

**KNOWLEDGE AND PERCEPTION OF MARRIED MEN TOWARDS  
INFERTILITY AND ITS MANAGEMENT IN EDE NORTH LOCAL  
GOVERNMENT OSUN STATE, NIGERIA**

**BY**

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## **DEDICATION**

This research work is humbly dedicated to the most high, the most beneficent and the most merciful, the source of all wisdom, the lover of my soul, the author and the finisher of my faith, the one who knew me and knows what I can achieve before I was conceive of it. May His name be glorified.

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## ABSTRACT

Infertility is a public health problem that is characterised by serious social and psychological consequences. It is considered as a major life crisis that has the potential to threaten the stability of individuals and relationships, especially infertility among married men. Apart from the magnitude of the problem, management of infertility has focused more on women with little attention paid to men. The study was therefore designed to explore knowledge and perception of married men towards infertility and its management in Ede North Local Government Area (ENLGA), Osun State, Nigeria.

A descriptive cross-sectional design was adopted including a survey, complemented with five Focus Group Discussions (FGD) sessions. For the survey, a purposive sampling technique was used to recruit married men from all the 11 wards in ENLGA. Data were collected using a pre-tested interviewer-administered questionnaire. The questionnaire elicited information on socio-demographic characteristics of respondents, knowledge, perception and management of infertility. Knowledge of infertility was measured on a 28-point scale with  $>17$  rated as good, 10-17 as average and  $<10$  as poor. Knowledge scores of the management of infertility on 16-point scale were rated as “poor” ( $<8$ ) and “good” ( $\geq 8$ ) respectively. Perception on infertility was measured on a 14-point scale and scores of  $<7$  and  $\geq 7$  were classified as “wrong” and “right” respectively. Perception towards management of infertility was measured on a 12-point scale with  $<6$  and  $\geq 6$  categorised “wrong” and “right”. Descriptive statistics and Chi-square test were used to analyse the quantitative data at  $p=0.05$  while the FGD data were analysed using thematic approach.

In all, 316 married men were interviewed. Age of the respondents was  $40.1\pm 10.3$  (22-80) years, 98.7% were Yoruba, 69.0% were Muslims and 30.1% were Christians. About one-third (35.1%) of the respondents had secondary education and 43.0% were civil servants. Knowledge score of infertility was  $18.4\pm 2.8$  with 65.5% of the respondents having good knowledge on infertility, while 71.8% had good knowledge of the management with the score of  $8.4\pm 2.2$ . Respondents with secondary education had average knowledge of infertility ( $18.5\pm 2.9$ ) compared to those that had primary education ( $17.8\pm 2.4$ ) and no formal education

(18.5±2.9). Majority (60.8%) had right perception towards infertility with score of 7.5±2.3 while 44.9% had right perception towards its management with score 6.7±2.9. Religion of respondents was significantly associated with perception of married men on infertility. Majority of the FGD participants mentioned watery sperm, erectile dysfunction and sperm back-flow as illnesses that could lead to infertility. There was a consensus that both medical and traditional management could be utilized to treat infertility in men.

Majority of the respondents had good knowledge of infertility and its management. Although they had right perception towards infertility, perception towards its management was poor. Community-based health education programmes should be organised using existing male platforms to promote right perception of respondents with regards to early diagnosis and management of infertility.

**Keywords:** Knowledge of infertility, Management of infertility, Perception of married men,

**Word count:** 468

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## **CERTIFICATION**

I certify that this project was carried out by ABIONA ADESINA OLUTAYO in the Department of Health Promotion and Education, Faculty of Public Health, College of Medicine, University of Ibadan, under my supervision.

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## TABLE OF CONTENT

Title page	i
Dedication	ii
Abstract	iii
Acknowledgement	v
Certification	vi
Table of contents	vii
List of figures	x
List of Tables	xi
List of Appendices	xii
List of Abbreviations	xiii
<b>CHAPTER ONE: INTRODUCTION</b>	
Background of the study	1
Statement of the problem	2
Justification of the study	3
Research Questions	4
Research Objectives	4
Hypothesis	5
Operational definition of terms	5
<b>CHAPTER TWO: LITERATURE REVIEW</b>	
Concepts of infertility	6
Prevalence of infertility in developing countries	7
Causes of infertility	8
Knowledge about infertility	17
Perception of infertility	29
Knowledge on the management of infertility	33
Perception on management of infertility	35
Management of infertility	38
Conceptual framework	41

### **CHAPTER THREE: METHODOLOGY**

Study Design	43
Scope of the study	43
Study Area	43
Population for the study	43
Sample size determination	43
Sampling technique	44
Training of the research assistants	44
Method of data collection	44
Validity and Reliability	45
Reliability of instrument	45
Ethical consideration	46
Data management and statistical analysis	46
Limitations of the study	47

### **CHAPTER FOUR: RESULTS**

Socio-demographic profile of the respondents	48
Perception of married men on infertility	50
Perception of married men towards the management of infertility	55
Knowledge of married men on infertility	59
Knowledge of prevention of infertility	63
Knowledge of married men on management of infertility	66
Hypothesis testing	70

### **CHAPTER FIVE: DISCUSSION, CONCLUSION AND RECOMMENDATION**

Socio-demographic characteristics	74
Perception of married men about infertility	74
Perception of married men towards the management of infertility	75
Respondents knowledge on the causes of infertility	76
Knowledge on prevention of infertility	77
Knowledge on management of infertility	78
Conclusion	78
Recommendation	79

Implication of research findings for sexual and reproductive health	79
Suggestion for further study	80
References	81

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## LIST OF FIGURES

- Fig 2.1** Social Ecological Model as applied to knowledge and perception of married men towards infertility and its management 42

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## LIST OF TABLES

4.1	Socio-demographic profile of the married men	49
4.2	Perception of married men on infertility	51
4.3	Perception of married men on the severity of infertility	53
4.4	Categories of the perception score of married men on infertility	54
4.5	Perception of married men towards the management of infertility	56
4.6	Categories of perception score of married men towards the management of infertility	58
4.7	Respondents' knowledge of causes of infertility	61
4.8	Knowledge of prevention of infertility	64
4.9	Categories of knowledge score of married men on infertility	65
4.10	Knowledge of married men on management of infertility	67
4.11	Categories of the knowledge scores of married men on management of infertility	69
4.12	Hypothesis 1: Association between age and perception of married men on infertility	70
4.13	Hypothesis 2: Association between religion and perception of married men on infertility	71
4.14	Hypothesis 3: Association between level of education and knowledge of infertility management category.	72
4.15	Hypothesis 4: Relationship between age of the respondents and the knowledge on infertility.	73

## APPENDICES

Appendix I - Focus Group Discussion Guide	94
Appendix II - Study Questionnaire	95
Appendix III – Yoruba version of Focus Group Discussion Guide	99
Appendix IV – Yoruba version of Questionnaire	100
Appendix V – Letter of Ethical Approval	105

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## ABBREVIATIONS

<b>ARTs</b>	-	Assisted Reproductive Technologies
<b>CDC</b>	-	Centre for Disease Control and Prevention
<b>DNA</b>	-	Deoxyribonucleic Acid
<b>ICPD</b>	-	International Conference on Population and Development
<b>ICSI</b>	-	Intra-cytoplasmic Sperm Injection
<b>IUI</b>	-	Intra-uterine Insemination
<b>IVF</b>	-	In-vitro Fertilization
<b>NDHS</b>	-	National Demographic Health Survey
<b>PID</b>	-	Pelvic Inflammatory Disease
<b>RAHR</b>	-	Russian Association of Human Reproduction
<b>RHO</b>	-	Reproduction Health Outlook
<b>ROS</b>	-	Reactive Oxygen Species
<b>STD</b>	-	Sexually Transmitted Disease
<b>STI</b>	-	Sexually Transmitted Infection
<b>WHO</b>	-	World Health Organization

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background

Worldwide, more than 80 million couples suffer from infertility; the majority of this population are residents of developing countries (Ombelet & Campo, 2007). In the African society, infertility is considered as a serious problem, so African men and women can go to any length to ensure that their marriage is blessed with children. This issue of infertility has led to many matrimonial problems in many families that started well and founded on genuine love when the marriages were consummated. Infertility is regarded as a major life crisis (Ashraf, Ali and Azadeh, 2014) that has the potential to threaten the stability of individuals and relationship. Social, psychological and infertility-related issues as well as gender may be of relevance in determining the impact of infertility on marital relationships. Studies have agreed that women experience infertility as being more stressful than men (Henning and Strauss, 2002; Ying, Wu and Loke, 2015).

Studies carried out by Quach and Librach,(2008) showed that community members accord great significance to child bearing, but they have incorrect knowledge of the causes and appropriate treatment of infertility. Focus group participants used in the study mentioned several traditional beliefs regarding the causes of infertility from which they derived a variety of traditional and religious methods for its treatment; many affected couples use these methods of treatment, sometimes singly but most often in combination. Orthodox treatments are less often used because of perception of the causes of infertility and lack of confidentiality at the treatment centres. Women's experience of infertility are documented to be multi-dimensional and includes stigmatization, ostracism and neglect, marital instability, abuse, loss of social status and security (Holloos and Larsen, 2008, Hollos, Larsen, Obono, & Whitehouse, 2009).

Fertility knowledge in the general population is poor. The evidence indicates that people are unaware of the biological aspects of conception; they often overestimate the chances of pregnancy at the time of ovulation (Lampic et al., 2006), have low awareness of when women are most fertile (Byamugisha, Mirembe , Faxelid , Gemzell-Danielsson , 2006)

and lack an understanding of the steep decline in female fertility after the age of 34 years (Bunting, Tsibulsky and Boivin, 2012; Bretherick, Fairbrother, Avila, Harbord, Robinson, 2010). Knowledge about the specific risk factors, e.g sexually transmitted infections, smoking and alcohol consumption, for lower fertility is limited (Bunting and Boivin, 2008; Quach and Librach, 2008). People have erroneous knowledge when it comes to factors that have no impact on fertility potential (e.g. being healthy is equated with being fertile, (Bunting and Boivin, 2008). Country of origin also seems to be an important contextual factor. For example, American samples tend to attribute fertility problems to biomedical and chance factors (Sabarre, Khan, Whitten, Remes and Phillips, 2013), whereas in some other countries attribution to supernatural causes is still common (Ola, Aladekomo, Oludar, 2008; Ali, Sophie, Imam, Khan, Ali, Skaikh, Farid-ul-Hasnain, 2011).

The perceived causes of infertility in many parts of Africa are mainly nonmedical and are commonly associated with supernatural or evil powers, and the treatment often involves traditional healers and spiritualist. (Deribe, Anberbir, Regassa, Belachew & Biadgilign, 2007). Infertility has recently been construed to be a serious problem in sub-Saharan Africa. This problem seems to be viewed as of low priority with reference to the effective and efficient allocation of available health resources by national government as well as by international donors sponsoring either research or service delivery in the public health sector. (Akinloye and Truter 2011).

## **1.2 Statement of Problem**

Infertility affects 12–16% of couples during the reproductive lifespan (Louis, Thoma, Sorensen, McLain, King, Sundaram, Keiding and Louis, 2013; Thoma et al., 2013), and male factor infertility is the sole etiology in up to 30% of couples seeking assistance with conception (Anderson, Fan, Jamieson, Warner and Macaluso, 2009). About 6% of married women 15-44 years of age in the United States are unable to get pregnant after one year of unprotected sex (infertility) and about 11% of (6.1 million) of women 15-44 years of age in the United States have difficulty getting pregnant or carrying a pregnancy to term, regardless of marital status (impaired fecundity), according to Centre for disease control and prevention (2011). Available evidences suggested that male infertility is an important but neglected reproductive health issue in Nigeria. Published studies indicated that the

male factor accounts for 20%-50% of the causes of infertility in different parts of the country. However, very little has been done to identify the original causes of male infertility in the country and several reports on the major part of male infertility is unexplained (Okonofua, Menakaya, Onemu, Omo-Aghoja and Bergstrom, 2005). It has been estimated that approximately 15% of the population in industrially developed countries are affected with the problem of infertility (Homan, Davis and Norman, 2007; Belani, Purohit, Pillai, Gupta and Gupta, 2014). Unfortunately, a large majority of the population cannot afford infertility treatment since new reproductive technologies are either unavailable or very costly (Balen and Gerritis, 2001; Nachtigall, 2006).

The total population of Nigeria was last recorded at 173.6 million in 2013 from 45.2 million in 1960. The population of Nigeria represents 2.35 percent of the world's total population which arguably means that one person in every 43 people on the planet is a resident of Nigeria (NPC, 2015). This shows that Nigeria has a high population growth rate and also a fertility rate of 5.5 births per woman in 2013. On the average, rural women are having two children more than the urban women; 6.2 and 4.7 children, respectively. (NPC and ICF, 2014). Nigerian gynaecologists frequently report that infertility cases constitute between 60 and 70 percent of their consultations in tertiary health institutions and most cases of infertility follow reproductive tract infections. (Snow, Okonofua, Kane, Farley & Pinol 2009, Chaudhry, Majrooh & Javed 2013). According to the studies carried out on semen quality of male partner of infertile couples in Ile-Ife, Nigeria the patterns of semen parameters noted in infertile males were oligozoospermia, teratozoospermia, asthenozoospermia, azoospermia, oligoteratozoospermia, oligoasthenozoospermia, and oligoasthenoteratozoospermia, asthenoteratozoospermia found in 25.6%, 18.5%, 11.5%, 6.2%, 3.2%, 2.3%, 2.1%, and 0.9%, respectively. Among the age groups, age group 31-40 had a higher prevalence of oligozoospermia (13.3%) while among the occupational groups, the civil servants had the highest prevalence of oligozoospermia (12%). There was a high level of leucocytospermia and bacterial infections in both normospermic and oligospermic semen (Owolabi, Fasubaa and Ogunniyi, 2013)

Studies had shown that supernatural factors are also believed to cause infertility. A person could be punished by offended witches, wizards or elders. Infertility could also be caused by powers of darkness, called '*Juju*.' Another reason is that a person might be destined not to have any children in the physical world or is cursed by other people or God Himself.

(Sonja, Nieuwenhuis, Akin-Tunde, Sally & Xiaoyun, 2009). In many cultures, womanhood is defined through motherhood and infertile women usually carry the blame for the couple's inability to conceive (Ombelet, Cooke, Dyer, Serour and Devroey, 2008).

However, it was discovered that many studies have not been carried out on married men's knowledge and perception towards infertility and its management. The result of this study would provide information on men's knowledge and perception towards infertility and its management and this would gear up public health department in Nigeria to intensify its health education and promotion exercise in the community to enhance the knowledge and perception of men towards infertility and its management.

Lastly, the result could be useful during seminars, work shop and conferences by health educators and public health specialist to effect changes in the negative knowledge and perception of men towards infertility and its management.

### **1.3 Justification of the Study**

Infertility or childlessness is a global reproductive issue for both sexes yet often neglected and not discussed in public, (Tabong and Adongo 2013). Infertility is recognised and defined as a public health problem and is the manifestation of one or more pathological conditions either of female or male origin (Le Thi Thuy, 2005). Infertility is of public health importance in Nigeria and many other developing nations because of its high prevalence and especially due to its serious social implication (Araoye, 2003; Robert and Nachtigall, 2005). Apart from the share size of the problem, it is also now well known that infertility in African countries has severe negative consequences for women's reproductive health. Due to the high cultural premium placed on childbearing in many African countries, infertility often poses serious social problem for the couples. However, women are more severely affected than men even when the infertility is due to a male factor (Fisher and Hammarberg, 2012).

The study carried out by Owolabi et al, (2013), showed a high rate of abnormal semen quality of male partners of infertile couple in our environment and is an indication for the need to focus on the management of this condition and the institution of preventive program for male infertility. There is urgent need for advocacy for men to accept responsibility for their contribution to infertility and to reduce stigmatisation and

ostracising of women for infertility. This study therefore determined the knowledge and perception of married men toward infertility and its management.

#### **1.4 Research Questions**

This study attempts to find answers to the following questions.

1. What are the perceptions of married men towards infertility?
2. What are the married men's perceptions towards infertility management?
3. What is the knowledge of married men on infertility?
4. What is the married men's knowledge on infertility management?

#### **1.5. Broad Objective**

The broad objective of this study was to investigate the knowledge and perception of married men towards infertility and its management in Ede North Local Government, Osun State, Nigeria.

##### **1.5.1 Specific Objectives**

The Specific Objectives of this study were:

1. To determine the perception of married men towards infertility.
2. To assess the perception of married men toward management of infertility.
3. To evaluate the knowledge of married men on infertility
4. To assess married men's knowledge on management of infertility.

##### **1.5.2 Hypotheses**

The following hypotheses were tested by this study

- Ho1. There is no association between the age of the respondents and their perception toward infertility.
- Ho2. There is no association between the religion of the respondents and the perception toward infertility and its management.
- Ho3. There is no association between the level of education of the respondents and their knowledge of infertility management.
- Ho4. There is no association between the age of the respondents and their knowledge of infertility.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Concepts of infertility

According to World Health Organisation, (2015) - Primary infertility is the term used in reproductive medicine for a woman (couple) who failed to achieve a pregnancy for 1 or 2 years and who was never pregnant before. Secondary infertility is the term applied to women who meet the criteria for primary infertility but at some time in the past have been pregnant. In reproductive medicine, the term infertility can be used in a descriptive manner to define the situation in women (couples) who are unable to conceive or have a pregnancy leading to live birth, during  $\geq 1$  year. But it has also absorbed the meaning of the term as used in common language in the sense of impossible to conceive, synonymous with the demographic term infecundity.

Ajuwon, Owoaje, Falaye, Osinowo, Christopher and Adewole, (2007), viewed infertility / sub-fertility as inability of a couple to obtain a clinically recognisable pregnancy after 12 months of regular and unprotected sexual intercourse (involuntary failure to conceive). Cooper, Noonan and Eckardstein, (2010), reported that the definition of infertility frequently used by reproductive endocrinologist is when a woman under 35 years has not conceived after 12 months of contraceptive-free sexual intercourse or when a woman over 35 years has not conceived after 6 months of contraceptive-free sexual intercourse.

Mascarenhas, Flaxman, Boerma, Vanderpool, and Stevens, (2012) said primary infertility is defined as the absence of a live birth for women who desire a child and have been in a union for at least five years, during which they have not used any contraceptives and Secondary infertility is defined as the absence of a live birth for women who desire a child and have been in a union for at least five years since their last live birth, during which they did not use any contraceptives

For a woman, infertility (or a state of subfertility) can manifest itself as either: the inability to become pregnant, an inability to maintain a pregnancy or an inability to carry a pregnancy to a live birth. (WHO, 2014). Gurunath, Anderson and Bhattacharya, (2011), wrote that definitions of infertility differ with demographers tending to define infertility as childlessness in a population of women of reproductive age while the epidemiological

definition is based on 'trying for' or 'time to' a pregnancy, generally in a population of women exposed to a probability of conception. Cowden, (2010) said "infertility is not an inconvenience; it is a disease of the reproductive system that impairs the body's ability to perform the basic function of reproduction"

## **2.2 Prevalence of infertility in developing countries**

Global infertility prevalence rates are difficult to determine, due to the presence of both male and female factors which complicate any estimate which may only address the woman and an outcome of a pregnancy diagnosis or live birth. One in every four couples in developing countries had been found to be affected by infertility, when an evaluation of responses from women in Demographic and Health Surveys from 1990 was completed in collaboration with World health organisation in 2004. The burden remains high. A WHO study, published at the end of 2012, has shown that the overall burden of infertility in women from 190 countries has remained similar in estimated levels and trends from 1990 to 2010, (WHO 2014). Only a limited number of papers report on the prevalence of infertility in developing countries. According to Boivin, Bunting, Collins & Nygren (2007), the 12-month prevalence rate ranges from 6.9 to 9.3% in less-developed countries. Substantial geographical differences in the prevalence are noted, and these differences are largely explained by different environmental, cultural and socioeconomic influences.

In sub-Saharan Africa, the prevalence of infertility differs widely from 9% in the Gambia (Biovin et al, 2007, Tabong and Adongo, 2013) and 15% in Ghana (Donkor and Sandall, 2009) compared with 21.2% in northwestern Ethiopia (Haile, 1990, Ombelet et al, 2008) and between 20 and 30% in Nigeria (Larsen, 2000, Ombelet et al. 2008). Even less data are available from Asia and Latin-America, but a report compiled by the World Health Organization (WHO) indicated that the prevalence of infertility in these regions fell within the globally expected range 8 – 12% of couples of reproductive age and was thus lower when compared with African countries (World Health Organisation, 2014). Current estimates of infertility in developing countries are primarily based on demography and health survey (DHS) birth history data and do not include the self reported time to pregnancy question. However these estimates show that primary infertility, or childlessness, remain relatively rare, with rates between 1 – 10 % in woman aged 25 – 49. In contrast, the percentage of women experiencing secondary infertility, or an inability to

produce a live birth after at least one previous birth ranges from 9% – 38 % (Rutstein and Shah, 2004, Dhont et al, 2010). Available data indicate that countries in sub-Saharan Africa have some of the highest rates of infertility in the world. Infertility rates among married couples in African countries range from 15% to 30%, compared to reported rates of 5% to 10% in developed countries. There is now conclusive evidence that much of the infections in Africa are attributable to infections that produce irreversible reproductive tract damage in men and women. In Gabon, for example, more than 30% of couples are infertile at the end of their reproductive lives due to longstanding tubal occlusion in women and occlusion of the vas deferens and/epididymis producing azoospermia in men (Okonofua, 2003). Purefoy and Kermeliotis, (2011), said the prevalence of infertility in Nigeria is about 25%, compared to 10 to 15% in the U.S. and UK.

### **2.3 Causes of Infertility**

American Society for Reproductive Medicine,(2012), while expounding the causes of infertility said some factors called “fertility factors” when affected one way or the other are responsible for infertility. These factors include:

#### **The Ovulation Factor**

Problems with ovulation are common causes of infertility, accounting for approximately 25% of all infertility cases. Ovulation involves the release of a mature egg from one of the ovaries. After ovulation, the ovary produces the hormone progesterone. During the 12 to 16 days before menstruation begins, progesterone prepares the lining of the uterus into an optimal environment for implantation and nurturing of the fertilized egg. If a woman has regular menstrual cycles, she is probably ovulating. Cycle lengths of approximately 24 to 34 days (from the beginning of one period to the beginning of the next period) are usually ovulatory. If a woman only has a period every few months or not at all, she is probably not ovulating or not ovulating frequently and if a woman is not ovulating she cannot become pregnant. An elevated progesterone level helps to confirm ovulation and the adequacy of ovarian hormone production (Baby center medical advisory board, 2014)

#### **The Tubal Factor**

Open and functional fallopian tubes are necessary for conception, tests to determine tubal openness (patency) are important. Tubal factors, as well as factors affecting the peritoneum (lining of the pelvis and abdomen), account for about 35% of all infertility problems. If the tubes are found to be blocked, scarred, or damaged, surgery can sometimes correct the problem. But surgery does not guarantee that the tube, even if opened up or cleared of scar tissue, will function properly. Although some tubal problems are correctable by surgery, women with severely damaged tubes are so unlikely to become pregnant (Garcia-Ulloa and Arrieta, 2005)

### **The Male Factor**

In approximately 40% of infertile couples, the male partner is either the sole or a contributing cause of infertility. Therefore, a semen analysis is important in the initial evaluation. There may be Varicocele (dilated or varicose veins in the scrotum) or duct obstruction. In some cases, no obvious cause of poor sperm quality can be found.

### **The Age Factor**

Delaying pregnancy is a common choice for women in today's society. The number of women in their late 30s and 40s attempting pregnancy and having babies has increased in recent years. Those who have chosen to delay pregnancy, due to college or career for example, may not realize that their fertility begins to decline significantly in mid 30s and accelerates in their late 30s. Some women even begin to experience a decline in their fertility in their late 20s and early 30s. Fertility declines with age because fewer eggs remain in the ovaries, and the quality of the eggs remaining is lower than when they were younger. An elevated FSH (follicle stimulating hormone) level indicates that the chances of becoming pregnancy may be lower than routinely expected for a particular age, especially if women are age 35 or older. In addition, an AMH (anti-müllerian hormone) level may also be ordered to provide additional information about an individual ovarian reserve. A lower AMH level indicates decreased ovarian reserve. Abnormally high FSH or low AMH levels do not mean that the woman have no chance of successful conception. However, they may indicate that success rates may be lower, that more aggressive treatment may be warranted, and/or that higher medication doses may be needed (Anderson, Dallal and Must, 2003; Usmani, Rehman and Qamar, 2014).

### **The Cervical/Uterine Factor**

Conditions within the cervix, which is the lower part of the uterus, may impact fertility, but they are rarely the sole cause of infertility. It is important for the physician to know if a woman has had prior biopsies such as a cone biopsy, surgery, “freezing” and/or laser treatment of the cervix, abnormal pap smears. Possible uterine abnormalities that may be identified include scar tissue, polyps (bunched-up pieces of the endometrial lining), fibroids, or an abnormally-shaped uterine cavity. Problems within the uterus may interfere with implantation of the embryo or may increase the incidence of miscarriage (Raga, Bauset, Remohi, Bonilla-Musoles, Simon and Pellicer, 1997; Tan and Bennet, 2007)

### **The Peritoneal Factor**

Peritoneal factor infertility refers to abnormalities involving the Peritoneum (lining of the surfaces of the internal organs) such as scar tissue (adhesions) or endometriosis. Endometriosis is a condition where tissue that normally lines the uterus begins to grow outside the uterus. This tissue may grow on any structure within the pelvis including the ovaries and is found in about 35% of infertile women who have no other diagnosable infertility problem. Endometriosis is found more commonly in women with infertility, pelvic pain, and painful intercourse. Endometriosis may affect the function of the ovaries, the ovarian reserve, the function of the fallopian tubes, as well as implantation (Güven, Dilek, Pata, Dilek and Gragil, 2007).

### **Unexplained Infertility**

In approximately 10% of couples trying to conceive, all of the above factors are normal and there is no easily identifiable cause for infertility. In a much higher percentage of couples, only minor abnormalities are found that should not be severe enough to result in infertility. In these cases, the infertility is referred to as “unexplained”. Couples with unexplained infertility may have problems with egg quality, fertilization, genetics, tubal function, or sperm function that are difficult to diagnose and/or treat (Robert and Rebar, 2008).

### **Genetic Abnormalities**

Some men and woman may carry genetic abnormalities that make it more difficult to become pregnant and more likely that a pregnancy end in miscarriage. One example is a translocation, or a rearrangement of genetic material. This may be tested for, in appropriate circumstances, by blood testing of the couple. Some couples may even carry a known genetic illness and wish to avoid passing this illness on to a child.

Cowden, (2010), said in the female there are many causes of infertility. Some of the most common causes are age, polycystic ovaries, complications from being infected with sexually transmitted diseases, smoking, and being underweight or overweight. Although most occurrences of infertility result from these mentioned causes many times infertility results from a combination of issues from both the male and female side. Many times sadly, infertility cannot be explained. Unfortunately for many women age plays a big role in their infertility. As a woman ages—just like with all the other organ system of the body her reproductive organs do not function as well as they did when she was younger. Women have the most follicles of their lifetime in utero. As therefore as a woman ages her ovarian follicular pool decreases. Fecundity declines gradually but significantly beginning approximately at age 32 years, and decreases more rapidly after age 37 years, reflecting primarily a decrease in egg quality in association with a gradual increase in the circulating level of FSH. So, as a woman ages, the follicles that she has had since before birth are of course aging too. So, as one can imagine, the older these follicles become, the more likely oocytes are to have genetic abnormalities. The age-associated decline in female fecundity and increased risk of spontaneous abortion are largely attributable to abnormalities in the oocyte.

### **Polycystic ovary syndrome (PCOS)**

Polycystic ovary syndrome is a serious condition resulting in ovaries which cannot ovulate an oocyte. Polycystic ovaries are the main cause of infertility in women. In women with PCOS, the ovary doesn't make all of the hormones it needs for an egg to fully mature. The follicles may start to grow and build up fluid but ovulation does not occur. Instead, some follicles may remain as cysts. For these reasons, ovulation does not occur. Women with PCOS produce an excess amount of androgens. When too much is produced, it can prevent ovulation as well (Baby center medical advisory board, 2014)

### **Sexually transmitted infection**

Infertility often results from complications from having a sexually transmitted infection. The top four STD's that affect fertility are Chlamydia, Gonorrhea, Syphilis, and HPV. PID (pelvic inflammatory disease) is often associated with these four STD's. PID will cause more than 100,000 women in the U.S. to experience infertility annually. Statistics from the Centers for Disease Control and Prevention show that, —Untreated, about 10 -15% of women with Chlamydia will develop pelvic inflammatory disease (PID). Sadly, women can have an STI and not even know it because many times a person will not present symptoms. And even without symptoms these infections in the upper genital tract may cause permanent damage to the fallopian tubes, uterus, and surrounding tissues, which can lead to infertility (ASRM, 2009).

### **Smoking**

As with any other system in the body, smoking—of course can cause problems with fertility. Several comprehensive reviews have summarized the cumulative data on cigarette smoking and female fecundity and all support the conclusion that smoking has an adverse impact. It is known that, —Menopause occurs one to four years earlier in smoking women than in non-smokers. Thus smoking causes a decrease in ovarian follicular pool at a younger age, making it harder for an older woman to become pregnant. Also, —Chemicals in cigarette smoke appear to accelerate follicular depletion and the loss of reproductive function. Finally, —Urinary estrogen excretion during the luteal phase in smokers is only about one third that observed in non-smokers, possibly because constituents of tobacco smoke inhibit granulosa cell aromatase. Thus, smoking adversely affects many aspects of the female reproductive system (Dechanet, Anahory, Mathieu, Dauda, Quantin, Reyftmann, Hamamah, Hedon and Dechaud, 2011)

### **Abnormal body weight**

Abnormal body weight can play a role in infertility in several ways. It has been shown that women who are obese sometimes have difficulty becoming pregnant. —Obesity is frequently associated with menstrual cycle disturbances. Data from cross sectional studies indicate that 30%–47% of overweight and obese women have irregular menses. Irregular menses increases difficulty in ovulation. Another important fact is—The impact of obesity on reproductive function can be attributed primarily to endocrine mechanisms. Abdominal obesity is associated with an increase in circulating insulin levels, which, in turn, results in

increased functional androgen levels via suppression of hepatic SHBG synthesis and increased ovarian androgen production. This is highly correlated to polycystic ovary syndrome. In severely underweight women too little body fat causes insufficient production of estrogen and disruption of the menstrual cycle. Thus there are ovulation disturbances in women who are underweight as well (Anderson, Dallal and Must, 2003). Ombelet et al, (2008) said female infertility is caused by; sexually transmitted diseases, unsafe abortion practices, post-partum pelvic infections and female genital mutilation.

Infertility can be put in two broad groups. The first group includes anatomic, genetic, hormonal and immunological problems. These have been described as the 'core' causes of infertility. The core group is responsible for about 5% of the prevalence and this rate is similar throughout the world. The second group includes causes that are preventable and their rates therefore differ widely in the world. The preventable causes are largely infection-related and iatrogenic. In Africa, nearly 85% of women had a diagnosis of infertility caused by infection, a figure which is more than double that of the rest of the world. In sub-Saharan Africa, sexually transmitted diseases (STDs) are responsible for more than 70% of cases of pelvic infections, with most being caused by Chlamydia and *Neisseria gonorrhoea*. Of these two organisms, *Neisseria gonorrhoea* causes an acute form of infection of the fallopian tubes requiring immediate treatment, even hospitalisation, making diagnosis easier. Chlamydia however is indolent and the infection may remain unrecognised until the investigations for infertility are undertaken. They also cause male factor infertility, as well as being associated with postpartum and post-abortal infections. HIV infected individuals are also at risk for infertility both through tubal damage in women and through altered spermatogenesis in men. These effects happen both directly and through increased susceptibility to other sexually transmitted infections (Sharma, Mittal and Aggarwal, 2009).

Tuberculosis is another major cause of infertility in both men and women in the Indian subcontinent. Genital tuberculosis appears to be an important and common cause of Asherman's syndrome in India, causing oligomenorrhoea or amenorrhoea with infertility. In a study of women with infertility and amenorrhoea/oligomenorrhoea, there was past history of tuberculosis in 68% of women while the prevalence of genital tuberculosis in tubal factor infertility was 49% in women requesting assisted reproduction. Genital

tuberculosis therefore appears to be a major contributor to both primary and secondary infertility in India. Other infections associated with infertility in developing countries include Lepromatous leprosy, schistosomiasis and malaria. Important local factors may be important for male infertility in Nigeria including infections, such as tuberculosis and mumps that may damage the male reproductive system directly or indirectly. Sexually transmitted infection (STI) is another common problem that has been poorly investigated for its association with male infertility in Nigeria. Several sexually transmitted bacteria such as *Neisseria gonorrhoeae* and *Chlamydia trachomatis* are highly prevalent in Nigeria (Imade, Towobola, Sagay, Otubu and Okonofua, 2005). There are reports indicating high rates of infertility among males attending STI clinics in Nigeria (Nwabusi and Onile 2001), and it would be relevant to the determination of the relationship between previous exposure to STIs and infertility in Nigerian men. Since the pattern of sexual behaviour has a direct connection with the prevalence of STLs, it would be relevant to the determination or the impact of polygamy and sexual relationships with multiple partners, both being common phenomena in Nigeria. According to Okonofua et al, (2005), other equally important factors with high prevalence in Nigeria include previous exposure to drugs, smoking and alcohol, concurrent medical illnesses, as well as surgical procedures, such as hernia and the use of native medications.

Tremellen (2008) linked male infertility to oxidative stress. Oxidative stress occurs when the production of potentially destructive reactive oxygen species (ROS) exceeds the body's own natural antioxidant defences, resulting in cellular damage. Oxidative stress is a common pathology seen in approximately half of all infertile men. ROS, defined as including oxygen ions, free radicals and peroxides are generated by sperm and seminal leukocytes within semen and produce infertility by two key mechanisms. First, they damage the sperm membrane, decreasing sperm motility and its ability to fuse with oocyte. Second, ROS can alter the sperm DNA, resulting in the passage of defective paternal DNA on to the conceptus.

Male factor infertility accounts for up to half of all cases of infertility and affects one man in 20 in the general population (McLachlan and Kretser, 2001, Tremellen, 2008). Evidence now suggests that reactive oxygen species (ROS)-mediated damage to sperm is a significant contributing pathology in 30 – 80% of cases (Iwasaki and Gagnon, 1992; Zini

et al., 1993; Ochsendorf, 1999; Shekarriz et al., 1995a b; Agarwal et al., 2006a Tremellen, 2008). In the male, the most important part of fertility is the functionality of his sperm. In order for fertilization to occur his sperm count, morphology, and motility all have to be sufficient. In the male, infertility occurs when there are abnormalities with his sperm or abnormalities with his reproductive organs. The most common causes of infertility are varicoceles, complications from diseases and infections, retrograde ejaculation, obstruction, environmental hazards, and genetics. Varicoceles have a high correlation with male infertility. Varicoceles are abnormal enlargements (dilations) of the pampiniform plexus of veins within the scrotum. The pampiniform plexus is believed to have an important functional role in maintaining testicular temperature in the appropriate range for sperm production. The pampiniform plexus cools blood in the testicular artery before it enters the testicles, helping to maintain an ideal testicular temperature, essential for optimal sperm production. Varicoceles are said to be present in an estimated 15 percent of all men. It is not known how many lead to infertility but approximately 40 percent of men undergoing evaluation for infertility are found to have a varicocoele and decreased sperm motility. Therefore, varicocoeles can affect a man's fertility by changing the optimal temperature for sperm production and thus not producing sperm cells properly. A variety of diseases—from kidney disease to testicular cancer—can result in male infertility. For instance, systemic conditions and metabolic disorders, along with ordinary fevers and infections, can impair the development of sperm. In addition, sexually transmitted diseases can lead to obstruction and scarring of the reproductive tract while genetic conditions, such as cystic fibrosis, may result in lack of sperm due to missing vas deferens or seminal vesicles (Cowden, 2010).

Although many of these complications are rare and do not always cause infertility, it should be noted that the abnormalities above have been shown to affect a man's fertility. Retrograde ejaculation can affect male fertility. Retrograde ejaculation occurs when semen pushes backwards into the bladder instead of out the penis. This is caused by the failure of nerves and muscles in the bladder neck to close during orgasm. It is one of several difficulties couples may have delivering sperm to the vagina during intercourse. Retrograde ejaculation can be caused by previous surgery, medications or diseases affecting the nervous system. Obstruction of any portion of the male reproductive tract can lead to infertility. Obstruction can be defined as, blocking sperm from its normal passage.

Obstructions can be caused by a number of factors, such as repeated infections—possibly from an STI—, prior surgery—including vasectomy—, inflammation, or development problems. Any portion of the male reproductive tract, such as the vas deferens or epididymis, can be obstructed, preventing normal transport of sperm from the testicles to the urethra, where it leaves the body during ejaculation.—A history of undescended testes as a child and/or sport and back injuries may result in problems with sperm production and transport. An environmental effect that can cause problems with fertility in males similarly as it does in females is smoking (Dechanet, Anahory, Mathieu, Dauda, Quantin, Reyftmann, Hamamah, Hedon and Dechaud, 2011).

Research has shown that regular smoking impacts the sperm in a variety of ways. It decreases the size and movement of these cells and damages their DNA content. Smoking also can impact the seminal fluid, ejaculated with the sperm. Another interesting player in male infertility is the free radical. It is also important to note that there are also social pressures that come along with male fertility. —Since conception requires successful ejaculation in the woman’s vagina, some fertility problems are related to problems in achieving or maintaining an erection or to problems with premature ejaculation, (Cowden, 2010) Although the African socio-cultural setting has before now, focused on the female, fertility problems are obviously shared between both male and female sexes. Male infertility may account for up to 40% of infertile couples. Besley, (1976), Ahmed et al. (2010). The main determinant of male potential is the quantity and quality of spermatozoa ejaculated during coitus. The causes of male infertility could be pre-testicular, testicular, and post-testicular. (Obafunwa, Elesha and Odunjo, 1993 Ahmed et al. 2010). Aghaji and Ugwumba (2007) said aetiology of male infertility includes:

**Chromosomal Disorders:** This heterogeneous group of conditions are known to cause defective spermatogenesis and often present with severe oligospermia and azospermia.

**Endocrine Disorders:** Pituitary Disease, including infarcts, tumours, infections, radiation etc.

**Androgen Excess:** Congenital adrenal hyperplasia; Anabolic steroid abuse in athletes;

**Androgen producing tumours.** Estrogens’Excess: Hepatic dysfunction and Obesity, both

leading to solvated serum levels of estrogensertali cell tumours. Hyperprolactinaemia:

Prolactin secreting pituitary tumours; Idiopathic hyperprolactinaemia. Testicular Torsion:

This condition is often unilateral and some workers gave demonstrated abnormalities in the contralateral testes, suggesting the presence of a humoral factor. (Heindel, Pakyz and

Cosentino 1990). Varicocele: This is the most common correctable cause of male infertility, and has been shown conclusively to improve semen parameters and pregnancy rates following surgery (Aghaji, 2000). Chemotherapy, Radiotherapy, Drugs: A variety of drugs have been shown to have deleterious effects on spermatogenesis, some of these are: Marijuana; Cocaine; Alcohol; Cigarette smoking Cimetidine; Diethylstilboesterol; Nitrofurantoin. Ductal Obstruction: Congenital Bilateral Absence of the Vas Deferens; Acquired ductal obstruction secondary to infection, stricture or vasectomy. Retrograde Ejaculation/Anejaculation: Anatomical causes, such as patients who have scarring of the bladder neck following operative procedures; Functional disorders like diabetes mellitus, multiple sclerosis and retroperitoneal surgery; Spinal cord injury. Idiopathic Infertility: Up to 25% may be found to exhibit abnormal semen analysis for which no aetiology can be identified, this condition is referred to as idiopathic male infertility and is likely to be associated with a multitude of causes.

## **2.4 Knowledge about infertility**

### **2.4.1 Male Infertility: Global and Local Considerations**

A standard biomedical definition of infertility is the inability to conceive after twelve months of regular, unprotected intercourse (Greil and McQuillan 2010). By this definition then, infertility affects more than 15 percent of all reproductive- aged couples worldwide (Vayena, Rowe, and Griffin 2002). So-called male factors contribute to more than half of all these cases (Irvine, 1998). Male infertility is a chronic reproductive health condition for millions of men worldwide, given that it is recalcitrant to prevention, and among the most difficult forms of infertility to treat (Inhorn and Birenbaum-Carmeli 2010). Male infertility can be “solved” by ICSI, but it is not a condition that can be “cured” per se. Male infertility involves four major categories of sperm defects: low sperm count (oligozoospermia), poor sperm motility (asthenozoospermia), defects of sperm morphology (teratozoospermia), and total absence of sperm in the ejaculate (azoospermia). Azoospermia may be due to lack of sperm production (non-obstructive azoospermia) or blockages in sperm transport (obstructive azoospermia). These four types of male infertility account for about 40 percent of all cases of infertility in the Western countries. However, in the Middle East, 60–90 percent of all cases presenting to IVF centers involve a diagnosis of male infertility, according to physician estimates (Inhorn 2004). Moreover,

non-obstructive azoospermia is highly prevalent in the Middle East, as are cases of severe oligoasthenozoospermia (i.e., very low sperm count and poor motility).

Male infertility is especially common in the Middle East and quite common elsewhere, but this is not popularly known. Male infertility has been called a “neglected” reproductive health problem, and one that remains deeply hidden, including in the West (Becker 2000, 2002; Greil 1991). This is because male infertility is popularly mistaken for impotence, (i.e., erectile dysfunction), as both disrupt a man’s ability to impregnate a woman and to prove one’s virility, paternity, and manhood. This “fertility–virility linkage” means that men who are infertile are assumed to be impotent, even though most are not (Lloyd 1996). Given the widespread prevalence of male infertility, researchers have questioned whether levels of male infertility are, in fact, increasing globally (Daniels 2006).

More specifically, in 1992, a team of Danish scientists reported that global sperm counts had dropped by rates of more than 40 percent over the previous fifty years. Dubbed “the big drop theory,” this purported epidemic of male infertility led to significant moral panic. As noted by Daniels (2006) in her book, *Exposing Men: The Science and Politics of Male Reproduction*, the media and government agencies began declaring a male fertility “crisis,” even announcing the potential “end of the human race.” As Daniels points out, however, proving or disproving this big drop theory was difficult, given that measurement of male reproductive health has been woefully inadequate throughout the twentieth century. Nonetheless, once this notion of declining male fertility rates leaked into the public and scholarly imagination, a range of theorized causes began to be investigated. These included, *inter alia*, maternal use of drugs during pregnancy; the use of plastic diapers on male infants; the use of phytoestrogen-rich, soy-based formulas to feed male infants; increased rates of sexual activity among young men; the shift from boxer to jockey shorts (the so-called jockey shorts hypothesis); the rise of male obesity and dietary changes in men; increased use of drugs and alcohol as well as male smoking in some societies; the shift from factory to sedentary work; the use of hard bicycle seats; the use of hot tubs and saunas (which overheat the testicles); and “even the advent of feminism and the decline of war!” (Daniels 2006). More than two decades later, this “big drop theory” remains unproven (Auger 2010).

Nonetheless, there is increasing scientific evidence that environmental pollutants—especially a class of widely used chemicals known as “endocrine disruptors”—are affecting both male and female reproductive health deleteriously, by altering the human hormones that control fertility (Bentley 2000). Furthermore, reproductive epidemiological evidence strongly suggests that other environmental toxins such as lead—the heavy metal found in paint and in air-polluted cities where leaded gasoline is still used (e.g., Mexico City, Cairo, Damascus) - are, in fact, “spermatotoxic,” leading to lower sperm counts in men with high levels of lead in their bodies e.g., traffic policemen; (Inhorn et al. 2008). Like lead, smoking has also been shown to be spermatotoxic, immobilizing human spermatozoa (Calogero et al. 2009). Due to advances in the field of genetics, it is now realized that a significant percentage of male infertility cases, particularly those that are severe, are due to genetic abnormalities. Indeed, “a virtual explosion in the identification of genes affecting spermatogenesis has occurred” in recent years (Inhorn, Chavkin and Navarro, 2014).

A variety of abnormalities in both the Y and X chromosomes, as well as genetic abnormalities of the hypothalamic–pituitary–gonadal axis involved in the production of reproductive hormones, are now well-established causes of male infertility (Maduro et al. 2003; Maduro and Lamb 2002; Hahn and Inhorn, 2009). Probably the most frequent genetic cause of infertility in men involves microdeletions of the long arm of the Y chromosome, which are associated with spermatogenic failure (Krausz, Forti, and McElreavey 2003; Chan 2007). Such deletions are manifest in a variety of sperm defects, including defects of the sperm head (e.g., round heads, heads with craters) and sperm tail (e.g., stunted, immotile, or detached tails). In men with such Y micro deletions, the spermatozoa will always be infertile, because these genetic alterations are incurable and will be present throughout a man’s lifetime (Baccetti et al. 2001). In other words, male infertility may be primarily a genetic condition, although “gene–environment interactions” also seem to play a major role.

In a study carried out by (Inhorn, 2012) it was documented that not all men are able to articulate causes of infertility. Forty-five of the infertile men in the study, or more than one-third, said they had “no idea” why they were infertile. They essentially lacked

etiological narratives, although most said that they were interested in the origin of their infertility problems.

In many cases, men had asked their physicians, who often responded that male infertility is “idiopathic,” or of unknown cause. Several of these men described their incredible frustration at being given inadequate information. As one man expressed it, “I don’t know my problem. I can’t guess the reason why I have this, but I want to know. It makes me angry, it causes stress. Why do I have this problem? I’ve often thought, ‘Why me?’ But I can’t find the answer.” Another man directed his frustration at his physicians, “in my opinion, I have the problem of not having kids. I can’t bring kids. Why no sperm? The doctor should tell me, but all doctors, they never give a reason. They say there isn’t one cause. But the doctors should tell you. The doctors should do an exam.

In same study explained above, it shows a few men had definitive answers about why they were infertile, based on reproductive disorders (e.g., undescended testicles) or other health problems (e.g., cancer and its treatment), which had affected their reproductive systems. Etiological Narratives of Male Infertility: The Five Factors (Inhorn, 2012) said although a wide range of factors were mentioned in Middle Eastern men’s etiological narratives, five factors emerged repeatedly: wiratha (heredity), zina (illicit sex), alharb (the Lebanese civil war), daght (stress), and talauwiz (pollution). Each will be described briefly in turn. Although few of these factors are found in standard medical and epidemiological descriptions of male infertility, they speak to men’s own embodied understandings of male infertility causation. Indeed, this set of five factors reflects the risks and responsibilities of being a man in the politically tumultuous Middle East, where the vicissitudes of everyday life may wreak havoc on a man’s reproductive body.

### **Wiratha (Heredity)**

Discourses of “genetics” are not widespread in the Middle East, and, in fact, there was only one geneticist practicing in Lebanon at the time of this study. Genetic counseling is rarely if ever offered as a routine part of reproductive care, either for men, women, or couples. Thus, men in this study generally had no knowledge of the genetics of male infertility, nor had they been exposed to any form of genetic testing. Yet, even in the absence of “geneticization,” some men speculated about “hereditary” causes of male infertility. This was especially true among men whose male family members were also

infertile. More than 40 percent of infertile men in this study could identify other known cases of male infertility in the immediate family, particularly among brothers, first cousins, uncles, and, in some cases, fathers or grandfathers. In the study, male infertility definitely “clustered” in families. The fact of two or more infertile men in the same family led some men to suspect *wiratha*, or heredity. In a few cases, physicians had also informed these men of a possible genetic etiology to their problems. For example, a Shia Muslim Lebanese truck driver was diagnosed with absence of the vas deferens, a testicular vessel crucial to sperm transport. As he explained it, “it’s ‘the line’ [vas] I don’t have. It’s not only me; it’s my brother and one cousin. I asked the doctor why this happened. The doctor explained to me, ‘It’s biology. It’s coming from your mother and father. It’s coming to the men in your family.’” In this man’s case, he was the product of multiple generations of consanguineous, or cousin marriage. He, too, was married to his first cousin. Across the Middle East, rates of cousin marriage remain high, and are often preferred for a variety of social and cultural reasons (Inhorn et al. 2009). That male infertility may be somehow linked to cousin marriage is not part of men’s understandings of *wiratha*. Nonetheless, marriage to cousins has been shown to increase the chances for genetic defects, including the chromosomal defects linked to male infertility (Baccetti et al. 2001; Latini et al. 2004).

Reproductive history data from Inhorn and her colleague study shows that significantly more of the infertile than fertile men in the study were the offspring of prior consanguineous unions, suggesting that this form of marriage may produce infertile male offspring (Inhorn et al. 2009). In addition, infertile men with the most severe cases of oligozoospermia and azoospermia were significantly more likely to be the offspring of parental and grandparental consanguineous unions. Among this “most infertile” subset, nearly half of all men were born from consanguineous marriages among parents, grandparents, or both. Clearly, these findings suggest that consanguineous marriage over generations may lead to familial patterns of male infertility.

### **Zina (Illicit Sex)**

Although conditions of *wiratha*, or hereditary infertility, are deemed beyond men’s control, practices of *zina*, or illicit sex, are not. In fact, men in the study felt guilty about their sexual pasts, and blamed themselves for “wasting” or “destroying” their own

reproductive potential. In Islam, zina is defined as any form of sexuality other than heterosexual marital sex. Premarital, extramarital, and homosexual sex are all considered zina, and masturbation, too, is generally looked upon unfavorably within the Islamic legal schools (Khuri 2001). In short, the only form of licit sex within Islam is marital sex, thus leaving open multiple possible forms of sexual transgression. When interviewed, some men openly lamented their youthful practices of masturbation as the probable cause of their current state of infertility. These men said that their own excessive premarital masturbation had, in effect, “used up” all of their good semen, leaving their bodies depleted of the sperm necessary to impregnate their often healthy, fertile wives. They also doubted that such masturbation was moral within their societies and religion. Such attitudes could be found among highly educated professionals as well as among blue-collar workers in the study, and was found among both Sunni and Shia Muslims. For example, a Shia Muslim construction worker framed his current sexual and infertility problems within an earlier discourse about his adolescent sexuality. In addition, many men in the study worried about the effects of another form of zina, namely, premarital sex. Overall, one-third of men in the study had only had sex with their wives.

The vast majority of men, more than 90 percent, also said that they had been faithful within marriage. However, two-thirds of men in the study had experienced premarital sex. Of these, half had had sex with less than ten lifetime sexual partners, and the other half with more than ten. A total of 17 percent of men in the study claimed to have had more than 100 lifetime partners, and virtually all of them had spent significant periods of their lives outside of their home countries, mainly in West Africa, Europe, North America, and Latin America. There, they had experienced “promiscuous” youthful premarital sexuality, and some deemed their current infertility problems to be the outcome, even God’s “punishment,” for their illicit sexual pasts. Excessive premarital sex, encounters with prostitutes, and the contraction of STIs were all mentioned in men’s etiological narratives. To take but one example, a Lebanese Shia man who fled to West Africa in 1977 to escape the ravages of war in his home community, described—while literally hanging and hiding his head in shame—that he and eleven other Lebanese refugee men had had serial, group intercourse with a West African prostitute. Following this episode, he contracted an STI, which was quickly resolved with an antibiotic. Nonetheless, this man and his close home town friend who had also participated in the group sex had gone

on to suffer from long-term infertility in their subsequent marriages, of fifteen- and twenty-year durations, respectively. In this man's view, it was this act of zina that had caused his infertility. He lamented, "Only God knows if this is the reason, but I think so. I feel guilty. But all of us were like this back in Abidjan [the capital of Cote d'Ivoire], because there were so many prostitutes there."

### **Al Harb (The War)**

This man was one of the forty-four men in the study who had fled their countries because of war. Indeed, the vast majority of men in the study had lived through periods of war and political violence. Al harb, "the war," was the single most cited reason for male infertility problems. In invoking al harb, most men were referring to the Lebanese civil war (1975–1990) and the subsequent occupation of Southern Lebanon by Israel (1990–2000). However, some Palestinian men had also lived through the First Gulf War (1990–1991), and the US-led war in Iraq had just begun during the period of this study, causing acts of angry violence in Lebanon during the spring of 2003. Men's "war stories of male infertility" bespoke their embodied suffering, but also the reproductive effects of war's aftermath.

Most of the men had been wounded, sometimes as fighters, but mostly as civilians. They often showed their bullet and shrapnel wounds, pointing to where they were still carrying metal debris in their bodies. Several men had been kidnapped and threatened with death. Even more had been imprisoned and tortured. Some had lost family members, including their parents when they were still young children. In a few very poignant cases, men's entire families had been wiped out in massive bombing raids, usually by the Israelis in Southern Lebanon. Most of the Lebanese men in this study had been exposed to bombing and life in bomb shelters. Some had had their homes destroyed. Families had often been forced to flee to safer havens. When entire families were unable to emigrate, they often sent their sons out of the country to prevent them from being killed. Most of the Lebanese and Palestinian men in the study had stories of suffering to tell. For example, a Shia Muslim Lebanese police officer met in a Beirut IVF clinic, said "I have suffered a lot in my life." He then launched into the harrowing tale of his capture by the Israelis in 1983 and his two-year detention in the notorious Khiam Prison (now a museum) during the Lebanese civil war. He was put in solitary confinement—"where you could not see day

from night in some of the cells, and there were no toilets”—and forced to eat the same food, without any meat, for the length of his imprisonment. He was also tortured with electricity to his genitals on three separate interrogations, “and there were many interrogations.” As he explained, “I wasn’t married then, and I didn’t do a sperm test before marriage because I was young then. This was almost 23 years ago. But maybe this [the torture] is the cause of my sperm problems.”

In addition, upon his release from Khiam in a prisoner swap with the Israelis, he was involved in a major car accident, breaking twenty-four bones, suffering internal bleeding, and experiencing two months of unconsciousness as a result of a severe head injury that required brain surgery. Unfortunately, such car accidents are common in Lebanon as a result of war-torn roads and general lawlessness. As he concluded quite bluntly, “the war was very bad. We lived our life in the war, and we suffered a lot. ‘The fact that Middle Eastern men attribute their male infertility problems to war is not so far-fetched. In two papers written with my Lebanese colleagues, we have been able to show that exposure to war events significantly increases the risk of male infertility (Abu-Musa et al. 2008; Kobeissi et al. 2008). In this study, men who were infertile had a 57 percent increased odds of exposure to one or more war-related events, as compared to fertile men in the study. Furthermore, the men who had suffered the harshest exposures to war (through combat, kidnapping, torture, and displacement) were the most likely to be infertile. In short, the study suggests that Middle Eastern men are right about al harb. As they put it, “War has weakened sperm.” That war has destroyed lives and men’s fertility is an indigenous etiological narrative that seems to hold up well against the emerging epidemiological evidence.

### **Daght (Stress)**

Men often attributed their infertility to daght nafsi, or “psychological stress.” Many of the people said that the war had affected their hal nafsiya, or “psychological condition,” in profoundly negative ways. The psychologically exhausting fifteen-year Lebanese civil war, which was followed by at least seven years of post-war economic recession, seemed to have generated high levels of poor mental health in Lebanon. Majority of the respondents in the study openly admitted to feelings of stress, depression, and anxiety, for which some were taking medications. The poor psycho-logical state of many Lebanese

men was noted while interviewing them. Many men bluntly said, “I’m not in a good mood.” They described their *nafsiya*, or “psychology,” as being poor, or noted that they were *asabi*, or “nervous.” In general, the Lebanese men in my study, and also many of the Palestinian men, did not seem happy, an impression that was seconded by some of the physicians I also inter-viewed. Lebanese men rarely laughed, were somewhat reserved during interviews, and generally looked much older than their reported ages (presumably from a “weath-ering” effect attributable to the war, too much sun, and heavy smoking). In general, this was a population of men who described themselves as living in conditions of chronic *daght*, defined as both “stress” and “pressure.” Various forms of *daght* included work stress, family stress, financial problems, and the problem of infertility itself along with its costly solution via intracytoplasmic sperm injection (De Vos, 2000).

According to most men, these various forms of *daght* exerted negative effects on their reproductive bodies as well as on their sexual lives. For example, a Lebanese Greek Orthodox store owner, who had once joined a Christian militia at the tender age of thirteen, described how he was now experiencing multiple forms of stress in his life. According to him, these stresses were taking their toll on his body. Not only did he suffer from azoospermia, but he had high cholesterol and a chronic problem of severe migraine headaches, which were incapacitating his sex life. As he explained, the migraines and the cholesterol are affecting my sex drive. After intercourse, I feel very tense, and then I get swollen eyes and the aura of a migraine. Then one to two hours later, I get the migraine. So sex makes me feel tension, not relaxation! I feel hysterical because of the migraine. I need to relax and sleep [to overcome it], but I have no time because of my work. I like to work, but then I have no time to relax and to enjoy sex. And I’m worried about having a migraine after sex. Accordingly, his sex life is now infrequent because of the migraines, his hectic work schedule, and the stresses of infertility treatment. He said he is currently on his sixth ICSI cycle. “Worries, sure! Everyone worries, not about the ICSI itself, but about how many embryos will develop, the possibility of death of some embryos. The whole procedure is stressful. ‘As this man suggested, men’s emotions were especially heightened at the time of ICSI, which involved the stresses of “timed” ejaculation in clinic bathrooms, watching wives wince in pain during ICSI operations, or hearing bad news about semen test results or the “cancellation” of an ICSI cycle when embryos failed to develop. Men with financial problems experienced additional stresses at the time of

payment. Men's etiological narratives about the debilitating effects of stress on their sexual and reproductive bodies seem to be substantiated by emerging research in male reproductive physiology (Bribiescas 2001, 2006). Namely, stress induces testosterone suppression in men. In males, testosterone is the primary hormone necessary for both male reproduction and sexual function. Thus, during periods of acute or chronic stress, testosterone production is diminished, leading to lower levels of sperm production as well as erectile dysfunction in some men. In short, stress leads to diminished fertility through testosterone suppression. Middle Eastern men's strong suspicion that stress underlies their male infertility problems seems to be supported by the evidence.

### **Talauwiz (Pollution)**

In addition to the stresses of war and its aftermath, Middle Eastern men worry that war in the region has led to talauwiz, or "pollution" of the air, food, and water. In fact, Lebanon is a Middle Eastern nation that has undergone severe environmental degradation over the past few decades. In his article on "The Ecological Crisis in Lebanon," (Hamdan, 2002,) argues that the improper disposal of household, industrial, and hospital waste, industrial pollution, air pollution, and the use of chemicals in agriculture have compromised the quality of Lebanon's air, water, and soil. These types of environmental disruptions may have long-term impacts on human health, particularly in a country with nonexistent or unenforced occupational safety and health standards. Much of Lebanon's environmental degradation is the direct result of war, including the illegal importation of toxic wastes from abroad and dumping of those wastes on Lebanon's soil (Noueihed, 2006).

During the last "Summer War" of 2006, thousands of hectares of agricultural land and greenhouses were destroyed, huge quantities of toxic wastes were produced from destroyed building and structures, and 15 tons of oil were spilled into the Mediterranean Sea (United Nations 2006). Heavy metal contamination is a cause for serious concern in Lebanon. A 2001 report by the Lebanese Ministry of the Environment reported that more than 2,400 tons of industrial waste containing heavy metals is generated each year. A variety of heavy metals are known or suspected to cause damage to the male reproductive system, by affecting spermatogenesis (i.e., the production, maturation, motility, and fertilizing capacity of human spermatozoa).

Given these environmental concerns, men in this study worried openly about the effects of Talauwi, or pollution, on their fertility and overall health. Men complained about the ongoing use of lead in the gasoline, of pesticides on their fruits and vegetables, of hormones in meat, and of unsafe drinking water. Furthermore, they described in great detail the various types of bombs and armaments that had been dropped on Lebanon, and about their own direct exposure to bombing raids and the choking air-borne debris. Air pollution was cited time and again as a probable cause of male infertility. As one Lebanese engineer remarked, while we looked out a window of a fifth-floor IVF clinic, “see how black the sky is? This pollution is bad for everything. I am sure that this has something to do with infertility. And recently the cancer rates have been really, really high, too.” Given these concerns about infertility-producing talauwiz, more than 200 of the 220 men in this study volunteered to have their blood drawn for toxic metal analysis. These blood samples were hand-carried in a cooler back to the University Of Michigan School Of Public Health, where my colleague Jerome Nriagu assessed the samples for a suite of toxic metals. Fortunately, it was determined that the men in the study were not carrying toxic loads of heavy metals in their bodies (Inhorn et al.2007).

Once this heavy metal analysis was completed, all the men in the study were contacted to convey their “healthy” results. Many were extremely curious to know what was “in” their blood, worrying, as they did, that “chemicals” in the air, food, and water were at least partly to be blamed for their male infertility. Thus, they were quite grateful for this health-edifying information. In many parts of Africa the dominant purpose of marriage is to have children since marriage without children is incomplete and insecure (Dyer, 2007). Infertility studies documented multi-dimensional impacts of childlessness on marital life which include polygamy, divorce, remarriage, abuse, neglect, and abandonment (Orji et al., 2002; Pearce, 1999; Deribe et al., 2007; Hollos et al., 2009; ). For example, Orji and colleagues (2002, p. 61) conducted a quantitative study on the impact of infertility on marital life in Ile-Ife Nigeria which included 236 women. The study found out that 38.9% of the respondents had divorced and remarried because of infertility. A study in Southwest Ethiopia by Deribe and colleagues (2007) noted that some infertile women were divorced due to their childlessness. Others reported that their husbands had lost interest in them. Some husbands on the other hand told that they were planning to marry another woman to get a child. These practices of divorce and remarriage exposed childless women and men

to STDs and HIV/AIDS. This problem was also noted in other studies. For example, in a hospital-based study in Tanzania, Favot et al. (1997) found out that the HIV prevalence was considerably higher among infertile women compared to child-bearing women since infertile women had more marital dissolutions, life time sexual partners, and STD's than fertile women. "In African communities, land is commonly owned by men and land claims are negotiated through the number of their children" (Dyer, 2007).

Children are also seen as old age insurances and guarantors of generational continuity. For example, women in certain communities of Kenya receive land through their children and in this case, the inability to bear children means loss of livelihood (Kimani and Olenja, 2001). Similarly in Yoruba, only children inherit property after the death of the husband and as a result, a childless wife cannot be considered for inheritance. As Lancy (2008) documented, children especially in the majority world, contribute to the household through child-minding, selling products in the market, tending livestock, fetching water, cooking, and farming. Besides their labour contribution to secure parents' and families' survival, children support aging parents in the absence of social support systems for the elderly (Inhorn and van Balen, 2002).

A study in southwest Ethiopia found out that most of the childless respondents are worried about not having helpers in their old age (Deribe et al., 2007). Cultural, environmental and economic factors influence the prevalence of infertility especially in countries where poverty and infections are widespread (Leke et al., 1993). The major preventable cause of infertility in many parts of the majority world is Pelvic Inflammatory disease (PID) which is caused by sexually transmitted diseases (STDs) and post-partum and post-abortion infections (RHO, 2003). In addition, more specific local or regional factors of infertility may have something to say. For instance, in Egypt, exposure of men to occupational toxic agents, water pipe smoking practices of men, and close cousin marriage contributed to infertility (Inhorn, 2012). Garenne (2008), noted that infertility is still growing in some of the "infertility belt" countries (example Congo and Mozambique), in "late marriage" countries (Lesotho, Namibia and South Africa), and in other countries such as Ghana, Mali, Rwanda, Senegal, Tanzania and Ethiopia.

## 2.5 Perception of infertility

Male infertility has largely been ignored in the Reproductive Health Initiative. Focussing on a group of men—Middle Eastern Muslims—who are rarely upheld as “reproductively responsible.” Instead, Middle Eastern men are often associated with what I call the four “notorious Ps”: patriarchy, patrilineality, patrilocality, and polygyny (Inhorn 2012). Polygyny or divorce are said to be Middle Eastern Muslim men’s taken-for-granted “solutions” to childlessness. Furthermore, in the Middle East, men are said to “blame” women for childlessness, because male infertility is rarely if ever acknowledged.

Based on ethnographic research carried out with 220 Lebanese, Syrian, and Lebanese–Palestinian men, this article examines the problem of male infertility in the Middle East, including how men attempt to answer the “Why me?” question. Men in the Middle East engage in what could be called etiological narratives or stories about the origins of their own infertility problems and of male infertility more generally. These etiological narratives range from the personal to the political, and are constructed through a process of retrospective life review. Through these narrative constructions, men not only make sense of why they are infertile but also “take responsibility” for their infertility by admitting to past mistakes and their own psychological responses to a variety of life problems. Furthermore, these etiological narratives may or may not accord with standard epidemiological and medical understandings about male infertility risk factors and causation. Few Middle Eastern men have ready access to this kind of public health information. In short, in the new millennium, “responsibility” for infertility increasingly rests on the shoulders of men, who are assessing their reproductive risks and seeking assistance in IVF clinics across the region (Inhorn 2012).

Furthermore, it was stated in a study conducted by (Inhorn 2012) so-called lifestyle factors—such as smoking, drinking, overeating, drinking too much caffeine, or leading a sedentary lifestyle—were occasionally mentioned, with men taking responsibility for behaviors that they deemed harmful to their own bodies. But, overall, a focus on “unhealthy lifestyles” was relatively infrequent in this population. For example, smoking was rarely mentioned in men’s etiological narratives. Yet, male smoking is widespread across the region, with Lebanon having among the highest rates of smoking in the Arab world. In Lebanon, by age nineteen, approximately 52.6 percent of men are already

smoking (Nakkash et al. 2010). In this study, 45 percent of men were current cigarette smokers (41 percent of the infertile men, 49 percent of the fertile men).

Furthermore, the majority of men were heavy smokers; consuming one to three packs a day. This was as true among infertile men in the study as among fertile ones. In fact, few infertile men made any association between their infertility and their smoking, even though physicians had often told them to quit. Quitting attempts were relatively few and far between; only twenty men in the study (twelve infertile, eight fertile) had stopped cigarette smoking altogether. As most men said, they had started smoking as teenagers, continued to smoke because they enjoyed it, considered smoking to be a form of sociability and a coping mechanism, and remained unconvinced that smoking had anything to do with infertility, especially since so many of their male compatriots who smoked had fathered children.

In Nigeria, high premium is traditionally placed on having children and this is celebrated in the society by rites and rituals (Feyisetan and Bankole, 2002; Makinwa Adebusoye, Edewor, Odimegwu, Pearce, 1999). Voluntary childlessness is rare with less than one percent of men and women stating zero as their ideal number of children (this most likely includes men and women with confirmed infecundity and that have accepted their status as such). On the other hand, infertility (as defined by the inability of a woman to conceive or carry a pregnancy to full term) among women aged 45-49 years ranged from 3-5% in the country (NPC and ICF, 2008; 2003; 1999; 1990). Infertility was found to be consistently higher in the rural areas compared to the urban and in the North compared to the South. Further, infertility and related complaints have been identified as the highest cause for gynaecological consultations in some countries including Nigeria (Mogobe, 2005).

In a setting such as Nigeria, where cultural norms and values encourage reproduction and celebrate parenthood, childlessness becomes a potentially stigmatizing status, which can adversely affect the identities and interpersonal relationships of married people (Larsen, 1996; Gage-Brandon, 1992). Despite changes in the last couple of decades in families' living arrangement (due to social mobility and migration, which has led to growth in single-family housing units and less interference from extended family members), fertility issues especially childlessness is still not allowed to be kept private between couples.

On the research front, several studies have investigated the prevalence, causes and consequences of childlessness and infertility. A number of studies have also documented how childlessness is perceived in various societies and the multitude of adverse effects suffered by affected individuals as a result. However, how the perception on childlessness might have changed over time and across cultures have not been documented. This certainly limits understanding of the issues surrounding childlessness as well as what and how interventions could be developed to support childless individuals in contemporary societies.

Given the various social, economic and demographic changes (urbanization, increase in level of education, increase in unemployment and under employment and diminishing societal monitoring among others) that have been taking place in recent decades in virtually all societies, there is the need to find out how these developments may have affected societal perception of childlessness. Changes in societal perception of childlessness across cultures in Nigeria were explored. Societal perception and acceptance of voluntary and involuntary childlessness was examined. The former is based on the belief that, if voluntary childlessness is tolerated, it may be a signal of reduction in the stigmatisation attached to the childless (Inhorn, 2012).

While men and women are assumed to have equal probability of being infertile, in many societies of Africa the problem of infertility is perceived mainly as women's problem (Deribe et al., 2007; Kimani and Olenja, 2001). In such societies, women suffer severe stigmatization since they are assumed to have failed to conceive (Ombelet et al., 2008). Besides, in many societies bearing children are valued as the main purpose in life. In these cases, fosterage and adoption will not substitute real motherhood and are only seen as temporary solutions to childlessness (Gerrits, 2002). In many societies of Africa, own children give significant socio-economic contributions to their families and are the ultimate sources of old-age security for their parents (Dyer, 2007; Hollos et al. , 2009).

If a woman remains childless after whatever trials, such a woman will often be considered as worthless and even not to be considered as a woman at all (Inhorn, 1996 and Kimani and Olenja, 2001). Because childless women have few options to lead a meaningful life, it is important at this stage to wonder what is left for the childless women.

Medically, there are different causes and risk factors for male and female infertility. According to Eisenberg and colleagues (2009), infertility for men is most often caused by low or no sperm count and blockage of the tubes that transport sperm. Infertility in women, on the other hand, is caused by a range of other factors such as problem with ovulation, blockage of fallopian tubes and physical damage to the uterus. STDs, advanced age, smoking, and excess alcohol use are also mentioned as risk factors of infertility. However, a considerable number of people in the majority world have limited level of knowledge about the medical causes of infertility. The problem is thus usually perceived as caused by other factors than medical ones. Some associate infertility with supernatural powers and others associate it with diseases or with the absence of reproductive organs. A study by Okonofua et al. (1997) on the social meaning of infertility in Southwest Nigeria showed that there are several traditional beliefs regarding the causes of infertility. Kimani and Olenja (2001) in the study *Infertility: Cultural dimensions and impact on women in selected communities in Kenya* found that different communities in Kenya associate infertility with different things. For example, while the Kikuyu community perceived infertility as being caused by the breaking of taboos such as non-payment of bride wealth, the Luhya community believed that if a baby is born by blood relatives, it causes secondary infertility for the mother and brings a curse to the other members of the family (Aseffa, 2011).

Infertility is also perceived as caused by menstrual problem; too thick, too thin, too much or too little blood is believed to be unfavourable for conception. (Fikir Aseffa 2011, said that the ethnographic study conducted by Pearce (1999) on the social construction of infertility and childlessness in women among the Yoruba of southwestern Nigeria, revealed promiscuity, physical diseases (in the abdominal, reproductive, or intestinal tracts), and spiritual powers or evil spirits to be the perceived causes of infertility. Similarly, infertility in Southwest Ethiopia (Illubabor Zone) is commonly attributed to God's wrath (Deribe et al., 2007). Moving beyond the African context, Adashi et al. (2000) conducted an international survey on how infertility was perceived by the public in Western countries (included Belgium, France, Germany, Italy, Sweden and UK, USA, and Australia). The survey found out that the awareness about the definition and incidence of infertility was relatively low. For example 38% of the participants perceived infertility as a

disease. From this, it is possible to say that there is limited awareness about the problem of infertility even in the Western countries.

## **2.6 Knowledge on the management of infertility**

Treatments used by infertile individuals around the world vary from being traditional and spiritual to the latest and advanced medical treatments. When people face the problem of infertility in most parts of Africa, they try traditional and spiritual practices rather than medical treatment. A study by Okonofua et al., (1997) among the Yoruba's in Nigeria, showed that many infertile couples use a variety of traditional and religious treatments, while medical treatments are less often used. Another study in the same community by Koster-Oyekan (1999) found out that infertile women prefer to seek treatment from local herbal and spiritual specialists and churches. A study from Malawi also revealed that there is strong cultural pressure to bear children that leads infertile people to visit traditional healers who are assumed as having the ability of curing infertility (De Kok, 2008). When it is not possible to have one's own child, adoption or fosterage is commonly practiced by many all over the world as a mechanism to satisfy parenthood needs. Adoption and fosterage are solutions for infertile couples to avoid public discrimination and to fulfil parenthood needs (Jenkins, 2002; Aseffa, 2011).

However, while some people consider adoption as equivalent with biological parenthood, others consider it as of less valuable and incomparable with biological parenthood, arguing that the adopted children cannot be real children for adopters due to their felt needs of biological generational continuity. A study conducted in Canada by Miall (1996) showed that parenting experiences between adoptive and biological families as well as paternal and maternal feelings of adoptive and biological mothers and fathers were similar for the large majority of the respondents. What mattered most was commitment in the families, not biological relatedness. However, voluntary childlessness and adoption are unacceptable in many parts of the majority world (Inhorn, 2003; Inhorn, 2012).

In Egypt, for example, one of the reasons that make adoption unacceptable as a substitute to real motherhood is the fact that birth parents may come to reclaim the adopted child and thus feelings of emotional affinity and kinship between adoptive parents and adopted children will not emerge. Moreover, as a woman should have a child of her own body in

order to achieve the real womanhood identity, substitute mothering (fostering or adoption) can never take the place of “normal” motherhood in Egypt (Inhorn, 1996). Similarly a study by Hollos and colleagues’ (2009, p. 2068) in two Southern Nigeria communities demonstrate that foster children are considered as a valuable source of labour but they cannot be compared to biological children in terms of social status, emotional satisfaction, or old age security. A study on social and cultural aspects of infertility in Mozambique showed that most childless women didn’t see fostering as a permanent solution (Gerrits, 2002). Two reasons making fosterage unacceptable in Mozambique were biological parents’ accusation of foster parents for mistreating and exploiting foster children, and children’s disobedience for a woman who was not their real mother.

Despite such deviations, adoption and fosterage are still world-wide practices as a means to cope up with the problem of infertility. In Ethiopia too, there are cultures in some regions encouraging adoption or fosterage regardless of the adopters’ fertility status. Another means of overcoming the infertility problem is the New Reproductive Technologies (NRTs). NRTs are becoming a widespread means around the world since the birth of world’s first test-tube baby, Louise Brown, in 1978 (Inhorn and van Balen, 2002). This technique is found world-wide, including the petro-rich Arab countries and North African countries. NRTs have brought ‘new freedoms’ by preventing unwanted pregnancy and birth and the birth of ‘undesired’ (‘wrong sex’, ‘unhealthy’) children through prenatal diagnosis technologies (Gupta, 2006).

Moreover, it has given the possibility of motherhood to infertile women and single lesbian women through artificial insemination or IVF. However, NRTs have also created a ‘new dependency’ on technologies and service providers. Besides being expensive, they also have side effects on women’s health. In the majority world, access to NRTs is determined by people’s economic status. For example, the elites in Egypt who are able to access NRTs are able to bear test-tube babies while the infertile poor didn’t get the chance (Inhorn, 2003). In the context of many African communities, we can notice that most treatments of infertility are designated for women. This is associated with the perception that infertility is women’s problem.

## **2.7 Perception on management of infertility**

According to Rusanova and Isupova (2011) the Internet has become one place where everyone can find “people like oneself.” Many people find the best support they can receive from these people who are in the same life situation and are able and willing to share their lives experiences with each other. However, it is not at all the case with infertile men in Russia. They almost never share their experiences concerning stated health condition with other men in similar life situation in the web. On the other hand, their female partners do so often, and unite on the special sites in order to discuss the problems of their men. Communication via the Internet and the formation of a virtual community of patients has both positive and negative aspects.

On the one hand, it creates a psychologically favorable atmosphere and might potentially increase the success rate of In-Vitro Fertilization (IVF) treatment. On the other, this leads to the seclusion of patients within the circle of “similar people” and sometimes to negative attitudes towards people outside the circle. As well as a referenced article, current paper is based on the authors “netnography” research of a virtual community of Russian IVF patients. In Russia, 40961 Assisted Reproductive Technologies (ART) treatment cycles happened in the year 2009. It is the most recent year for which the data is available. Clinics are now located in all major cities throughout the country, though most are concentrated in Moscow and St. Petersburg. The average success rate in 2009 was 33.0% for classic IVF (RAHR, 2011). This is a reasonably high efficiency for this method. There is no research on the incidence of infertility across Russia as a whole (Kuzmenko, 2008; RAHR, 2010). However, figures are available for some regions, varying from 8% to approximately 20% of the general population of women of reproductive age. Infertility was measured according to the World Health Organization (WHO) definition, (Kuzmenko, 2008).

According to Kuzmenko, male infertility, on its own or combined with female infertility, is also widespread and is encountered in 35% of couples seeking infertility treatment (this is not representative survey data but the result of studying only couples referring to reproductive clinics to seek treatment). Contemporary fertility in almost all countries of the world is being formed with, though yet moderate, help of ART, which, in the best case, can contribute up to 4% of yearly national fertility. Though social attitudes to these

methods are ambiguous, in the vast majority of the countries these technologies are being used for more than 25 years already. One of the reasons for their relative popularity consists in the states willingness to use all possible resources to increase fertility in ageing countries and improve population health. Recent research demonstrates differences in male and female reproductive behavior, especially in what concerns timing of parenthood and desired number of children (for example, Lampic et al., 2006). Births are being postponed; age at motherhood and at fatherhood grows. Potentially, these might be associated with worse reproductive health in both women and men (Lampic et al., 2006). Medical data demonstrates possible gradual decline of sperm quality from generation to generation (“spermatozoid crisis”, Skakkebaek et al., 2006). On the other hand, men’s desire to have children is often higher than women’s, at least in Russia. According to the Russian Committee of Statistics “Semya I Rozhdaemost” survey (2010), both desired and expected number of children is higher in men than in women. Men want having 2 children 10% more often, than women, and three times as often as women they want to have three children.

Although ART appeared in 1978 as a specific means to resolve female reproductive problems, soon they started to be applied in the case of male reproductive health being impaired, too. On the other hand, they also created the possibility for healthy males to become sperm donors. Since male reproductive problems are highly relevant, Russian ART clinics suggest wide spectrum of options to men with different reproductive status (from becoming donors to using cryo-conservation of their own healthy sperm at younger age before any problems appear). According to current registration of couples recurring to fertility treatment in several Moscow fertility clinics in 2010, men very seldom come there themselves, usually the state of their reproductive health is becoming evident only when the couple seeks treatment and only after a woman is totally scanned (RAHR,2010).

A woman most often is being considered apriori “guilty if a couple wants to start a family but cannot”. This might be associated with archaic cultural norm which is still widely spread by now: that infertility is associated with a woman only (“barren woman”= “barren land”), while a man is associated with his sexual function, and, if the latter is normal, he ‘cannot be’ infertile. And, if there are problems with his sexual function, it is a very stigmatizing state, which should be hidden from everyone by any means (Pfeffer, 1993).

Number of accepted sperm donors is not higher than 30-50 persons in Moscow reproductive clinics, usually, from men coming and willing to be donors, only 10-50% is able to meet requirements. At the same time, an option of cryo-conservation of one's own sperm for the future is not popular, only very few men ask for that. Psychological strain in infertile women and the importance of receiving social and psychological support during IVF//Intra-Cytoplasmic Sperm Injection (ICSI) treatment have become increasingly pressing concerns. However, the strain might be even higher in men. A number of studies (Abbey, Andrews, & Halman, 1991; Mindes, Ingram, Kliewer, & James, 2003; Sandelowski & Jones, 1986; Akizuki & Kai, 2008) have indicated that infertility and fertility treatments are associated, both in women and men with deep and intense psychological problems.

Meanwhile, there is some evidence that positive social support tends to improve not only the psychological state of IVF patients but also the actual IVF outcome (review in Williams, Marsh, & Rasgon, 2007). However, though many female IVF patients, driven either by conscious decision or by their emotions, search for support not in their inner circle of friends and relatives but elsewhere, for example in the Internet-communities, male IVF patients seem not to discuss this matter neither with friends, nor with female partners, nor in the Internet, in spite of the fact that the longer the treatment takes, the more acute the need for support becomes. Research carried out by (Awadallah, 2006; White & Dorman, 2001; Bäckström, Wahn, & Ekström, 2010) has demonstrated that when patients share their experiences this can form an important source of mutual support, which can in turn significantly improve the health and well-being of those involved. This is the case with real life patients' support groups and with those formed on the Internet.

## **2.8 Management of Infertility**

The objectives of management include:

Diagnosing any definitive cause of subfertility; giving a realistic prognosis (with or without treatment); providing information, support, and counselling (to cope with the stress of treatment and possible failure); advising about treatment appropriate to the couple's needs (by duration, age, wishes) and valid alternatives (including non-intervention), and arranging prompt referral for couples who need specialist help (Cahil and Wardle, 2002).

As a general rule, it is preferable to treat the male to improve his fertility status rather than ignore the male factor infertility and use high cost advanced technology. Assisted reproductive technologies (ARTS) which place the burden of treatment and risk on the female partner for a male problem. When a defined cause is found it is advisable to treat same rather than resorting to ARTS immediately provided that the female partner has reproductive potential of > 1 year (Aghaji and Ugwumba, 2007).

Ombelet, 2008 said the time has come to consider the possibility of implementing new reproductive technologies' in developing countries. We consider the integration of infertility management into sexual and reproductive health-care programmes and a reduction of costs a prerequisite in this regard. Simplifying diagnostic procedures in the infertility work-up, simplifying ART, minimizing complication rates and organizing training courses for medical and paramedical personnel will be mandatory if new reproductive technologies are becoming available and affordable, especially outside the private health-care sector.

Induced abortions were more likely to have been diagnosed with STDs and had fewer years of schooling. These data suggest that reproductive and sexual events during teenage years determine the future prospects of fertility and highlight the importance of education. Paradoxically, education will not only help to safeguard future fertility but will also reduce total fertility rates as studies have demonstrated that education, especially of women, is an important variable determining the desired number of children(Potts and Marks, 2001; Bauer, et al., 2006).

Fertility awareness programmes are an inexpensive and efficient first line approach to infertility management, provide tubal patency is demonstrated and severe male factor sub fertility has been excluded. In a prospective randomized study by Gnoth et al. (2003), couples were instructed about the meaning and detection of cervical mucus secretion, with good results. Fertility awareness counselling, which should also incorporate education on infertility prevention, can be given by nurses and paramedical staff working in existing reproductive health-care centres.

Okonofua, (2003) said there is now a growing body of scientific opinion that suggests that addressing infertility could be one way to empower women in Africa and improve their sexual and reproductive health. Infertility management should be part of a more comprehensive approach to reproductive health service delivery as recommended in the plan of acting of ICPD, and would also improve the uptake of contraceptives needed to improve other indices of reproductive health in Africa. Despite the high prevalence of infertility in Africa, very little resources presently exist for the treatment of infertile couples. Conventional methods of infertility treatment are poorly developed in many African countries, with treatment effectiveness not exceeding 10% of infertile couples when these methods are applied in many parts of Africa. (Okonofua, 2002,).

Part of the reasons for poor effectiveness of conventional methods is that many cases of infertility must have simply gone beyond the scope of these methods before they present for orthodox treatment. Of 780 couples seen at the reproductive health clinic of the Women's Health and Action Research Centre in Nigeria in 2002, more than half were assessed to have severe causes of infertility (bilateral tubal occlusion, severe oligospermia and premature ovarian failure) , for which conventional methods of infertility treatment would have little effectiveness. Thus, there can be no doubt that the new reproductive technologies (in vitro fertilisation and embryo transfer, intra-cytoplasmic sperm injection, gamete intra-fallopian transfer, etc) are needed to resolve infertility for some couples in African countries. (Okonofua 2003)

Aghaji and Ugwumba (2007), while writing on management of infertility, said when patients' conditions are not remediable by surgery or medical therapy then ARTS should be done. These include: Intrauterine Insemination (IUI): In this technique catheter injection of processed semen is introduced into the uterine cavity, this serves to bypass cervical mucus principally and indications include male factor issues. Variable results are obtained but coverage at 30-35% for 3-4 cycles, ovulation induction with clomiphene citrate or gonadotrophin may be added. (Guzick, 1999). In-vitro Fertilization (IVF): introduced about three decades ago and basically involves ovarian hyperstimulation, ultrasound harvesting of oocytes, in vitro mixing and embryo or more recently blastocyst transfer. About 20% - 30% of replaced embryos survived and become clinical pregnancies (gestational sac seen by ultrasound).

Intracytoplasmic sperm injection (ICSI): when sperm quality and numbers are poor, pregnancy rates of 40% -50% can be achieved, even non-ejaculated sperm can be used following aspiration from the vas-deferens, epididymis and the testes.(Palermo, 1992; Devos, 2000).

UNIVERSITY OF IBADAN

## **2.9 Conceptual Framework**

### **2.9.1 Social Ecological Model**

The theoretical framework that was used for this study is social ecological model (SEM). SEM is a framework to examine the multiple effects of interrelatedness of social elements in an environment. SEM can provide a theoretical framework to analyse various context in multiple types of research and in conflict communication (Oetzel, Ting-toomey, & Rinderle 2006). Hawley 1950 said social ecology is the study of people in an environment and the influences on one another. Oetzel et al (2006), further said this model allows for integration of multiple levels and context to establish the big picture in conflict communication, health or physical context. There have been several adaptation of the social ecological model; however the initial and most utilized version is Bronfenbrenner's (1977 & 1979), Ecological system's theory which divides factors into 4 levels: macro-, exo-, meso-, and micro-. These levels describe influences as intercultural/society, community, organizational, and interpersonal/individual.

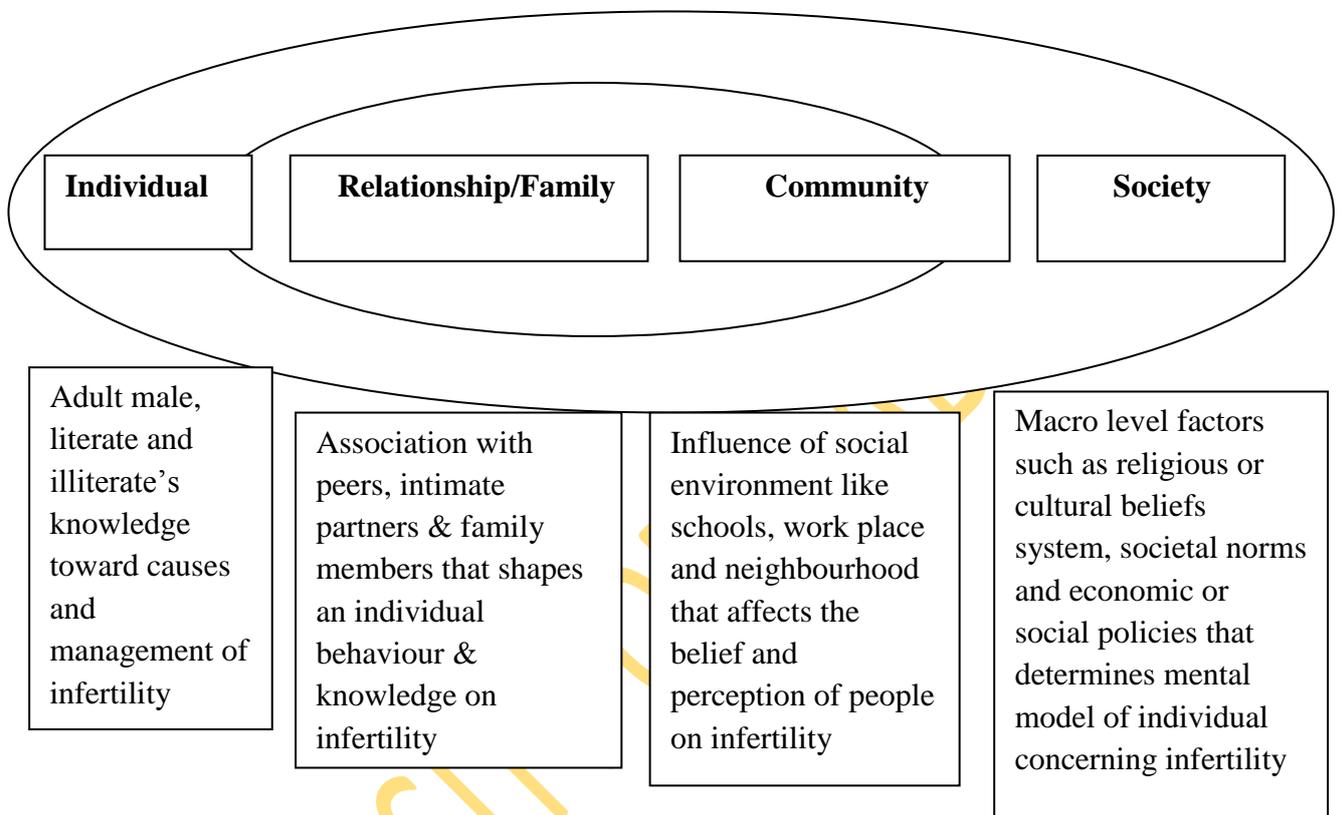
#### **Application of the Social Ecological Model to the Married Men Knowledge and Perception towards Infertility and its Management.**

**Individual:** the first level identifies biological and personal history factors that increase the likelihood of having knowledge and perception about infertility. Some of these factors are age, education, income and drug use. The specific approach to resolve this may include education.

**Relationship:** the second level which is relationship to peers, partners, and family members may also contribute to wide range of knowledge and perception both negative and positive about infertility and its management. The approach at this level is to design a program on knowledge, perception and management of infertility.

**Community:** this level seeks to find the knowledge about treatment of infertility in community, workplace and neighbourhood. Examples of approach that can be employed are group programmes and services.

**Societal:** this considered the societal factors that create an atmosphere where infertility support for self management is encouraged. These factors include social and cultural norms, health and social policies.



**Fig 2.1: Social Ecological Model as applied to knowledge and perception of married men towards infertility and its management**

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.1 Study Design**

A descriptive cross-sectional design was used for the study of men's knowledge and perception towards infertility and its management in Ede North Local government Area (ENLGA), Osun State, Nigeria.

#### **3.2 Scope of the Study**

Scope of the study was limited to the knowledge and perception of married men towards infertility and its management in Ede North Local Government, Osun State, Nigeria.

#### **3.3 Study Area**

The study area is Ede North Local Government Area (ENLGA). Ede is an urban town which has two local government areas; Ede South and Ede North Local Government Areas. Ede South Local Government Area (ESLGA) has population of 76,035 consisting of 36,025 males and 40,010 females while Ede North Local Government Area has population of 83,831, consisting of 40,210 males and 43, 621 females (Population, FOS, 2006). Projecting Ede south and Ede North local Government Area to 2015, using yearly 3% increment for its calculation, will make Ede north Local government Area 109,379 males and females and Ede South Local government Area 99,207 people. Ede South Local Government Area has 10 wards, 5 wards at the town and 5 wards at the villages while Ede North Local Government Area consists of 11 wards, all of which are in the town. There are 3 higher institutions of learning (one Federal Polytechnic and 2 private universities), 22 public primary schools and 7 public secondary schools, in Ede town. Also, there are 18 public health institutions (state hospital, comprehensive health centres and primary health centres) and 17 registered private health institutions (specialist hospital, hospitals, clinics, nursing homes, maternity homes and convalescent homes) in the town and people access fertility cares in nearly all the health institutions.

### 3.4 Population for the Study

The target population is the married men in Ede North Local Government Area of Osun state.

### 3.5 Sample size Determination

The sample size was calculated using Leslie Kisch's formula

- $n = Z^2 Pq / d^2$
- $n$  = minimum sample size
- $Z = 1.96$
- $P$  = prevalence of infertility in Nigeria estimated at 25% (0.25) (Friday Okonofua, 2011)
- $q = 1 - p$ , then  $q = 1 - 0.25 = 0.75$
- $d = 5\%$  level of significant
- $n = (1.96)^2 (0.25) (0.75) / 0.05^2$
- $n = 288$  married men in Ede North Local Government.
- Adding 10% for non response rate:  $28.8 + 288 = 316.8$ ,

### 3.6 Sampling Technique

The data was collected through purposive sampling technique; purposive sampling technique is a type of non-probability sampling that is most effective when one needs to study a certain cultural domain with knowledgeable experts within. (Tongco, 2007). Married men with age range of 22-80 years were chosen for the study, because observation from clinical practice shows that majority of the males in ENLGA don't get married or start raising children until they finish secondary education or after completion of the apprentice training, which is usually after age 21 and men don't stop procreating until after age 80. A two staged sampling technique was used. In stage 1 all the 11 wards in the LGA were used for the study. In stage 2, the first 29 consented married men who were 22-80 years of age were interviewed from the first 8 wards from households and places of work while the first 28 consented married men who were 22-80 years of age were interviewed from the last 3 wards making a total of 316 married men.

### **3.7 Development of Instrument for data collection**

Both quantitative and qualitative methods were used in collecting the data.

1. Qualitative data was collected through the use of Focus Group Discussion guide. A Focus Group Discussion guide was developed which explored issues relating to Knowledge and Perception of Married Men Towards Infertility and its Management.
2. Quantitative data – Quantitative data was collected through the use of questionnaire containing open ended and close ended questions. The questionnaire was divided into five sub-sections (Section A-E), thus designing it to explore demographic characteristics of the respondents, perception of married men on infertility, perception of married men towards management of infertility, knowledge of married men on infertility and knowledge of married men on management of infertility.

### **3.8 Method of data collection**

A total of five focus group discussions were held. Each session lasted for about fifty minutes; it involved either 7 or 8 participants. A team of two persons consisting of a moderator and a note taker were involved in each FGD. These men were accessed through mobilisation by the ward leaders and from house to house. Data collected using Focus Group Discussion guide and the information gathered during the pilot study at Osogbo Local Government area was used for two main purposes (i) it serves as main source of data. (ii) It was used to further fine tune the questionnaire (Appendix I).

Quantitative data was collected with questionnaire using interviewer administered approach (Appendix II)

### **3.9 Validity and Reliability**

#### **3.9.1 Validity**

Validity is the ability of a test or an instrument to measure what the investigator wants to measure and was censured by the following steps:

- (i). A draft of the questionnaire was constructed by consulting relevant literature. (ii). The draft instrument underwent an independent review from peers and experts in the field of public health. (iii). Supervisor's review was used in fine-tuning the instrument. (iv). Content validity of the questionnaire was further ensured through the incorporation of the preliminary pretested FGD outputs. (v). Special care was taken to monitor the quality of data collected through supervision during collection of data.

### **3.9.2 Reliability of the instrument**

Reliability is the accuracy or precision of a research-measuring instrument. Both the FGD guide and the questionnaire were reviewed for quality and consistency. The instruments were translated into Yoruba (which is the local language of the target population- Appendix III and IV) by a Yoruba language expert. Another Yoruba language expert translated it back to English language. The two instruments were pre-tested to ascertain suitability and appropriateness to field situations, determine whether the questions were clear and simple enough for participants' comprehension and determine the trend in the response of participants and the amount of time it took to administer the questionnaire. Two FGDs done and thirty-two respondents were interviewed with the questionnaire (representing 10% of the actual sample size for the study) at Osogbo Local Government Area. At the end of the exercise, items that were not easily understood were reframed, those that were found to be irrelevant were removed and adequate spaces were provided for responses. The pretest questions were analyzed using the Statistical Package for Social Science Version 15. The reliability of the questionnaire was tested using the Alpha Cronbach's reliability test and the result was 0.874.

### **3.10 Training of the Research Assistants**

Four male research assistants which consisted of two graduates and two MPH students of the University of Ibadan were employed and trained for a day on objectives of the study, methods and ethical procedures necessary in conducting an interview

### **3.11 Ethical Consideration**

The proposal was submitted, reviewed and approved by the UI/UCH Ethical Review Committee before the commencement of data collection (See Appendix V). Informed consent of the respondents was verbally sought, their rights were protected and information received was kept confidential. The ethical principles guiding human participants were considered which includes essential information about the study procedure, duration, its purpose and benefits. Confidentiality of the respondents is ensured by not writing names or address on the questionnaire. The right and integrity of the respondents were fully protected. The collected data was securely kept to prevent unauthorised access and loss of the materials.

### 3.12 Data Management and Statistical Analysis

The tape-recorded responses from the FGD sessions were transcribed verbatim and used to update the write up of the recorder. The FGD report was analyzed manually by the researcher. Content and context analysis using a thematic approach involving the grouping together of similar themes in each transcript was done followed by identifying emerging trends and differences across transcripts. In respect to data analysis from questionnaire the following were done: (i). All questionnaires were numbered, reviewed and edited by the researcher for completeness. (ii). The quality of the information collected was checked. (iii). A coding scheme guide was developed and data were manually coded and entered into the computer. (iv). All the questionnaires were packed in bundles according to serial numbers and kept in a safe box to ensure safety and maintain confidentiality. More so there may be need to refer to them in the course of the research process.

The data were analysed using Statistical Package for Social Science (SPSS). Knowledge variables measured on 28-point scale. Each correct answer had a score of 1, incorrect answer, I don't know and no response each was assigned 0 score. The scores were then summed up to give a composite knowledge score for each respondent. Knowledge scores were categorized into poor (<10), Average (10-17 points) and good (>17) grades.

Perception on infertility variables measured on 14-point scale; (<7) were classified as wrong and ( $\geq 7$ ) are classified as right. The scores were added together to obtain a composite perception score for each respondents.

Perception towards management of infertility was measured on a 12 point scale; an incorrect answer or no response has a score of 0. The scores were then summed up to give a composite perception towards management score for each respondent. These were categorised into (<6) as wrong and ( $\geq 6$ ) as right.

Frequency tables were generated, cross tabulations of some variables were done using Chi-square ( $X^2$ ) test. The research hypotheses were tested to establish significant relationship between the independent and dependent variables using the chi-square test at 5% probability level for rejecting the null hypotheses. Cross tabulation of dependent and independent variables was also done to establish relationship between the variables. The results were presented in tables.

### **3.13 Limitations of the Study**

This study was limited to the married men in the urban setting of the study area and convenient sampling technique was used in the collection of data for the study so the interpretation should be done with caution.

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## CHAPTER FOUR

### RESULTS

The results for the both qualitative and quantitative data are presented in this chapter.

#### **4.1: Socio- demographic profile of the respondents.**

The ages of the respondents ranged from 22 to 80 years with the mean age of  $40.1 \pm 10.3$  years. Almost all the respondents 99.1% were married, 98.7% were Yoruba, 0.6% were Hausa, 0.3% Ibo, and 0.3% others. About two third 69% were Muslims, 35.1% had secondary education and 43.0% were civil servants. Slightly more than half of the respondents 52.3% had 3-5 children. Most of the respondents 81.6% had lived in the community for 7 years and above, 7.3% for 3 to 4 years, 5.7% for people that had lived for 1 to 2 years and 5.4% for 5-6 years. Details are shown in Table 4.1.

**Table 4.1: Socio - Demographic Profile of the Married Men ( N = 316)**

Socio-demographic characteristics	No	%
<b>Age</b>		
≤ 30 years	65	20.6
31-40 years	118	37.3
41-50 years	87	27.5
>51 years	46	14.5
<b>Marital Status</b>		
Married	313	99.1
Divorced	3	0.9
<b>Religion</b>		
Christianity	95	30.1
Islam	218	69.0
Traditional	3	0.9
<b>Educational Level</b>		
No formal education	22	7.0
Primary Education	74	23.4
Secondary Education	111	35.1
Tertiary	109	34.5
<b>Occupation</b>		
Civil servant	136	43.0
Artisan	74	23.4
Self employed	39	12.3
Driving	32	10.1
Trading	23	7.3
Farming	5	1.6
Retired	4	1.3
Clergy	3	0.9
<b>Number of children</b>		
0	5	1.6
1-2	109	34.5
3-5	165	52.3
6 and above	37	11.6

## 4.2 Perception of married men on infertility

This section discussed perception of married men on infertility with the score of  $7.5 \pm 2.3$ . One hundred and thirty 43.0% of the respondents agreed that witches and witchcraft cause infertility, 48.1% disagreed and 8.9% were not sure. As regards watery sperm, majority 82.6% agreed while 8.5% disagreed and 8.9% were not sure. Fifty eight respondents 18.4% agreed that early circumcision of male child can cause infertility while majority 72.8% disagreed and 8.9% not sure. More than half of the respondents 67.7% disagreed with the belief that certain food caused infertility and 24.1% agreed that eating of certain food can cause infertility while 8.2% were not sure. The larger percentage of the respondent 73.7% said that sperm back flow can cause infertility while 11.7% said it has nothing to do with infertility and 14.6% not sure. Infertility having more negative effect on women than men, 64.6% agreed to the perception, 28.8% disagreed and 6.6% not sure. Two hundred and twenty 69.6% disagreed that infertility could be inherited from parents, 25.3% agreed and 5.1% were not sure Table 4.2.

The married men in the verbal discussions perceived that illnesses are what lead to infertility, causing the egg shortage, also drug misuse, family problems from both men and women, promiscuity on the part of women most especially has been attributed to infertility causes, some also said that we cannot really say women are the major causes of infertility; it may also be from the men. Another respondent also disagreed with people's opinion as regards some of the causes that they had mentioned he said they should not look at them as the set of people that are being promiscuous; it may be an act of God. It is also believed that women is the major cause of infertility, also late marriage has been one of the contributory factor to infertility especially for women. It was supported with the statement below:

*“Infertility, all they have said before, that is what I want to sum up now, body illness generally that is what causes it, like weak erection, like illness in short, like weak tendons, these cause it for men and also for women also. If woman's body is not okay too, this can also cause it”.*

*“Hmmm, what I will add is that women of nowadays, drug misuse causes some. Drug misuse, some that are not even up to age, they have started seeing men and they will use tablet so that it will not turn to pregnancy when it is time for them to get pregnant in men's house, it would have affected all those things in their system*

*and will not let the pregnancy come on time as for women. For men, well, the way we are being created by God, if a man has not spoil himself before he will be unable to impregnate a woman, maybe it is from God”*

*“Ehen! People’s belief as regard infertility for both male and female is that being promiscuous is too much. Some, the things that they supposed to use to produce child would have been misused and when they try and try, they will conclude that is god’s time that is not enough”.*

*“We cannot look at them anyhow from my own perspective, the only thing we can do is to be begging God on their behalf. If it is human cause that does not allow them to give birth, we will also beg God and if it is God’s wish, we will beg God also, all does not go beyond begging God for them to be able to give birth”.*

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**Table 4.2: Perception of married men on infertility**

(N=316)

Perceptions about causes of infertility	Responses					
	Agree		Disagree		Not sure	
	No	%	No	%	No	%
Infertility is caused by witches and withcraft	136	43	152	48.1	28	8.9
Infertility is caused by watery sperm	261	82.6	27	8.5	28	8.9
Infertility is caused by early circumcision of male child	58	18.4	230	72.8	28	8.9
Infertility is caused by eating certain foods or vegetable e.g okro	76	24.1	214	67.7	26	8.2
Infertility is caused by eda (sperm back flow)	233	73.7	37	11.7	46	14.6
Infertility has more negative effect on women than on men.	204	64.6	91	28.8	21	6.6
Delay in ability to achieve pregnancy/infertility could be inherited from parents?	80	25.3	220	69.6	16	5.1

#### **4.3: Perception of married men on severity of infertility**

One hundred and fifty seven respondents 49.7% said infertility is a very serious problem, 35.1% assumed it is not a serious problem because it can be treated, and 12.7% believed that it is only serious in Africa society. Five respondents 1.6% said that it is not a serious problem and the minority 0.9% said no cause for alarm, only those who are under spell become infertile Table 4.3.

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**Table 4.3: Perception of married men on the severity of infertility**

(N=316)

<b>Statements are true about infertility</b>	<b>No</b>	<b>%</b>
It is a very serious problem	157	49.7
*It is not serious because it can be treated	111	35.1
*It is only serious in Africa society	40	12.7
*It is not a serious problem	5	1.6
No cause for alarm, only those who are under spell becomes infertile.	3	0.9

\*Scientific based correct responses

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#### **4.4: Perception of married men towards the management of infertility.**

Almost all the respondents 92.1% agreed that infertile couple can achieve pregnancy if managed properly, 3.8% disagreed, 4.1% not sure. Half of the respondents 57.0% believed that spiritual means is the best way to treat infertility, one-third of them 34.5% disagreed to that opinion and 8.5% were not sure. Close to half 48.4% said orthodox method is the effective means of managing infertility, 35.8%, 15.8% disagreed and were not sure respectively. On the issues of the reliable way of managing infertility, 47.5% believe it can be managed through medical treatment, 44.0% disagreed and 8.5% were not sure. As regards the issue of management between men and women, slightly more than half 181 57.3% agreed, 29.1% disagreed and 13.6% were not certain whether infertility is easier to manage in men than women. Two third of the respondents 61.4% also believed that it is cheaper to manage infertility in women than in men, 22.8% opposed the notion and 15.8% were not sure about it Table 4.5.

The participants also mentioned their perception towards its management in the group discussions. Some said the most effective ways of treating infertility is strictly with traditional medicine, but other opined that both traditional and orthodox medicine. It was also explained further that God does not allocate children to some people and if those set of people should force them to look for child; they may get children from the local deity. It was also said that people should not sit in one place; they should look for solutions in various places they think solution can be found. Marrying another wife by the couple has also been another suggestive measure to solve infertility problem.

*“the ways of treating or managing infertility is through white medicine and orthodox medicine”*

*“my father had said it all, number one is we will go for test in the hospital both man and women, if it does not work they will try orthodox medicine. Some may receive child from river goddess”.*

**Table 4.4: Perception of married men towards the management of infertility****(N=316)**

<b>Perception towards the management of infertility.</b>	<b>Agree</b>		<b>Responses Disagree</b>		<b>Not sure</b>	
	No	%	No	%	No	%
Infertile couple will achieve pregnancy after being managed/receiving treatment.	291	92.1	12	3.8	13	4.1
Spiritual means is the best way to treat infertile couples.	180	57.0	109	34.5	27	8.5
Orthodox method is the effective means of managing infertility.	153	48.4	113	35.8	50	15.8
The only reliable way of managing infertile couple is through medical treatment.	150	47.5	139	44.0	27	8.5
It is easier and cheaper to manage infertility in men than in women.	181	57.3	92	29.1	43	13.6
It is easier and cheaper to manage infertility in women than in men.	72	22.8	194	61.4	50	15.8

**Table 4.5: Categories of the perception score of married men towards the management of infertility**

(N=316)

<b>Perception score of married men on infertility</b>	<b>No</b>	<b>%</b>
Poor perception (scores less than mean- 6.65)	174	55.1
Good perception (score greater than or equal to mean-6.65)	142	44.9
Total	316	100

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#### **4.5: Knowledge of married men on causes of infertility.**

Majority 68.4% of the respondents believed that both men and women are responsible for the infertility problem, 22.2% said women are responsible, 3.8% said men are being responsible for infertility and minority 5.7% said is none of them.

Two hundred and twenty nine 72.5% said it is true that diseases like urinary tract infection, gonorrhoea, diabetes, hypertension and obesity can cause infertility among couples, 20.6% said false to the statement while 7.0% had no idea about the causes. Two hundred and thirteen 67.4% said it is true that waywardness/promiscuity can cause infertility, 23.4% supposed false to the statement while 9.2% had no idea about the causes. Close to two third of the participants, 63.9% said it is true to the fact that congenital abnormality is also one of the major causes of infertility, 19.6% false to the statement while 16.5% had no idea of what congenital abnormality is. Two hundred and eleven 66.8% said it is true that supernatural causes like curse can be responsible for infertility, 25.9% false while 7.3% did not know. A few of the participants 8.9% said it is true that early marriage can cause infertility, some 87.7% said false while 3.5% did not know.

Majority 78.8% said that late marriage is not a contributing factor of infertility, 17.1% said it is a factor while 4.1% did not know if it is a factor. 89.6% said that low sperm count can cause infertility, 9.2% respondents said false while 1.3% did not know. 71.2% said true, that trauma to reproductive organs causes infertility, 16.8% said false while 12.0% did not know. Two third, 65.8% said evil spirit can cause infertility, 23.7% said false while minority 10.4% did not even know if it causes infertility. Most participants 83.9% also accepted that unsafe abortion can lead to infertility, 13.0% said it was not true while 3.2% did not know.

Majority 88.6% said that watery sperm can cause infertility, 8.9% said the statement was not true and 2.5% never knew. Some 32.3% said truly overworked or stress can results to infertility, more than half, 63.3% said the statement was false while 4.4% had no idea. Family planning was said to be part of the causes of infertility, close to half 48.7% said it was true, 43.0% said false and 8.2% did not know. Some also said that sexual arousing drugs can cause it 38.9%, 53.8% said the statement is false, 7.3% did not know. 37.3% also said it is true that it can be inherited while 53.8% said false and 8.9% did not know.

18.7% said it is true that burning of menstrual cloth can lead to infertility, 61.7% said false and 19.6% did not know. Close to half of the participants 48.4% also said it is true that family gods and idols can cause infertility, 44.0% false, while 7.6% did not know. Most of the respondents 82.6% also said it is true that some men can use their manhood to get money leading to infertility, 11.4% false and few 6.0% did not know. It was noted that more than half of the respondents 54.7% said it is true that God does not allot children to some people, 38.0% said the statement was false while 7.3% opted for don't know Table 4.6.

Findings from the focus group discussion sessions revealed that participants believed that infertility exists and it was believed to be caused by so many factors. Some of the factors that were said that can cause infertility are sexual transmitted infections like gonorrhea, sperm backflow, piles. It was also believed that some other factors can lead to infertility like some occupation that requires sitting for a very long time such as sitting on the car engine, motorcycle riders, people that erect network masts, keeping phones in the trouser pockets. It was also reiterated by one of the participant that abortion can lead to infertility and this civilized world is a major contributing factor to it e.g. using of drugs for family planning, eating of processed food that people don't eat in the olden days, it was also believed that it could be spiritual in nature and it was believed that it could be an act of God. This can be supported with the participants' statements below:

*“The work that men do also determines at times because sometimes, according to medical experts; if you sit on a hot engine like drivers that drives lorry, it can cause infertility for men”.*

*“Like the mast that mtn or others or international service provider normally erect; if someone is there it reduces sperm”.*

*“All the points they have mentioned is still the same and if something has never happened to you before, one cannot be sure of saying it but the general one is low sperm count, it goes beyond that. Had it been we are from health line; we should be able to shed more light on it”.*

**Table 4.6: Respondents' Knowledge of causes of infertility****( N=316)**

<b>Causes of infertility</b>	<b>No</b>	<b>%</b>
Disease (e.g. urinary tract infection, gonorrhoea, Diabetes, hypertension, obesity,etc)		
*True	229	72.5
False	65	20.6
I don't know	22	7.0
<b>Congenital problems</b>		
*True	202	63.9
False	62	19.6
I don't know	52	16.5
<b>Low sperm count</b>		
*True	283	89.6
False	29	9.2
I don't know	4	1.3
<b>Trauma to the reproductive organs</b>		
*True	225	71.2
False	53	16.8
I don't know	38	12.0
<b>Unsafe abortion</b>		
*True	265	83.9
False	41	13.0
I don't know	10	3.2
<b>Heredity or family problem</b>		
True	118	37.3
*False	170	53.8
I don't know	28	8.9

\*Correct Responses

#### **4.5 Knowledge of prevention of infertility**

More than three quarter of the respondents, 88.0% said yes that infertility can be prevented while minority 12.0% said no.

As regards how infertility can be prevented within the society, almost all the respondents said health education on reproduction and sexual life for teenagers should be organized in other to prevent infertility while 8.2% said no to the statement. Two-third of the respondents supported that fertility awareness program can prevent infertility while 13% said no. Majority supported sexual counselling was also part of the preventive measures while others 12.7% said no. Early treatment of sexually transmitted infection was also part of the suggestive measures to curb future occurrence of infertility; most of the respondent said yes to the statement while 12.0% opted for no. More than three quarter of the respondents supported that people should be screened for abnormalities and hormonal imbalance while 16.5% said no to the statement. Most of the respondents 74.4% said no to the statement of checking the child's destiny after delivery so as to prevent future infertility while minority said yes to the statement. Table 4.7.

**Table 4.7: Knowledge of prevention of infertility**

**(N=316)**

<b>Knowledge of prevention of infertility</b>	<b>Yes</b>	
	<b>No</b>	<b>%</b>
* Health education on reproduction/sexual life for teenagers	290	91.8
*Fertility awareness	275	87.0
*Sexual counselling	276	87.3
*Early treatment of sexually transmitted diseases	278	88.0
*Clinical screening for abnormalities and hormonal imbalance	264	83.5
By checking the child's destiny after delivery	81	25.6

\*Only correct responses are displayed

**Table 4.8: Categories of knowledge score of married men on infertility**

**(N=316)**

Knowledge category	No	%
Poor knowledge (0-9)	2	0.6
Average knowledge (10-17)	107	33.9
Good knowledge (18-28)	207	65.5
Total	316	100

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#### **4.6: Knowledge of married men on management of infertility.**

Majority, 97.8% opined that infertility can be prevented to achieve pregnancy while 2.2% said no to the statement. On the knowledge of married men on management of infertility, two hundred and fifty, 79.1% said the use of native concoction can actually cure infertility, 14.9% said false and 6.0% did not know. Majority, 86.7% said that visiting spiritual houses (Churches/mosque) for prayers can reduce the cases of infertility, 8.5% said false and 4.7% did not know. Undergoing regular test/examination and treatment of ailments that can delay child bearing, 89.2% said it is true, 9.2% false and 1.6% did not know. One hundred and one, 35.1% also said that adoption of IVF (in vitro fertilization) can prevent infertility, 41.5% said false while 23.4% didn't know. Adoption of children; 32.3% true, 59.2% false and 8.5% didn't know. One third 32.9% said that no treatment is needed; God will do it at His own time while more than half 61.4% said false and 5.7% didn't know. Table 4.9.

The respondents result above can be corroborated with their responses in the discussion sessions had with them. They were of opinion that infertility can be managed in three ways; by orthodox medicine, by taking medical prescriptions and visiting spiritual homes (churches, mosques and traditionalists). It was suggested that the couple affected can also go for test in order to know what to treat before drug prescription. It was suggested by some of the respondent that combination of both herbal medicine and modern medicine should work together to combat infertility problems. This can be corroborated with the responses below:

*“ehen, en ,infertility is not common like that , the reason being that if infertility want to happen ,people use different types of drugs to fight it ,and when they have done that ,they have treated it with herbal doctor or medical doctor to give them medicines to use”.*

*“that is the reason why god created herbs and leaves for our benefits. If we are talking about pile, gonorrhoea, i don “think prayer has something to do with that, it is herbs and leaves that one we use to cure that”.*

**Table 4.9: Knowledge of married men on management of infertility****(N=316)**

<b>Statements</b>	<b>Yes</b>		<b>No</b>		<b>I don't know</b>	
	No	%	No	%	No	%
The use of native concoction	250	79.1	47	14.9	19	6.0
Visiting spiritual houses (churches/mosque) for prayers.	274	86.7	27	8.5	15	4.7
*Undergoing regular test/examination and treatment of ailments that can delay child bearing	282	89.2	29	9.2	5	1.6
*Adoption of IVF (in vitro fertilization)	111	35.1	131	41.5	74	23.4
Adoption of children	102	32.3	187	59.2	27	8.5
No treatment is needed;God will do it at his own time	104	32.9	194	61.4	18	5.7

\*Correct Responses

**Table 4.10: Categories of the knowledge scores of married men on management of infertility**

(N=316)

<b>Knowledge score on management of infertility</b>	<b>No</b>	<b>%</b>
Poor knowledge (scores below the mean- 8.35)	89	28.2
Good knowledge (score greater than or equal to mean- 8.35)	227	71.8
Total	316	100

UNIVERSITY OF IBADAN

## 4.7 Hypotheses Testing

**4.7.1 Hypothesis One:** The null hypothesis which stated that there is no significant association between respondents' age and perception of infertility were cross tabulated to determine if age had an influence on Perception about infertility. Table 4.12 shows that there was no significant association between respondents' age and perception towards infertility. Age has no role to play in perception towards infertility.

The null hypothesis, which stated that there is no association between respondent's age and perception of married men towards infertility was therefore accepted, the alternate response that respondents' age influences perception of infertility is therefore rejected.

**Table 4.11: Hypothesis 1: Association between age and perception of married men on infertility.**

Age	Perception of married men on infertility				Total
	Poor		Good		
	No	%	No	%	
≤ 30	27	41.5	38	58.5	65
31-40	47	39.8	71	60.2	118
41-50	33	37.9	54	62.1	87
>51	17	36.9	29	63.0	46

$$\chi^2 = 1.915$$

$$df = 5$$

$$P\text{-value} = 0.861$$

#### 4.7.2 Hypothesis Two

Religion and perceptions of married men towards infertility were cross-tabulated to determine if religion had an influence on perceptions of married men towards infertility. Table 4.13 shows that there was a significant association between Religion and perceptions of married men towards infertility. Religion has a role to play in the perceptions of married men towards infertility. The null hypothesis which stated that there is no association between Religion and perceptions of married men towards infertility was therefore rejected.

**Table 4.12: Hypothesis 2: Association between religion and perception of married men on infertility**

Religion	Perception of married men on infertility				Total
	Poor		Good		
	No	%	No	%	
Christianity	35	36.8	60	63.2	95
Islam	86	39.4	132	60.6	218
Traditional	3	100.0	0	0.0	3

$$\chi^2 = 4.878$$

$$df = 2$$

$$P\text{-value} = 0.087$$

### 4.7.3 Hypothesis Three

Level of education and knowledge of married men on infertility were cross-tabulated to determine if Level of education had an influence on knowledge of married men on infertility. Table 4.14 shows that there was a significant association between level of education and knowledge of married men on infertility ( $p < 0.05$ ). Level of education has a role to play in the knowledge of married men on infertility. The null hypothesis which stated that there is no association between Level of education and knowledge of married men on infertility was therefore rejected.

**Table 4.13: Hypothesis 3: Association between level of education and knowledge of infertility management category**

Level of Education	Knowledge on infertility management category				Total
	Poor		Good		
	No	%	No	%	
No education	8	36.4	14	63.6	22
Primary	23	31.1	51	68.9	74
Secondary	26	23.4	85	76.6	111
Tertiary	32	29.4	77	70.6	109

$$\chi^2 = 12.352$$

$$df = 3$$

$$P\text{-value} = 0.003$$

#### 4.7.4 Hypothesis Four

The null hypothesis which stated that there is no significant association between respondents' Age and Knowledge towards infertility was cross tabulated to determine if age had an influence on Knowledge about infertility. (Table 4.15) shows that there was no association between respondents' age and knowledge towards infertility. Age has no role to play in knowledge towards infertility

The null hypothesis, which stated that there is no association between respondent's age and knowledge of married men towards infertility was therefore accepted, the alternate response that respondents' age influences knowledge of infertility is therefore rejected.

**Table 4.14: Hypothesis 4: Association between age of the respondents and the knowledge on infertility.**

Age of the respondent	Knowledge on infertility						Total
	Poor		Average		Good		
	No	%	No	%	No	%	
≤ 30	1	1.5	24	36.9	40	61.5	65
31-40	0	0.0	40	33.9	78	66.1	118
41-50	1	1.1	27	31.0	59	67.8	87
> 51	0	0.0	16	34.8	30	65.2	46

$$\chi^2 = 2.911,$$

$$\chi^2_{\text{YATE}} = 2.878$$

$$\text{df} = 10$$

$$\text{P-value} = 0.98$$

## CHAPTER FIVE

### DISCUSSION AND RECOMMENDATION

#### 5.1 Socio-demographic characteristics

The age of the respondents ranged from 22 to 80 years which falls within the reproductive age of the married men in Ede North Local Government Area. The communities were also dominated by Islam as a religion, having majority of the respondents as Muslims, a similar findings was documented by Sumera, Raafay, Ayesha, Faisal, Syed. F, Annum and Syed Farid-ul-Hasnain, (2011).

#### 5.2 Perception of married men about infertility

Few of the respondents perceived that men are responsible for infertility problems, a finding that was at variance with the study carried out by American Society for Reproductive Medicine (2012) which shows that in approximately 40% of infertile couples, the male partner is either the sole or a contributing cause of infertility. This opinion might not be unconnected with cultural perspective that usually put the blame on the female partner. About half of the respondents disagreed that infertility is caused by witches and witchcrafts this may be due to the religion which they practice and their level of education, as this was at variance with the documentation of Sumera et al (2011) and Tabong and Adongo (2013). Sumera et al (2011) stated that there is a prevalent belief in the society that infertility can be caused by supernatural causes like *jinn* (evil spirits) and black magic. To know about people's views on these beliefs, two options were included in the list of causes of infertility. It was found that one third of the people interviewed, believed *jinn*s to be a cause of infertility while almost two fifth believed that black magic could be a cause of infertility. Whereas in Tabong and Adongo, (2013) findings, some respondents; one third believed that if the female is not able to conceive, she may be possessed by an evil spirit. The less educated participants were more likely to attribute the causes of infertility to evil forces or supernatural power, outside human control because some of the respondents agreed that infertility is caused by witches and witchcraft.

It was also perceived in the study that watery sperm can also lead to men becoming infertile. Majority of the respondents in the study also stated that eating certain foods like okra cannot cause infertility in men, this does not corroborate with the study carried out by Olatunji-Bello, Ijiwole and Awobajo (2009) which evaluated the deleterious effects of aqueous fruit extract of *Abelmoschus esculentus* (okra fruit) on some male reproductive parameters in Sprague dawley rats. The study showed that there was a reduction in the weight of the testes of treated rats, secretion of testosterone and sperm production (spermatogenesis). It was also stated further that several vegetables that are eaten or used for medicinal purposes have been reported as having effects on both male reproductive functions. These include aqueous extract of *Spondias mombin* bark, referred to as *Iyeye* among the Yoruba speaking communities. Others are water extracts of seeds of *Ricinus communis* and pawpaw as well as neem.

Most of the respondents in this study agreed that infertility has more negative effects on women than men, because it is believed that women that are infertile had lived wayward lives, some may even be speculating that such person's womb has been removed. This is in line with the focus group session conducted by Tabong and Adongo (2013) in Northern Ghana where it was reported that "the highest biological factor that has been blamed for infertility among females was previous use of contraceptives. This was also directly attributed to past promiscuous lifestyle of the woman as the contraceptives were used to prevent unwanted pregnancies". Most of the respondents disagree on inheriting infertility from parents. This is at variance with the study conducted by the America Society for Reproductive Medicine study (2011), which documented that some men and women may carry genetic abnormalities that make it more difficult to become pregnant and more likely that a pregnancy ends in a miscarriage.

## **5.2 Perception of married men towards the management of infertility.**

As regards the aspect of management, majority believed that if it is properly managed the couples can achieve pregnancy and this corroborates the findings of Sumera et al (2011), where nearly all the respondents believed that couple should seek treatment for infertility. The respondents also believe that spiritual means is the best way to treat infertility problems, this was in support with the study conducted by Daniluk (2001), in Tanzania where the use of spiritual means to solve infertility eventually leads to practices of

spiritual methods ranging from the post coital exercise of standing on one's head to the unpleasant and dangerous traditional remedies of eating feces and inducing vomiting. Daniluk study also opposed the response of some respondents that the only way of managing infertile couple is through medical treatment. In this study, the respondents also said that is easier to manage infertility in men than in women because cost of management is higher in women. They also spoke further on the person who always carries the blame for infertility within the society; the respondents said mostly, women are blamed for infertility. Probably due to the cultural belief that men are created complete and that woman is the main cause of infertility.

### **5.3 Respondents Knowledge on the causes of infertility**

Infertility was also seen as a minute problem since it can be treated which corroborates the American Society for Reproductive Medicine study, (2011); which stated that the factors affecting fertility are easily detected and treated. Respondents' knowledge of diseases such as urinary tract infections, gonorrhea, and diabetes being causes of infertility, upheld previous findings reporting same (Tabong and Adongo 2013). Knowledge on the relationship between STIs and blocked tubes was high as it was unanimously agreed in FGD and cited in in-depth interviews. Participant mentioned gonorrhoea, syphilis and Chlamydia infections as common causes of infertility in the community because of the sexual promiscuity that is rampant in the society.

Majority of the respondents, agreed that unsafe abortion can lead to infertility and this corroborates the qualitative study carried out by Tabong and Adongo (2013), where it was reported that abortions in all forms (safe and unsafe) are believed to cause infertility, most especially those conducted by unqualified individuals. This finding stemmed from the cultural belief that, all women are born with a fixed number of children to conceive and when these children are aborted, they believe the consequential effect is infertility. However, men are believed not to have such fixed number of children and are therefore capable of producing uncountable number of children. One of the causes of infertility that the respondents supported was the one caused by low sperm count. This was also supported by studies which revealed that most common cause of male infertility is due to a problem in the sperm production process in the testes. About two thirds of infertile men

have sperm production problems. Low numbers of sperm are made and/or the sperm that are made do not work properly McLachlan (2001).

#### **5.4 Knowledge on prevention of infertility**

Knowledge of health education on reproduction and sexual life for teenagers and sexual counseling were reported as key strategies to preventing infertility, a findings that corroborates those of Tabong and Adongo (2013) and Centre for Disease Control (2010): The importance of education was documented by Tabong and Adongo (2013) qualitative study, which shows that the prevention of infertility was also unanimous and education was seen as the core preventive strategy especially for the younger generation as many of the perceived causes are consequences of illicit behaviours during youth. Some respondents, during the FGD suggested that drugs used for abortion should be banned even though there were other herbs that were believed to be capable of inducing abortion, which are believed to be relatively safer than medical abortifacients. Early treatment of sexually transmitted diseases has been proved to be effective in the treatment of infertility.

#### **5.5 Knowledge on management of infertility**

It was also supported by the respondents that infertility can be managed by undergoing regular test/examination and treatment of various ailments that can be associated to infertility. Indications for Assisted Reproductive Technology (ART) are increasing in parallel with advances in the reproductive technology. Explaining further in Ombelet and Campo, (2007) study; it was made known that new technologies are egg and embryo donation, pre-implantation genetic diagnosis and possibly in vitro maturation. In vitro fertilisation (IVF) is the logical treatment for tubal infertility. However (Dickens and Cook, 2007) stated that the establishment of high technology ART programmes (IVF) in low resource countries is not only extremely difficult but also contentious because of the limited healthcare budgets. ART services are expensive to set up and have high recurring costs.

As regards the issue of adoption, the respondents did not support it because they believe that the adopted children may carry some gene that will make them behave differently from those that adopted them. However, it was recommended at the world population conference that all government should facilitate child adoption so as to assist involuntarily sterile and sub-fecund couples to achieve their desired family size (United Nation 2009).

This recommendation shows that couples could use adoption to approximate biological parenthood when they are unable to have children of their own.

### **5.6 Implication of research findings for sexual and reproductive health**

The study set out to study the knowledge and perception of married men towards management of infertility in Ede Local Government. Majority of the respondent had good knowledge on infertility management but the perception was poor. Main findings also showed that infertility can be caused by sperm back flow and that infertility also has more negative effect on women than on men especially as women was perceived to be the major cause of infertility. Furthermore, it was believed to be treatable if detected early and taken to proper place for management. Infertility can be treated after receiving treatment. The study also documented misconceptions about sources of care and its efficacy. Majority of the respondents disagreed with the use of adoption for the treatment of infertility. Congenital problems, low sperm count, trauma in reproductive organ and unsafe abortion were also identified as factors that could be responsible for infertility. Others ways to prevent infertility were also mentioned, they are: health education on reproduction/sexual life for teenagers, fertility awareness, sexual counseling, early treatment of sexually transmitted diseases and clinical screening for abnormalities and hormonal imbalance. Ways in which infertility can be managed were also mentioned, examples are use of native concoction, undergoing regular test/examination and treatment of ailment relating to infertility. On the causes of infertility, it was believed that some certain diseases such as urinary tract infection, gonorrhoea, diabetes, hypertension and obesity are responsible for infertility.

The research findings have some implications for sexual and reproductive health education. The study identified misconceptions as it relates to causes of infertility and treatment options. This is a gap that needs to be filled. Community educational interventions, such as community dialogue, community engagement and sensitization activities need to be put in place to bridge this knowledge gap.

Furthermore, intervention programmes targeting community members should involve all stakeholders- men, women, community gate keepers in all the stages of the intervention

activities. The existing knowledge exhibited by the respondents should be used as a spring board for community educational activities.

Policies on management fertility issues should be developed at every tiers of government. Sensitization awareness should be done among the member of the public that only women should not be perceived as the cause of infertility, men can also be the cause.

On the issue of child adoption, most of the respondents are not in support, child adoption should be encouraged not only for infertility individual but also for the couples with children

Early diagnosis of couples on infertility should be done.

Proper counselling on the fertility options should be offered to couples with infertility problems in other to make the right choice.

### **5.7 Conclusion**

In conclusion, childbearing and family are considered a right of every human being. Infertility is a health problem that requires appropriate treatment strategy and modern medical science has developed advanced therapies to assist reproduction over the last 20 years, (Roupa et al 2009). So community-based health education programmes should be organised using existing male platforms to promote right perception of respondents with regards to early diagnosis and management of infertility in Ede North Local Government Area.

### **5.8 Recommendation:**

In this study, most men believe that infertility cannot be from men instead it is believed that women are the major causes of infertility. The following recommendations for perception of married men are made.

- a. The need for health education in re-orientating the men that women are not the only major causes of infertility, men are also be responsible most of the time.
- b. It was mentioned that some of the sexually transmitted infections such as gonorrhea and urinary tract infection can cause infertility. Therefore, the need to educate the general public about safer sex and avoidance of multiple sex partners to prevent sexually transmitted infections is crucial.
- c. The link between poorly managed STIs and infertility should be highlighted.

### **5.9: Suggestions for further study**

1. Knowledge and attitude on traditional ways of infertility management.
2. Knowledge of Sexually Transmitted Diseases management among adults of reproductive age.

UNIVERSITY OF IBADAN

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## APPENDIX II

### QUESTIONNAIRE

#### KNOWLEDGE AND PERCEPTION OF MARRIED MEN TOWARDS MANAGEMENT OF INFERTILITY IN EDE NORTH LOCAL GOVERNMENT, OSUN STATE, NIGERIA

Dear Respondent,

This study is designed to generate information about the **KNOWLEDGE AND PERCEPTION OF MARRIED MEN TOWARDS MANAGEMENT OF INFERTILITY IN EDE NORTH LOCAL GOVERNMENT, OSUN STATE, NIGERIA.**

Your sincere response will go a long way in contributing to the success of the research. All information obtained will be used for research purposes only.

Thanks.

\_\_\_\_\_ Date

#### SECTION A: Demographic Characteristics

- (1) AGE (in years) \_\_\_\_\_
- (2) MARITAL STATUS Married  Divorced  Widower
- (3) ETHNIC GROUP Yoruba  Iusa  Ibo  Others(specify) \_\_\_\_\_
- (4) RELIGION Christianity  Islamic  Iditional  Ithers(specify) \_\_\_\_\_
- (5) LEVEL OF EDUCATION No education  Primary  Secondary  Tertiary   
Others(specify) \_\_\_\_\_
- (6) OCCUPATION Civil servant  Self-employed  Iradng   
Farming  Driving  Artisan  Ithers (specify) \_\_\_\_\_
- (7) No of children \_\_\_\_\_
- (8) How long have you been living in this community? 1-2yrs  3-4yrs  5-6yrs   
7yrs and above

#### SECTION B: Perception of married men on infertility

	What are your beliefs about the causes of infertility?	Agree	Disagree	Not sure
9	Infertility is caused by witches and witchcraft			
10	Infertility is caused by watery sperm			
11	Infertility is caused by early circumcision of male child			
12	Infertility is caused by eating certain foods or vegetable e.g okro.			

13	Infertility is caused by <i>EDA</i> { sperm back flow}			
14	Infertility has more negative effect on women than on men			
15	Delay in ability to achieve pregnancy/infertility could be inherited from parents?			

**SECTION C: perception of married men toward the management of infertility**

	<b>What are your impressions/ understanding on management of infertility</b>	<b>Agree</b>	<b>Disagree</b>	<b>Not sure</b>
(16)	Infertile couple will achieve pregnancy after being managed/receiving treatment			
(17)	Spiritual means is the best way to treat infertile couples			
(18)	Orthodox method is the effective means of managing infertility			
(19)	The only reliable way of managing infertile couple is through medical treatment			
(20)	It is easier and cheaper to manage infertility in men than in women			
(21)	It is easier and cheaper to manage infertility in women than in men			

(22) Which of the following statements is true about infertility?

Tick ( ) only one

- (a) It is not a serious problem
- (b) It is not serious because it can be treated
- (c) It is only serious in Africa society
- (d) No cause for alarm, only those who are under a spell becomes infertile
- (e) It is a very serious problem
- (f) Others (specify)

**SECTION D: knowledge of married men on infertility**

(23) Who do you think is responsible for delay in achieving pregnancy among couples?

- (a) Man (b) woman (c) both (d) none of them

Tick ( ) appropriate option in the tables below

	<b>What do you think can cause infertility among couples?</b>	<b>True</b>	<b>False</b>	<b>I don't know</b>
24	Disease (e.g. urinary tract infection, gonorrhoea, diabetes, hypertension, obesity etc)			
25	Waywardness/promiscuity			
26	Congenital. Problems			
27	Supernatural cause e.g curse			
28	Early marriage			
29	Late marriage			
30	Low sperm count			
31	Trauma to the reproductive organs			
32	Evil spirit			
33	Un safe abortion			
34	Watery sperm			
35	Over work or stress			
36	Family planning			
37	Use of sexuality arousing drugs			
38	Heredity or family problem			
39	Burning of menstrual cloth			
40	Failure to worship the family gods/idols			
41	Men using their manhood to get money			
42	God not allotting children to some people			

(43) Can infertility be prevented? Yes  No

	<b>Infertility could be prevented among men and women through?</b>	<b>Yes</b>	<b>No</b>
44	Health education on reproduction / sexual life for teenagers		
45	Fertility awareness		
46	Sexual counselling		
47	Early treatment of sexually transmitted diseases		
48	Clinical screening for abnormalities and hormonal imbalance		
49	By checking the child's destiny after delivery		

**SECTION E: knowledge of married men on management of infertility**

(50) Can infertility be treated and the couple achieved pregnancy?

Yes  No

Tick ( ) appropriate options in the table below

	<b>Ways of treating infertility in men and women includes</b>	<b>True</b>	<b>False</b>	<b>I don't know</b>
51	The use of native concoction			
52	Visiting spiritual houses ( churches/mosque ) for prayers			
53	Undergoing regular test/examination and treatment of ailments that can delay child bearing			
54	Adoption of IVF ( in vitro fertilization )			
55	Adoption of children			
56	No treatment is needed; God will do it at His own time.			

## APPENDIX III

### FOCUS GROUP DISCUSSION GUIDE (YORUBA VERSION)

**IKINNI** – Eku dede iwo yii o gbogbo eniyan

Oruko mi ni ..... (oruko akoko), ti awon akegbe mi ni ..... A je akeekoo ile-iwe giga fasiti ilu-ibadan eka ti idanileko ati igbega eto-ilera. A wa lati pin ninu iriri ati imo yin nipa awon nkan to nise pelu ilera nipa omo bibi ati awon eto ilera miran. Ninu iforo jomitoro oro yii, kosi idahun ti o tona tabi eyiti okuna. Nkan ti oje wa logun julo ni erongba yin lori oro yii, nitori naa ki a fi arabale ki a si so gbogbo ohun ti oba je erongba wa ninu iforo jomitoro oro yii. A ro yin ki e gba wa laye ki alo ero agbohunsile ki a ma ba a gbagbe awon koko Pataki ti e o so fun wa. A si fin dayin loju pe a o dabo bo awon erongba yii ti a ko si ni lo lati tako yin ni ibikibi ati ni onakona.

Eseun.

#### **IPIN KINNI – Iforo jomitoro oro gbogboogbo**

- (1) Kini awon ailera ti owopo julo laarin awon okunrin ti o ti balaga ni aye ode oni?
- (2) Bawo ni awon ailera yii se n se akoba fun ilera omo bibi awon okunrin?
- (3) Ipa wo lo ye ki awon okunrin ko ninu eto ilera omo bibi?

#### **IPIN KEJI – Imo ati erongba awon okunrin ti o ti ni iyawo lori itoju airomobi**

- (4) Nje isoro airomobi wa ni agbegbe yii?
- (5) Kini awon ohun ti ole se okunfa airomobi ni agbegbe yii?

#### **Ise iwadi lori awon nkan ti ole se okunfa airomobi laarin awon okunrin ati obinrin agbegbe naa?**

- (6) Kini igbagbo awon eniyan nipa ohun ti on fa airomobi laarin okunrin ati obinrin?
- (7) Kini e ni lati so lori iwoye awon eniyan nipa airomobi laarin okunrin ati obinrin?
- (8) Nigba wo ni ale so wipe eniyan ko le ri omo bi? Se iwadi lori okunrin ati obinrin.
- (9) Tani ole je okunfa aitete ri omobi ninu ebi? Se iwadi lori oko ati aya.
- (10) Bawo ni a se le dena isoro airomobi?
- (11) Bawo ni won se nse itoju isoro airomobi ni agbegbe yii?

Se iwadi lori (a) Itoju re laarin okunrin?

(b) Itoju re laarin obinrin?

- (12) Kini igbagbo awon eniyan nipa itoju airomobi laarin okunrin ati obinrin?

Se iwadi lori (a) Pipeye awon orisirisi ona ti ale gba se itoju airomobi.

(b) Sise dede awon ona itoju ti a daruko yii.

## APPENDIX IV

### QUESTIONNAIRE (YORUBA VERSION)

#### ERONGBA ATI IMO AWON OKUNRIN TI O TI NI IYAWO NIPA ITOJU AIROMOBI NI IJOBA IBILE ARIWA EDE, IPINLE OSUN, NAIJERIA

##### Olukoopa mi owon,

A se iwadi yii lati mo nipa erongba ati imo awon okunrin ti o ti ni iyawo nipa airomobi ni ijoba ibile ariwa ede, ipinle osun, naijeria.

Idahun yin ni tooto yoo se iranlowo fun wa lori aseori ise iwadii yii. Iwadi yii nikan ni a o lo gbogbo idahun yin fun-un.

Eseun.

Ojo : .....

##### IPIN A: Alaye nipa onidahun ibeere

- (1) OJO-ORI (ni odun) .....
- (2) IPO IGBEYAWO Se eti gbe iyawo  O pinya pelu ololufe re  Opo
- (3) EYA RE Yoruba  ausa  po  iiran (se itoka)  
.....
- (4) ESIN Onigbagbo  Imole  Abalaye  Omiiran  
(se itoka) .....
- (5) IWON IWE TI O KA Mi ko ka raara  e-eko alakoobere  e-eko  
girama  Ile-eko giga  Omiiran (se itoka) .....
- (6) ISE Osise ijoba  adani  ise owo  be   
Awako  Onise owo  Omiiran (se itoka) .....
- (7) IYE OMO TI E BI .....
- (8) LATI IGBA WO NI E TI N GBE NI AGBEGBE YII? Odun kan – meji   
Odun meta – merin  Odun marun - mefa  Odun meje tabi ju bee loo

**IPIN B: Erongba awon okunrin ti o ti ni iyawo lori airomobi**

	<b>Kini igbagbo yin nipa ohun ti on fa airomobi?</b>	<b>Mo fi ara mo</b>	<b>Nko fi ara mo</b>	<b>Nko lee so</b>
(9)	Aje ati ooso ni on fa airomobi.			
(10)	Aato ti o san ni on fa airomobi.			
(11)	Titete da oko fun omo okunrin ni on fa airomobi.			
(12)	Jije irufe awon ounje kan tabi ewebe bi ila ni on fa airomobi.			
(13)	EDA ni on fa airomobi.			
(14)	Airomobi ni ipa buburu lori obinrin ju okunrin lo			
(15)	Aitete ri oyun ni tabi ri omo bi le je ajogunba lati odo awon obi.			

**IPIN C: Erongba awon okunrin ti o ti ni iyawo lori itoju airomobi.**

	<b>Kini awon ero/oye yin lori itoju airomobi?</b>	<b>Mo fi ara mo</b>	<b>Nko fi ara mo</b>	<b>Nko lee so</b>
(16)	Awon loko laya ti won ko ri oyun ni yio ri oyun ni leyin ti won ba ti gba itoju.			
(17)	Ona adura ni ona ti o dara julo lati se itoju toko- taya ti o ni isoro airomobi			
(18)	Isegun ibile ni ona ti o dara ju lati toju airomobi.			
(19)	Ona kan sooso ti o ni agbekele kunkun lati toju awon toko-taya ti ko ri omo bi nii ona isegun oyinbo.			
(20)	O roorun, o si tun dinwo lati se itoju airomobi lara okunrin ju obinrin lo			
(21)	O roorun, o si tun dinwo lati se itoju airomobi lara obinrin ju okunrin lo			

(22) Eewo ninu awon gbolohun wonyii ni oje otito nipa airomobi?

**Sami si ( ) eyookan sooso**

- (a) Kii se isoro ti o le.
- (b) Ko le nitori pe ose toju.
- (c) Ile alawo dudu nikan ni o ti je isoro ti o le.
- (d) Kosi wahala, awon ti egun/epe nja nikan ni won ko le ri omo bi.
- (e) Wahala ti o le gidi gan-an nii.
- (f) Omiiran (se itoka)

**IPIN D: Imo awon okunrin ti o ti ni iyawo lori airomobi.**

(23) Tani o lero pe o je okunfa aitete ri oyun ni laarin loko-laya?

- (a) Okunrin (b) Obinrin (c) Awon mejeeji (d) Kosi enikankan ninu awon ti a daruko wonyii.

**Sami si ( ) eyi ti oba leto julo ninu tabili ti o wa ni isale yii.**

	<b>Kini o lero pe ole fa airomobi laarin loko-laya?</b>	<b>Beeni</b>	<b>Beeko</b>	<b>Nko lee so</b>
(24)	Arun, fun apeere kokoro ile-ito ara, atosi, ito-suga, eje ruru, ara sisan asanju ati bee bee lo.			
(25)	Irin kurin/ise kuse			
(26)	Isoro/aisan abimo			
(27)	Ise aye, fun apeere eegun			
(28)	Titete gbeyawo			
(29)	Aitete gbeyawo			
(30)	Ato ti ko peye			
(31)	Ijamba si awon eya ara ti ojemo ti ibimo			

(32)	Emi okunkun			
(33)	Oyun sise ti o lewu			
(34)	Ato ti osan			
(35)	Aseju ise tabi sise wahala aseju			
(36)	Ifetosomo bibi			
(37)	Lilo awon ogun marale fun ibalopo			
(38)	Ajogunba tabi isoro molebi			
(39)	Sisun aso ti a fi se nkan osu nina			
(40)	Kikuna lati bo orisa idile			
(41)	Ki okunrin fi nkan omo-okunrin re se ogun owo			
(42)	Ki Olorun ma ko omo mo awon kan			

(43) Nje a le dena airomobi? Beenii  Beekoo

	<b>Ale dena airomobi laarin okunrin ati obinrin peluu?</b>	Beeni	Beeko
(44)	Idanileko ilera fun awon odo lori ilera omo bibi ati ibalopo.		
(45)	Sise eto ti ojemo ikede nipa omo bibi		
(46)	Idanileko lori ibalopo		
(47)	Titete se itoju awon arun ti eniyan nko lati ara ibalopo		
(48)	Ayewo eje fun awon ororo ara ti ko peye pelu ero igbalode.		
(49)	Wiwo akosejaye omo leyin ti a baa bi		

**IPIN E: Imo awon okunrin ti o ti gbe iyawo nipa itoju isoro airomobi.**

(50) Nje a le se itoju isoro airomobi ki toko-taya si ri oyun ni?

Beeni  Beeko

**Sami si ( ) eyi ti o ba leto julo ninu tabili ti o wa ni isale yii.**

	<b>Ninu awon ona ti a le gba se itoju isoro airomobi nii</b>	<b>Beeni</b>	<b>Beeko</b>	<b>Nko lee so</b>
(51)	Lilo agbo ibile.			
(52)	Lilo si awon ile adura bii ile ijosi/mosalasi fun adura.			
(53)	Sise ayewo loreekooree ati sise itoju awon aisan ti o le da omo bibi duro.			
(54)	Lilo ona igbalode lati mu ato okunrin ati eyin obinrin pade ki osi di oyun ni ode ile omo.			
(55)	Gbigba omo to			
(56)	Ko nilo itoju kankan; Olorun a se e nigba ti o ba wuu.			

APPENDIX V



**INSTITUTE FOR ADVANCED MEDICAL RESEARCH AND TRAINING (IAMRAT)**  
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UI/UCH EC Registration Number: NHREC/05/01/2008a

**NOTICE OF FULL APPROVAL AFTER FULL COMMITTEE REVIEW**

Re: Knowledge and Perception of Married Men towards Management of Infertility in Ede North Local Government, Osun State, Nigeria

UI/UCH Ethics Committee assigned number: UI/EC/13/0026

Name of Principal Investigator: **Abiona A. Olutayo**

Address of Principal Investigator: Department of Health Promotion & Education,  
College of Medicine, University of Ibadan, Ibadan

Date of receipt of valid application: 23/01/2013

Date of meeting when final determination on ethical approval was made: **21/03/2013**

This is to inform you that the research described in the submitted protocol, the consent forms, and other participant information materials have been reviewed and *given full approval* by the *UI/UCH Ethics Committee*.

This approval dates from 21/03/2013 to 20/03/2014. If there is delay in starting the research, please inform the UI/UCH Ethics Committee so that the dates of approval can be adjusted accordingly. Note that no participant accrual or activity related to this research may be conducted outside of these dates. *All informed consent forms used in this study must carry the UI/UCH EC assigned number and duration of UI/UCH EC approval of the study.* It is expected that you submit your annual report as well as an annual request for the project renewal to the UI/UCH EC early in order to obtain renewal of your approval to avoid disruption of your research.

*The National Code for Health Research Ethics requires you to comply with all institutional guidelines, rules and regulations and with the tenets of the Code including ensuring that all adverse events are reported promptly to the UI/UCH EC. No changes are permitted in the research without prior approval by the UI/UCH EC except in circumstances outlined in the Code. The UI/UCH EC reserves the right to conduct compliance visit to your research site without previous notification.*

**Professor A. Ogunniyi**  
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• Drug and Cancer Research Unit • Environmental Sciences & Toxicology • Genetics & Cancer Research • Molecular Entomology  
• Malaria Research • Pharmaceutical Research • Environmental Health • Bioethics • Epidemiological Research Services