? | | |
| P2. Do you think male infertility is high in the community? | | |
| P3. Do men admit they have a problem if they are the cause of a couple's childlessness? | | |
| P4. Do you think men feel embarrassed to discuss infertility issues? | | |
| P5. Do you think men put an effort in preventing infertility? | | |
| P6. Do you think men put avail themselves for infertility tests easily? | | |
| P7. Do you think the man is stigmatized most when a couple cannot have a child? | | |
| P8. If a male cannot have children, do you think this is grounds for divorce? | | |
| P9. If a man cannot have a child do you think he should adopt? | | |
| P10. Do you think male fertility drugs are socially acceptable? | | |
| P11. Do you think there are enough facilities to treat male infertility? | | |
| P12. Do you think wives are more supportive of husbands who suffer infertility? | | |
| P13. Do you think condom use can cause infertility? | | |

Thank you