

UNIVERSITY OF CAPE COAST

ACCEPTABILITY AND EXPERIENCES WITH ASSISTED
REPRODUCTION IN GHANA

KWADWO ASANTE-AFARI

2019

© Kwadwo Asante-Afari

University of Cape Coast

UNIVERSITY OF CAPE COAST

ACCEPTABILITY AND EXPERIENCES WITH ASSISTED
REPRODUCTION IN GHANA

BY

KWADWO ASANTE-AFARI

Thesis submitted to the Department of Population and Health of the Faculty of
Social Sciences, College of Humanities and Legal Studies, University of Cape
Coast, in partial fulfilment of the requirements for the award of Doctor of
Philosophy degree in Population and Health

FEBRUARY 2019

DECLARATION

Student's Declaration

I hereby declare that this thesis is the result of my own original work and that no part of it has been presented for another degree in this university or elsewhere.

Candidate's Signature Date

Kwadwo Asante-Afari

Supervisor's Declaration

We hereby declare that the preparation and presentation of the thesis were supervised in accordance with the guidelines on supervision of thesis laid down by the University of Cape Coast.

Principal Supervisor's Signature Date.....

Dr. David Teye Doku

Co-Supervisor's Signature..... Date.....

Prof. Eugene Kofuor Maafo Darteh

ABSTRACT

The use of Assisted Reproductive Technologies (ART) has emerged as an alternative option to have children in Ghana. This study aimed at investigating the use of ART as a treatment option for infertility in Ghana. Specifically, the study investigated assisted reproductive technology services delivery, assessed the experiences of infertile individuals/couples undergoing assisted reproduction processes, explored the experiences of individuals/couples who have successfully delivered through the use of ART, and the religious acceptability of the use of assisted reproductive technology services among Ghanaians. A qualitative approach using in-depth interview was utilised to tap into the experiences of respondents. The model of help seeking for infertility was adopted as the conceptual framework for the study. The study revealed that ART services such as IVF, ICSI, GIFT, ZIFT, TESA, gamete donation, embryo freezing and surrogacy were employed by service providers. Key religious figures from the Islamic and Christian religions upheld their religions' acceptability of the use of ART to treat infertility but condemned the use of third-party reproductive resources. The Traditionalist did not support the use of ART services at all. Infertile women went through challenges such as stigmatisation, abuses and abdominal pains but these challenges ceased when women achieved parenthood. Women who were undergoing treatment reported of health and other implications such as dizziness, nausea, abdominal pains and other psychological challenges. Cost of treatment was also identified to be high. Some clients had to seek financial support from banks. Generally, the use of ART to treat infertility is accepted in Ghana. However, there is the need for the state to streamline policies to guide the use of this technology.

KEY WORDS

Acceptability

Experiences

Assisted

Reproduction

Ghana

ACKNOWLEDGEMENT

I am exceptionally grateful to my supervisors, Dr. David Teye Doku and Prof. Eugene Kofuor Maafo Darteh through whose guidance, directions, advises and motivations have brought me this far in the pursuit of knowledge. Without your efforts, this work wouldn't have been a reality.

I am extremely thankful to the staff and management of Lister Hospital, Finney Fertility Centre located in Accra, Tema Women's Hospital, Ruma Fertility Centre and The Trustcare Specialist Hospital and Fertility Centre in Kumasi for allowing this study to be conducted in their facilities. I would like to acknowledge the contributions and guidance of all clinical embryologists and counsellors of these facilities. I would like to express my heartfelt gratitude to all women who willingly agreed to take part in this study and shared their experiences of going through ART treatments. My appreciation also goes to the key religious figures who generously shared their religions' ideology on the use of ART.

The contributions of Dr. Collins Adjei-Mensah, Mr. Dauda Suleman of the Department of Geography and Regional Planning, Dr. Joshua Amo-Adjei, Bismark Nantoma, Frank Bobor of the Department of Population and Health, University of Cape Coast, Ms. Esther Adu , Seth Adjei Frimpong of the Health Promotion Department, Ghana Health Service will forever be acknowledged.

To my parents, Mr. Kwabena Afari-Kissi and Ms. Adelaide Boateng who have served as the pillar behind my success in education, your efforts would forever be appreciated. My siblings, Ama Dufie, Kofi Kissi, Ama Antwiwaa and Yaa Obiriwaa, I say thank you for your prayers and support.

DEDICATION

To Mrs Evelyn Asante-Afari, Abena Boatemaa and Kwasi Kissi Asante-Afari

TABLE OF CONTENTS

Content	Page
DECLARATION	ii
ABSTRACT	iii
KEY WORDS	iv
ACKNOWLEDGEMENT	v
DEDICATION	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	xv
LIST OF FIGURES	xvi
LIST OF ACRONYMS	xvii
CHAPTER ONE: INTRODUCTION	1
Background to the Study	1
Problem Statement	4
Research Questions	8
Objective	9
Rationale of the Study	9
Organisation of the Study	10
CHAPTER TWO: TRADITIONAL AND MODERN APPROACHES TO INFERTILITY TREATMENT	
Introduction	14
Traditional Approaches to Infertility Treatment	14
Modern Approaches to Infertility Treatment	18
Alternative Insemination	18
Fertility Enhancing Drugs	21

Gamete Donation	22
Cryopreservation	24
Surrogacy	27
Regulatory Issues and ART	30
Summary	37
CHAPTER THREE: DETERMINANTS OF ASSISTED REPRODUCTIVE TECHNOLOGY USAGE	
Introduction	38
Age and Assisted Reproduction	38
Cost and Assisted Reproduction	43
Success Rate of ART	49
Marital Status and Assisted Reproduction	50
Religion and Assisted Reproduction	51
Cross-Border Reproductive Care and Assisted Reproduction	61
Health Impact of Assisted Reproduction	65
Summary	72
CHAPTER FOUR: THEORETICAL AND CONCEPTUAL FRAMEWORK FOR STUDYING INFERTILITY TREATMENT	
Introduction	74
Behavioural Model	74
Choice-Making Model	78
Network-Episode Model	79
Sick Role Theory	81
Help Seeking Theory	82
Stages of Illness and Medical Care	82

Health Belief Model	84
God-centric Healing Model	84
Theory for Ill-health Causation	85
Theory of Stigma	87
Conceptual Framework	88
Summary	93
CHAPTER FIVE: RESEARCH METHODS	
Introduction	94
Study Area	94
Lister Hospital and Fertility Centre	95
Finney Hospital and Fertility Centre	96
Tema Women's Hospital	97
Ruma Fertility and Specialist Hospital	98
Trustcare Specialist Hospital and Fertility Centre	99
Research Philosophy/Paradigm	99
Research Approach	101
Research Design	101
Data Source	102
Target Population	102
Sample and Sampling Procedure	103
Sampling Size	104
Tools for Data Collection	105
Training of Research Assistants	106
Pre-testing of Interview Guides	107
Ethical Considerations	107

Fieldwork	110
Data Collection	110
Data Collection Procedure	111
Data Management	112
Experience from Field	112
Data Quality Concerns	113
Data Processing	114
Data Analysis	115
Summary	115
CHAPTER SIX: ASSISTED REPRODUCTIVE TECHNOLOGY SERVICE PROVISION AND RELATED ISSUES	
Introduction	117
Types of Assisted Reproductive Technology Procedures Provided	120
Country of Origin of Clients for Assisted Reproductive Technology Services in Ghana	121
Assisted Reproduction Technology Provision	122
Information and Counselling	123
Donor Services Arrangements	124
Nature of Gamete Donor Programme	125
Financial Compensation for Gamete Donor	126
Surrogacy Services and Cost	127
Total Cost of ART	128
Health Risk Associated with ART	130
Success Rate	131
Regulation of ART in Ghana	132

Discussion	133
CHAPTER SEVEN: EXPERIENCES OF WOMEN SEEKING SELF- CYCLED ASSISTED REPRODUCTIVE TECHNOLOGY PROCEDURE	
Introduction	138
Socio-demographic Characteristics of Clients Undergoing ART Treatment	138
Age of Clients	138
Educational Level of Users	139
Marital Status of Users	139
Years Spent on Alternative Medications before the Use of ART	139
Religion of Users	140
Occupation and Income of Users	140
Income of Clients	140
Reasons for Seeking ART Intervention	143
Sources of Information on ART Availability and Preferred Facility	145
Cost and Affordability of ART Services	146
Sources of Securing Funds for ART Treatment	147
Counselling	148
Consent	150
Self-reported Health and other Implications of ART on Users	151
Discussion	155
Conclusion	159
CHAPTER EIGHT: EXPERIENCES OF WOMEN AFTER DELIVERY WITH ASSISTED REPRODUCTIVE TECHNOLOGY	
Introduction	161
Socio-demographic Characteristics	161

Ages of mothers	161
Education Level of Mothers	162
Marital Status of Mothers	162
Years Spent on Alternative Medications before Giving Birth	162
Religion of Mothers	163
Relationship with Husband before Childbirth	166
Relationship with In-Laws before Childbirth	167
Child Delivery	168
Motherhood	169
Relationship with Husband after Delivery	170
Integration into the Family after Delivery	170
Intention to Give Birth Again	172
Discussion	173
Conclusion	176
CHAPTER NINE: RELIGIOUS ACCEPTABILITY OF ASSISTED REPRODUCTION IN GHANA	
Introduction	177
Perceptions about the Causes of Infertility	179
Treatment of Infertility	180
Perception about the use of ART as a Treatment Option	181
Gametes Donation	182
Surrogacy	183
Cryopreservation	184
Utilisation of ART by Gays, Lesbians and other Single Individuals	185
Acceptability of Assisted Reproductive Technology	186

Perceptions about Children Born through the Use of ART	187
Discussion	188
Conclusion	198
CHAPTER TEN: SUMMARY OF MAIN FINDINGS, CONCLUSION AND RECOMMENDATIONS	
Introduction	199
Summary of Main Findings	200
Assisted Reproductive Technology service provision and related issues	200
Experiences of Infertile Persons Undergoing self-cycled Assisted Reproduction Treatment	201
Experiences of Persons who have Successfully Delivered through Assisted Reproduction	203
Religious Acceptability of ART	204
Conclusion	206
Reflections on the Conceptual Framework	207
Contribution to Knowledge	210
Implications of Findings for Policy	211
Strengths and Limitations of the Study	214
Areas for Further Research	215
BIBLIOGRAPHY	217
APPENDICES	
Appendix A: In-depth interview guide for service providers	261
Appendix B: In-depth interview guide for clients seeking ART services	265
Appendix C: In-depth interview guide for key religious figures	269
Appendix D: In-depth interview guide for women who have delivered	270

Appendix E: Consent form for ART service users	272
Appendix F: Consent form for Key Religious Leaders	275
Appendix G: Consent form for ART Service Providers	278
Appendix H: Agreement Form	281
Appendix J: Letters received from ART facilities	282
Appendix K: Ethical Clearance letter received from Ghana Health Service	287
Appendix L: Ethical Clearance letter received from University of Cape Coast	288

LIST OF TABLES

Tables		Page
1	Names of hospitals and the number of respondents selected for the study	105
2	Themes and categories obtained from the interview with ART service providers	118
3	Assisted Reproductive Technology Services	121
4	Socio-Demographic Characteristics of Users	141
5	Themes and categories obtained from women seeking ART	142
6	Socio-demographic Characteristics of women who delivered through ART	163
7	Themes and categories obtained from the interview with women who delivered through the use of ART	164
8	Themes and categories obtained from key religious figures on the acceptability of ART	177

LIST OF FIGURES

Figures		Page
1	Conceptual framework for seeking health for infertility	92

LIST OF ACRONYMS

ACU	Assisted Conception Unit
AIDS	Acquired Immune-Deficiency Syndrome
AIH	Artificial Insemination by Husband
AMA	Advanced Maternal Age
ART	Assisted Reproductive Technologies
ARU	Assisted Reproductive Unit
ASRM	American Society for Reproductive Medicine.
CAM	Complementary and Alternative Medicines
CBRC	Cross-border Reproductive Care
CEDAW	Convention on the Elimination of All Forms of Discrimination Against Women
COH	Controlled Ovary Hyperstimulation
COP	Church of Pentecost
CWC	Child Welfare Clinic
ESHRE	European Society of Human Reproduction and Embryology
FGD	Focus Group Discussion
GHS	Ghana Health Service
GIFT	Gamete Intrafallopian Transfer
GSS	Ghana Statistical Service
HBM	Health Belief Model
HIV	Human Immunodeficiency Virus
CDMA	Christian Dental medical Association

ICESCR	International Covenant on Economic, Social and Cultural Rights
ICMART	International Committee for Monitoring Assisted Reproductive Technology
IDI	In-depth Interview
ICSI	Intracytoplasmic Sperm Injection
IUI	Intrauterine Insemination
IVF	In Vitro Fertilisation
IVF-ET	In Vitro Fertilisation-Embryo Transfer
MESA	Microsurgical Epidermal Sperm Aspiration
NEM	Network-Episode Model
MoH	Ministry of Health
OHSS	Ovarian Hyperstimulation Syndrome
PESA	Percutaneous Sperm Aspiration
PGD	Pre-implantation Genetic Diagnosis
SET	Single Embryo transfer
STIs	Sexually Transmitted Infection
TESE	Testicular Sperm Extraction
UK	United Kingdom
UN	United Nations
USA	United State of America
WHO	World Health Organisation
ZIFT	Zygote Intrafallopian Transfer

CHAPTER ONE

INTRODUCTION

Background to the Study

Procreation in particular is a vital event in the life of every individual, especially married couple. It is also believed that the extended family grows when individuals in the family begin to procreate (Pequegnat & Bell, 2012). In the African context, the purpose of marriage is not complete until couples procreate (Horbst, 2010). However, for quite a number of couples, procreation is not easily fulfilled due to infertility (Tabong & Adongo, 2013). As a result, various channels have been explored as ways of treating infertility. For example, some women allow co-wives in their marriages just to have children for their husbands in order to save the marriage from collapse (Tabi, Doster & Cheney, 2010).

Also, the use of herbal and/or complementary and alternative medicines (CAM) to treat infertility is widespread, particularly in sub-Saharan Africa. Studies have shown that quite a significant number of individuals depend on CAM to enhance fertility or treat infertility (Bardaweel, Shehadeh, Suaifan & Kilani, 2013; Noumi, Eboule & Nanfa, 2011; Soladoye, Chukwuma, Sulaiman & Feyisola, 2014; Adewunmi et al., 2012).

In modern times, perception about infertility appears to be gradually changing especially with the advent of westernisation and education in particular. For many couples who are faced with fertility problems, conventional medical therapies such as Assisted Reproductive Technologies (ART) are explored. Assisted Reproductive Technology is defined as “all treatments or procedures that include in vitro handling of both human oocytes

and sperm, or embryos, for the purpose of establishing a pregnancy. These include, but not limited to, in vitro fertilisation and embryo transfer, gamete intra-fallopian transfer, zygote intra-fallopian transfer, tubal embryo transfer, gamete and embryo cryopreservation, oocyte and embryo donation, and gestational surrogacy. ART does not include assisted insemination (artificial insemination) using sperm from either a woman's partner or a sperm donor" (International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) (2009). Artificial insemination is not regarded as ART method because the procedure does not involve the handling of both the oocytes and sperm at the laboratory. The sperm is introduced into the woman's uterus only during her ovulation period.

Since 1978, ART has provided an alternative solution for many couples who are faced with fertility problems (European Society of Human Reproduction and Embryology (ESHRE), 2012). By 2010, 55 percent of countries in the world were offering In-Vitro Fertilisation (IVF) services (Jones et al., 2010). It was estimated that about 4000-4500 IVF centres existed worldwide as of 2015. Japan, is estimated to have between 606-618 and India, about 500 centres and these are the leading countries with the highest number of established IVF centres globally. In the USA, it is estimated that about 450–480 fertility treatment clinics exist. Italy has recorded about 360 facilities while Spain has between 177 and 203. Korea and Germany have 142 and between 120–121 IVF facilities respectively (Inhorn & Patrizio, 2015).

Globally, it is estimated that ART accounts for 1.7 to 4 percent of all pregnancies (Talaulikar & Arulkumaran, 2012). According to Wang, Chambers, Mbathio & Sullivan (2009), ART cycle performance in developed

countries is estimated to be about 5-10 percent per annum in the past few years. ESHRE (2012) explains that the collective summation of infants born as a result of the use of ART is about 5 million globally with some European countries accounting for nearly 4 percent of the total number of births. For example, in 2009, an estimated 3.6 percent and 2 percent of women in Australia and New Zealand respectively gave birth through the use of ART (Wang, Macaldowie, Hayward, Chambers & Sullivan, 2011; Statistics New Zealand, 2011). In the United States, ART accounted for more than 1.5 percent of all recorded births every year (Sunderam et al, 2015). This proportion was relatively high in States where laws permitted insurance coverage for infertility treatment. The situation is different in most African countries. A situation attributed to scarcity of health resources (Ombelet, 2009).

In Africa, the use of ART is largely accepted as a means of overcoming infertility (Ola, 2012). As of 2010, IVF clinics were available in about 15 African countries, including Ghana (Jones et al., 2010). The presence of IVF centres in sub-Saharan Africa probably suggests that despite the physical, social, or financial consequences, the service is desirable because of the wish of couples to have children due to the premium put on children in the African societies (Chimbatata & Malimba, 2016).

In Ghana, the evidence of ART usage dates back to the mid-1990s, even though it was not popular until when public discourses and research interest began increasing (Gerrits, 2016; Adageba, Maya, Annan & Damalie, 2015; Hörbst & Gerrits, 2016; Allen, 2016; Yakass, Woodward, Otoo & Hiadzi, 2016). As of 2015, the number of fertility clinics and hospitals in the

country numbered 12, all privately owned and concentrated in Accra, Tema and Kumasi (Gerrits, 2016). These facilities also carry out ART without any monetary assistance from the State and other international health organisations (Gerrits, 2016; Inhorn and Patrizio, 2015). These conditions make it time consuming and expensive for clients who intend to access ART, and therefore limit its utilisation to a certain class of people who can afford the treatment.

Again, there are no public or private insurance coverage of the cost for the use of ART services (Gerrits, 2016). These reasons raise important questions especially on the acceptability of ART treatments. This study therefore pursues the social aspect of ART in relation to the kind of services provided to clients, their acceptability, and the experiences of users.

Problem Statement

Globally, it is estimated that nearly 80 million adults in their reproductive ages are affected by infertility whiles in all marriages, infertility accounts for about 15 percent (Tabong & Adongo, 2013). It is also estimated that primary infertility accounts for nearly 2 percent whiles secondary infertility is estimated at 10 percent among women in their reproductive ages between 20-44 years (Mascarenhas, Flaxman, Boerma, Vanderpoel & Stevens, 2012). Primary infertility occurs when a sexually active couple never achieves pregnancy despite having unprotected sex and desiring to become pregnant for at least 12 months whiles secondary infertility refers to a couple who is unable to have pregnancy after a period of 12 months of regular unprotected sexual intercourse with the same partner despite the achievement of pregnancy in the past (WHO, 2014).

Sub-Saharan Africa is one of the regions with the highest infertility prevalence (Mascarenhas et al., 2012), although there are differences by country. For example, Gambia has an estimated record of infertility rate of 9 percent (Parrott, 2014), 21.2 percent in North-Western Ethiopia (Hollos & Whitehouse, 2014) and between 20 percent and 30 percent in Nigeria (Asemota & Klatsky, 2015).

In Ghana, infertility prevalence rate is 11.8 percent among women and 15 percent among men (National Collaboration Centre for Women and Children Health, 2012). Primary and secondary infertility rates among women and men account for 2 percent and 14 percent respectively (Larsen, 2000). Regional distributions indicate that Northern and Greater Accra regions have the highest percentage of childless women (12.6 and 12.3 percent respectively) compared to only 6.6 percent in the Brong-Ahafo Region (GSS, 2011).

It has been argued that the effect of infertility is enormous (Nachtigall, 2006; Nahar 2010, 2012; Cui, 2010; Nahar & Richters, 2011). For example, it is noted that the consequences of infertility may also affect the health system and its programmes delivery such as the use of contraceptives (Bharadwaj, 2011). At the individual level, inability to have children can create problems, particularly for the woman (Greil, McQuillan, Lowry, & Shreffler, 2011). In some Ghanaian communities, infertile women may face social stigmatisation, economic hardships, social segregation and sometimes violence (Naab, Brown, & Heidrich, 2013).

Other studies have argued that infertile women are usually abandoned or expelled from marital homes either by the husband or his family (Fledderjohann, 2012; Donkor, 2008). In other areas, mother in-laws maltreat

their in-laws who are faced with infertility conditions. Such women are often subjected to physical and emotional abuses by the husband's family (Fledderjohann, 2012). Infertile individuals are secluded from certain cultural practice and even at their death, traditional rituals may be performed (Gwandure & Mayekiso, 2012). These practices depict that the entire society is against childlessness hence, their unhappiness and adverse attitudes towards people with fertility problems.

Despite the various studies on the consequences of infertility (Nahar 2010, 2012; Cui, 2010; Nahar & Richters, 2011; Greil, McQuillan, Lowry, & Shreffler, 2011; Naab, Brown, & Heidrich, 2013), other several anti-natalists have argued otherwise. For example, it has been argued from the environmentalist point that procreation is wrong and the reason can be likened to overconsumption (MacIver, 2015). It has also been argued that monies spent on treating infertility and raising children should rather be spent on improving the lives of existing ones who are less endowed (Rachels, 2014). Others are of the view that there are several children who are homeless and this promotes moral reasons to adopt rather than to treat infertility and procreate (Friedrich, 2013; Rulli, 2014).

In Ghana, a limited number of recent studies have dealt directly with issues about ART. For example, Adageba, Maya, Annan & Damalie (2015) assessed the prospects and challenges of setting up and running a successful IVF program in Ghana and Africa. The findings of the study highlighted challenges such as power outages and fluctuations, lack of training programmes for key personnel in the industry, lack of reliable supply of equipment, quality drugs, consumables and culture media as some of the

challenges faced in running a successful IVF program in Africa including Ghana. Transnational connections of health professionals and assisted reproduction in Ghana and Uganda were examined (Allen, 2016; Hörbst & Gerrits, 2016). These studies utilised a comparative studies method in two private fertility clinics in Accra (Ghana) and Kampala (Uganda) to explore how the movement of service providers in ART in these two countries influence ART treatments. The study established that transnational collaborative contact was necessary in the setup and running ART in these two countries.

Gerrits (2016), examined assisted reproductive technologies in Ghana: Transnational undertakings, local practices and 'more affordable' IVF. This study focused on the history and origin of ART in Ghana with emphasis on mobility and flows of clients, technology, skills and knowledge in ART practices. Findings from the study showed that there is scarcity of qualified embryologists in most of the ART hospitals in Ghana. An audit of the prevalence of blood borne viruses in donor sperm was also carried out in a fertility Centre in Ghana (Yakass, Woodward, Otoo & Hiadzi, 2016). A retrospective cohort study was conducted at a private fertility centre in Accra to evaluate the prevalence of blood borne viruses in clients with infertility challenges who were utilising IVF. The study did not find any significant difference between blood borne virus positive and negative respondents for sperm count.

Recently, a study was carried out on reproductive travel to Ghana: Testimonies, transnational relationships, and stratified reproduction in private facilities in Accra (Gerrits, 2018). The study employed qualitative approach to

explore the motivations for cross-border reproductive travel to Ghana among infertile couples. The main findings of the study indicated that clients travel from Europe and other African countries to Ghana for services due to the perceived high quality of treatment and good treatment results; regulations in the country of residence; lower treatment costs; and the availability and affordability of matching donor material and surrogates.

So far, what is conspicuously missing in literature is a comprehensive analysis on ART as a treatment option for infertility cases, the kind of ART services available and experiences of clients who access these services. Also, no known study has been done on the religious and cultural acceptability of the use of ART as a means to meet parenthood in Ghana. These reasons raise a number of research questions

Research Questions

1. What are the various ART services provided by ART hospitals in Ghana?
2. What are the experiences of women who are undergoing ART treatment?
3. What are the experiences of women who have given birth through the use of ART?
4. Are these ART services acceptable per the religious and cultural perspectives among users?

To address these research questions, main and specific objectives are formulated.

Objective

The main aim of the study was to investigate the use of ART as a treatment option for infertility in Ghana. The specific objectives are to:

1. Investigate assisted reproductive technology services delivery;
2. Assess the experiences of infertile women undergoing assisted reproduction processes;
3. Explore the experiences of persons who have successfully delivered through assisted reproduction; and
4. Analyse the religious acceptability of the use of assisted reproductive technology services in Ghana;

Rationale of the Study

The study was useful as it had the tendency to shape social and cultural conditions as well as public discussions that may lead to increased access and utilisation of ART by couples with infertility (Greil, McQuillan, Shreffler, Johnson, & Slauson-Blevins, 2011). Further, analysis on the utilisation of ART in Ghana had significant importance for both policy makers and health professionals. The study has helped policy makers to ensure that ART services are safe, effective and efficient in the country. It has also helped policy makers to ensure that service providers adhere to protocols including management guidelines.

Despite the increased focus on infertility as a public health issue, majority of couples who meet the medical definition of infertility do not seek and utilise medical treatment. This is probably due to the fact that infertility issues are mainly considered as spiritual and witchcraft which may not have treatments. This study among other things had diffused this perception about

infertility and brought to light the kind of treatments that are accessible in terms of where, when, how and cost if possible.

The study among other things had provoked the state in meeting its obligatory role of assisting its citizens who have fertility challenges as enshrined in the United Nation's Human Right conventions ("States Parties shall take all appropriate measures to eliminate discrimination against women in the field of health care in order to ensure, on a basis of equality of men and women, access to health care services, including those related to family planning"). The Convention on the Elimination of all Forms of Discrimination Against Women (CEDAW) further declares under same Article 12 that "States Parties shall ensure to women, appropriate services in connection with pregnancy, confinement and the post-natal period, granting free services where necessary, as well as adequate nutrition during pregnancy and lactation".

The study had increased our understanding regarding the experiences of ART clients and thus contributed to health promotion strategies that seek to address infertility issues. Again, it had provided an empirical insight concerning infertility and its treatment through the utilisation of ART and its appropriations of practices in resource limited settings.

Organisation of the Study

The study is organised in ten main chapters. Chapter One is the introduction to the background of the study which includes the statement of the problem, objectives, rationale of the study and organisation of the rest of the study. Chapter Two is dedicated to discussions on the traditional and current approaches to the treatment of infertility. Among the issues discussed

under the traditional pursuit of infertility treatment included adoption, divorce and remarriage, consulting deities and the use of herbal medication among others. Assisted reproductive technologies and its associated practices to achieve motherhood are also discussed under the modern approaches to infertility treatment.

Chapter Three considers empirical studies on ART. Specifically, the chapter focuses on demographic factors (age, sex and marital status), economic and socio-cultural factors that impact on the utilisation of ART and regulatory issues. It shows the extent and nature of knowledge generated in respect to these factors. Chapter Four discusses the theoretical issues with emphasis on infertility treatment and concludes with a framework that links the various thoughts and perspectives emerging from the literature review.

Chapter Five is concerned with the methodological aspect of the study. The chapter dwells on the research design, target population, sample and sampling techniques employed, the data collection instruments including the use of questionnaires, community entry protocol, pilot testing of instrument and ethical issues.

Assisted reproductive technology services delivery to the wide range of clients and related issues are the focus of chapter six. The chapter presents the processes that a typical client goes through when a self-cycled procedure of ART services is used. Again, the cost of providing the various services, success rate and the health risks associated with the use of the various services have been discussed. The section ends with discussions on providers' perception about the several services and the regulations regarding the provision of those services.

In Chapter Seven, the characteristics of clients utilising ART are discussed. Further, analysis is made of socio-demographic characteristics of such clients especially, the sex, marital status, religion, ages of respondents, and their duration of marriage. The chapter further analyses the various motivations behind respondents' search for treatment underlining the experiences in going through the various stages of ART treatment procedure.

Chapter Eight considers the experiences of women/couple who have delivered through the use of ART. Particularly, respondents' socio-demographic characteristics and the duration they have searched for babies have been discussed. The chapter further elaborates on respondents' relationship with spouses, in-laws, families and the rest of the community before and after delivery highlighted by the discussions. Method of delivery, intentions about further deliveries and experiences as mothers have also been discussed.

Chapter Nine presents how the Ghanaian religious beliefs influence the acceptability and usage of Western biomedical treatment of infertility particularly through the use of Assisted Reproductive Technologies. Specifically, how practices such donor services, cryopreservation, surrogacy and the general usage of ART have been rationalised and in situations where the usage of these practices conflict with socio-cultural, religious and personal values have been discussed.

Chapter Ten, the final chapter is dedicated to the summary, recommendations and conclusion of the study. It synthesises the key issues emerging out of the discussion, summarises the research findings for future policy and draws conclusion.

Traditional and modern approaches to infertility treatment are the focus of the next chapter. It further discusses how the utilisations of modern practices of ART are boarded by regulations, legal and human right issues.

CHAPTER TWO

TRADITIONAL AND MODERN APPROACHES TO INFERTILITY TREATMENT

Introduction

In this chapter, critical discussions of literature that compares the traditional means of infertility treatment to the current practices in the field of assisted reproduction have been discussed. Traditional approaches to the treatment of infertility such as the use of herbal medications, wearing of charms, and adoptions have been compared to modern technologies such as alternative insemination, fertility enhancing drugs, gamete donation, cryopreservation, surrogacy, successes and regulatory issues concerning ART together with relevant differences and conclusions have been presented.

Traditional Approaches to Infertility Treatment

Traditionally, pregnancy was not attributed to only sexual intercourse between heterosexually married couple. Different tribes and traditions attributed pregnancy to different objects and deities. For instance, to the Trobrian Islanders (Papua New Guinea), pregnancy was given by spirits, Chukchi shamans (Siberia) attributed pregnancy to sacred stones which were worshipped by couple who needed pregnancy. In Australia, Ingardas believed that women could become pregnant only when they ate special food. The Batak (Philippines) envisaged that burying umbilical cords and placentas of a woman in their houses could make them pregnant. Among the Ancient Hindus, conception was achieved when the “*lingam*” (erected penis) and “*yoni*” (vagina) were worshipped and a special ritual performed (Walker, 1983). Women from the Ancient African origin ate the eyes of hyena with

licorice to ensure pregnancy within three days while women from Serbia ate spiders to accelerate conception (Johnston, 1963).

On the other hand, Ancient African men believed that they could have the strength to have sexual intercourse with their wives to become pregnant when they applied special powder made from roots to their manhood while women used pessary (a piece of solid medicine placed inside a woman's vagina) to achieve conception (Sha, 1990). To enhance conception, Egyptian women wore amulets and fertility symbols. In other cultures, fertility fetishes were consulted for help while others relied on herbal remedies, charms and traditional rituals for conceptions (Johnston, 1963).

In other societies, issues about infertility and childbirth are dealt with based on the societal beliefs. For example, among the Kikuyu of Kenya, a husband assumes the right over a child if the wife engages in extra marital relations to have that child due to infertility situation of the husband (Kershaw, 1973). In the same way, cleansing ritual is held to sanction a child born out of wedlock by a wife to an infertile husband in Nigeria (Onah, 1992). Again, adultery committed by a wife is often overlooked when the husband is faced with infertility in Sierra Leone (Harrel-Bond, 1975). A similar tradition persists among the Lo Daga tribe in Northern Ghana where a man becomes the legal father to all children born to a woman as long as he has paid the bride wealth (Goody, 1956).

In some other cultures, infertile couple have the opportunity to bring up children as their own even though such children may not be related to them biologically. For example, in Swaziland, a younger sister or a relative of an infertile wife may be brought into the marriage to bear children for the

infertile couple (Astuti, 1998). Among the Akamba of Central Kenya, there is a culture that allows an infertile couple to adopt a young girl for the purposes of procreating for them (Ueda, 1973).

Another way infertile women adopted to solve their infertility challenge in the Traditional African society was to marry or engage other women and claim ownership of all her offspring (Caldwell & Caldwell, 1990). This kind of relationship existed in different forms. For instance, a woman who has given birth to males could marry another woman to bear female children for her and vice versa. This form of arrangement also existed among the Abagusii of Western Kenya (Oboler, 1980). A similar culture was practiced among the Lovedu of South Africa (Sacks, 1982) and Igbo of Nigeria (Amaduime, 1987).

Re-marriage and/or divorce are considered as other possible means of solving infertility challenges (Nahar, Sharma, Sabin, Begum, Ahsan & Baqui, 2000). In some cultures, women engaged in extramarital unions to have children (Gerrits, 1997). Others also relied on adoption as an alternative way of coping with infertility although it was less accepted in the developing world (Bharadwaj, 2003).

The use of herbal and/or complementary and alternative medicines (CAM) to treat infertility or enhance fertility is also practiced (Bardaweel, Shehadeh, Suaifan & Kilani, 2013). For example, Noumi, Eboule & Nanfa (2011) in a study on Traditional health care of male infertility in Bansoa, West Cameroon established that out of 34 male clients who had fertility challenges, 48 percent got healed with the use of herbal medicines. According to the findings, the pathogens which cause barrenness like varicocele and mumps are

easily treated with herbs. A similar study in Nigeria indicated that 75 plant species belonging to 41 families have been identified to be useful in the treatment of female infertility (Soladoye, Chukwuma, Sulaiman & Feyisola, 2014).

In Uganda, it was observed that 76 percent of women used herbal medicines to treat their infertility conditions even before the commencement of orthodox medical treatment (Adewunmi et al., 2012). About 82 percent of infertile women in Turkey used herbal and alternative medicines to treat infertility (Edirne et al., 2010). In Australia, the use of herbal medications to treat infertility among clients attending fertility hospital is higher than 66 percent (Stankiewicz et al., 2007).

Additionally, waxing and waning of the moon was believed to have influence on a woman's fertility. Based on this notion, traditional astrologists were consulted for the provision of the rightful days in the month for sexual intercourse that would result in pregnancy (Burns & Covington, 2006). From the discussions, it appears that equal reproductive roles of both men and women in achieving pregnancy were not recognised in the past. Reproduction was thought to be the sole role and responsibility of the woman. Due to this reason, fertility rituals and traditions targeted only females. By the twentieth century, the notion about reproduction had changed. Scientists ascertained that reproduction required the male sperm and female oocyte (Foote, 2002). Infertility was medically addressed as a couple issue rather than blaming it on the woman (Laborie, 1993).

Modern Approaches to Infertility Treatment

By 1944, fertilisation of the first human ovum outside the female body was reported (Marsch & Ronner, 1996) and this gave birth to modern approaches in dealing with infertility. In modern times, ART and different techniques have emerged for the treatment of infertility. Assisted Reproductive Technologies involve the use of different technologies, some initiate pregnancy and others increase possibility of pregnancy and/or to test for the existence of certain genetic factor to enhance embryo selection and implantation after in vitro fertilisation process. Basically, alternative insemination (AI), prescription of fertility-enhancing drugs, and in vitro fertilisation (IVF) are the three divergent means of initiating pregnancy in the use of ART (Galpern, 2007). Practices such as gametes donation, cryopreservation, surrogacy, success rate and regulatory issues in ART have also been discussed.

Alternative Insemination

Alternate Insemination (AI) denotes several diverse techniques which promote the insertion of sperm into a woman's body for fertilisation and subsequent procreation. The differences in the various AI methods emanate from whether the sperm was inserted into the woman's vagina, uterus, cervix or fallopian tubes. For example, intrauterine insemination (IUI), one of the methods, allows the sperm to be exposed to laboratory preparation processes and inserted through the vagina into a woman's uterus for fertilisation purposes. The goal of IUI is to increase the number of sperms that reach the fallopian tubes and subsequently increase the chance of fertilisation. The main indication for IUI is that the method is used for the treatment of male

infertility, hostile cervical mucus, and unexplained infertility, if treatment with fertility drugs alone is not successful, if a sperm donor is being used and if sexual pain makes intercourse not possible. On the other hand, IUI is not recommended for women with conditions such as blocked fallopian tubes, severe endometriosis and previous pelvic infection. While this process is perceived as less invasive, it is characterised by minimal success rate and higher multiple pregnancy rates (Esteves, Miyaoka & Agarwal, 2011).

In vitro fertilisation is a process of fertilisation where an egg is combined with sperm outside the body, in vitro. The process involves monitoring and stimulating a woman's ovulatory process, removing an ovum or ova from the woman's ovaries and letting sperm fertilise them in a liquid in a laboratory. Originally, IVF was solely used for the treatment of women who have problems with their fallopian tubes. Presently, IVF could be used to treat conditions such as endometriosis and male factor, or when a couple's infertility is unexplained (Chakravarthi, 2016).

Intracytoplasmic sperm injection (ICSI) is another technique used for ART services. This method involves the direct injection of spermatozoon into an oocyte under laboratory conditions to improve fertilisation outcomes. This method is principally useful when couple have been diagnosed of male-female factor infertility (Family Health International, 2003). In the case of male infertility where there was the absence of sperm in the ejaculate, microsurgical epididymal sperm aspiration (MESA) and testicular sperm extraction (TESE) served as the means of obtaining sperms from the testicles for the ICSI process (Chakravarthi, 2016). Alternate Insemination (AI) can also be done with the combination of hormonal drugs to arouse the production of multiple eggs and

also intensify the chances of fertilisation. However, sperms used for AI must go through medical processes to ensure that only potent sperms are used for fertilisation purposes.

One of the ART procedures is Gamete intrafallopian transfer (GIFT). With this method, gametes are directly introduced into the woman's fallopian tubes instead of uterus. An essential feature about GIFT is that there is always a surgical procedure to transfer gametes to the fallopian tubes for fertilisation hence, a good option for women with normal fallopian tubes. Gamete Intrafallopian Transfer is preferred by most clients essentially on religious basis because fertilisation does not take place outside the body (American Society for Reproductive Medicine, 2011). A similar procedure to GIFT is Zygote intrafallopian transfer (ZIFT). The variance between GIFT and ZIFT is that unlike GIFT, fertilisation in ZIFT takes place in the laboratory. Fertilised egg is then transferred to the fallopian tubes which is same as GIFT.

Cost of sperm for AI depends on the source. It could be free if a partner or a friend donates it other than that, sperm bought through a bank costs between (\$200 and \$500), intrauterine insemination (\$120-\$400) or intrafallopian insemination (\$1,000); and if using fertility drugs, ultrasound and blood work cost up to \$6,000 (Galpern, 2007). Success rate of the use of AI is projected between 5-30 percent. However; this is influenced by the age of the woman, the use of drugs in conjunction with AI, whether quality sperm is inseminated vaginally or intra-uterine (Galpern, 2007).

Fertility Enhancing Drugs

Anovulation (inability to produce and/or release eggs) has been identified as one of the key problems that faces infertile women. It is estimated that nearly 25 percent of infertile women all over the world either are unable to produce fully matured eggs or fail to “ovulate” (release) an egg (American Society for Reproductive Medicine, 2012). As a result, fertility specialists employ medications, often known as “fertility enhancing drugs,” as temporal means to correct ovulatory challenges and subsequently increasing the likelihood for a woman to have pregnancy. Fertility enhancing drugs are essentially to correct other fertility problems such as improving the lining of the uterus (endometrium). They are also used in some circumstances to stimulate the development of multiple eggs for IVF cycle (Galpern, 2007).

Fertility drugs are mainly oral or injectable. The most frequently used fertility drug (clomiphene citrate or Clomid), is taken orally to stimulate ovulation in women who are unable to produce matured eggs regularly. The injectable (gonadotropins) enhances the ovary to produce more follicles in one cycle. Success rates of these drugs in achieving pregnancy ranges between 20 and 60 percent. However, it is dependent on maternal age and sperm quality (American Society for Reproductive Medicine, 2012).

After several years of use of fertility enhancing drugs especially clomiphene citrate and gonadotropins, risk of birth defects has not been associated to any of these drugs. Although it has been argued that ovulation inducing drugs including gonadotropins and clomiphene are susceptible to an increased risk of ovarian cancer, a recent study and re-analysis of previous

studies contradict this assertion (American Society of Reproductive Medicine, 2012).

Gamete Donation

Gamete donation can be explained as a situation where an individual offers him or herself to give out sperms or oocytes (egg) to prospective individuals or couples whose situation calls for the use of sperms or eggs to undergo any of the ART. Gamete can be obtained from fertility clinics, either from known or unknown donor. However; the identity of an unknown donor may be anonymous or be known to the child at 18 years (Stuart-Smith, Smith & Scott, 2012). The use of donor sperm commenced in the 1980s whereas oocyte donation was introduced in the mid-1980s (Murphy, 2009). The process involved in the collection of sperms is through masturbation which poses no medical risk to the man while the donation of the egg involves the use of multiple drugs and extraction of oocyte which to some extent have medical risks (Murphy, 2009). Donated sperm could be used for AI, IVF, GIFT, and ZIFT while donated oocyte on the other hand could be used for IVF, GIFT, and ZIFT but not for AI.

According to the European IVF Monitoring (EIM) programme, oocyte donation is on the increase especially in some European countries. For example, 11, 475 oocyte donation cycles were completed in 2005, 12,685 in 2006, 15, 731 in 2007, 13, 609 in 2008 and 22, 323 in 2009 (de Mouzon et al., 2012; Ferraretti et al., 2013). Despite these high numbers of oocyte donations in Europe, concerns have been raised about the procedure by some other European countries. In countries such as Germany, Italy and Austria, gamete donation is completely prohibited. The key concerns include: safety,

exploitation of donors and the commodification of the human body (Danish Council of Ethics, 2013).

Due to the controversies surrounding egg donation especially in countries where the practice is accepted, women are made to go through series of processes that will alleviate their fears even before the procedure commences. One of these processes is counselling (Ethics Committee of the American Society for Reproductive Medicine, 2009). During the counselling process, the medical risks as well as emotional benefits are made known to the donor before she consents. Further, it is a principal requirement that oocyte donation is carried out voluntarily without any form of compulsion or undue influence (Levens & DeCherney, 2008).

Although gamete donation has been admitted as one of the means of helping infertile couples and individuals to enjoy parenthood, disconnecting biological parenthood from marital relationship through the use of practices such as gamete donation in many cases have been raised as some of the fundamental concerns surrounding the use of ART all over the world. Again, it has been debated that financial compensation for egg donors may promote manipulation of women to accept the offer even if it is against their interest considering the medical risks involved in the whole process. Additionally, commodification (buying and selling) of human gamete has been condemned as being immoral. However, States regulations of gamete donation have emerged recently as result of the extensive argument about the practices (Levine, 2011). Cultural characteristics have been identified as the main factors that influence decision to opt for known or unknown donor (Laruelle, Place, Demeestere, Englert & Delbaere, 2011).

In recent years, the argument about the right of offspring in relation to donor gametes and anonymity has been raised (Sauer, 2009). Activists for gamete donation and offspring break of anonymity are attributable to the medical benefits to both the donor and the offspring (Jadva et al, 2011; Riggs & Russell, 2011). For example, break of donor gamete anonymity could help one to trace his or medical history to the donor. Others maintain that it will be right for donors to meet offspring and if possible, develop a relationship. In a case involving Rose and the British Secretary of State for Health (2002), it was ruled that donor offspring have the right to information about their genetic parents although the said parents had opted to be anonymous (Burr, 2010).

In some European countries, strong legislation persists to regulate gamete donation, especially in the areas of donor identity information, financial settlement for donors and age at which one could receive gametes (Stuart-Smith et al, 2012). For example, known donation is banned by law in France, Denmark and Spain whereas in Italy and Germany, one cannot access donated oocyte at all (Baetens et al, 2000).

Cryopreservation

Fertility cryopreservation is the conservation of sperm, oocytes, embryos, and other reproductive tissues to help in reproduction. Cryopreservation of reproductive cells on the other hand is the practice of retrieving, freezing, storing, and thawing of gamete (sperm or oocytes) for reproduction purposes. The preservation of human sperm commenced in 1776, after an Italian scientist confirmed that human sperm becomes frozen when it comes into contact with snow. By 1953, Bunge & Sherman had discovered that human sperm could survive when treated with 10 percent glycerol and frozen with

'dry ice'. The maiden human pregnancy from cryopreserved sperm was in 1969. By 1977, California State in the US had established a number of sperm banks for commercial purposes. After the birth of the first child through IVF in 1978, there was a renewed interest in cryopreservation as a means to store excess embryo to be used in future (Kelly et al., 2003). By 1986, technological advancement extended from sperm preservation to the cryopreservation of oocytes and embryo. The first birth from cryopreserved oocyte was recorded in 1986 (Chen, 1986).

Gamete can be cryopreserved by two distinct methods: conventional (slow) freezing and “vitrification” or fast freezing (Ciani et al, 2012). Slow freezing is done by progressively cooling the sperm over a period of 2-4 hours manually or by employing semi-programmable freezer. To cryopreserve the sperm manually, the temperature of the sperm is decreased and a cryoprotectant added. (A cryoprotectant is a compound that increases cell survival and reduces the quantity of ice that is made at any given sub-zero temperature) in a stepwise way afterwards sinking the sperm into liquid nitrogen (Said, Gaglani & Agarwal, 2010). Slow cryopreservation has been identified to be inconsistent and requires expensive equipment. Based on this, embryologists are not satisfied with this technique and therefore resort to other cryopreservation protocols such as vitrification (Balaban et al, 2008). Vitrification uses high concentrations of cryoprotectant to solidify the cell without the use of ice. In comparing the success rates of slow freezing and vetrification, it has been asserted that vitrification results in a better oocyte survival than slow freezing method (Smith et al, 2010).

The principal purpose of cryopreservation is to ensure the availability of gametes for future use by individuals or couples undergoing infertility treatment. It was noted that the process of egg retrieval was costly, painful and invasive. As a result, it may not be desirable for couples who have fertility challenge to always repeat the process (Paulk, 2014). Consequently, couples who go through the process may opt to freeze (cryopreserve) excess pre-implantation embryos to be used in future or for use in case the initial implantation was unsuccessful.

Further, cryopreservation is useful in patients who have moderate or severe ovarian hyperstimulation syndrome (OHSS) (Ciani et al, 2012). Cryopreserved cells and tissues can be stored for a very long time without compromising on their quality and functionalities. For example, there have been instances where live births have come from embryos cryopreserved for almost 20 years (American Society for Reproductive Medicine, 2011).

Pregnancies and deliveries that are as a result of cryopreservation have been reported to be associated with very low or no risk. For example, no congenital abnormalities were discovered among 900 live births which were derived from cryopreserve oocyte in the US (Noyes, Porcu & Borini, 2009). Again, a study involving 200 infants who were delivered through the use of vitrified oocyte pregnancies showed no difference in birth weight or congenital abnormalities compared to children born from fresh IVF (Chian, et al, 2008). From the discussions so far, the use of cryopreserved gamete is very safe since there have been no reported cases of infectious disease transmission, birth defects, chromosomal anomalies, or pregnancy complications (Smith et al, 2010).

Surrogacy

Surrogacy implies that a woman becomes pregnant and gives birth to a child with the intention of giving away this child to another person or couple upon delivery (James, Chilvers, Havemann & Phelps, 2010). The first successful birth through surrogacy was registered in 1984. Ten years later, India recorded its first surrogacy birth. In 1997, an Indian woman who needed money to settle the medical bills of her paralysed husband became the third woman to give birth through surrogacy. In recent past, the number of births through surrogacy has increased globally. It is reported that several thousands of children are born through surrogacy annually but there is limited data regarding global surrogacy trends (Nelson, 2013).

Surrogacy can be of different forms (Pawan, Inder & Sharma, 2013). For example, the surrogate may provide the ovum for fertilisation. In this case, the surrogate is called genetic surrogate. On the other hand, the gestational surrogate offers her womb for the period between IVF and birth. In this scenario, the surrogate has no genetic tie to the child. Quite recently, another form of surrogacy has been identified. This form is termed as Co-maternity also called ovum sharing (Singer, 2011). Co-maternity is predominantly used by same-sex female couples to consent the participation of both parties in the genetic procreation process. In co-maternity, one partner's egg is fertilised with a donor's sperm in the laboratory. The fertilised embryo is implanted into the womb of the other partner who did not produce the ovum for gestation and delivery. By this method, one partner becomes the genetic mother while the other becomes the birth mother (Singer, 2011).

Surrogacy can be free or paid for depending on the agreement between the surrogate and the prospective parents. In a situation where the surrogate offer services for free, it is termed altruistic surrogacy whiles commercial surrogate offer services for monetary purpose or other forms of payments agreed upon by the individuals involved in the process (Agnafors, 2014). For monetary reasons, commercial surrogacy is prevalent and costly across Europe and the United States of America (Galpern, 2007). In the US for example, hiring a surrogate together with the cost of other services (such as cost of insemination, transport, legal service and other medical services) is estimated around \$50,000 to \$250,000. In contrast, hiring a surrogate in developing countries is quite cheaper. For example, hiring a surrogate in India will cost between \$22,000 and \$35,000 (Shetty, 2012). Due to the differences in cost, developing countries have become the destinations for surrogacy (Humbyrd, 2009).

Despite the recent increases in the number of children born through surrogacy, concerns have been raised about the process especially the acceptability of gestational and commercial surrogacy (Parks, 2010; Suzuki et al, 2011). Studies that have contended surrogacy have linked the process to physical, social and emotional welfare of both surrogate and child (Ekberg, 2014; Satz, 2010). Although it is established that if the presence of the pregnancy puts the life of the surrogate mother into danger, the law permits for abortion to be done, the commercial surrogate loses all or part of the original payment depending on the agreement between the surrogate mother and the prospective mother (Horsburgh, 1993).

Another principal concern that has been raised against the use of surrogacy is the likelihood that the monetary involvement in the process could result to exploitation and commodification of the service (Pande, 2011; Deonandan, Green & Beinum, 2012). Although there have been guidelines and measures regarding the use of surrogacy among some nations especially in the developed world, these measures widely vary due to cultural, religious, financial and legal concerns (James, 2010). Due to these reasons, international surrogacy has emerged especially in the developing countries where there are flexible legislations and cheaper access (Humbyrd, 2009). These current practices have raised a number of unresolved concerns such as individuals' right, citizenship right of children that are born by international surrogates and exploitation of women (Deomampo, 2015)

Examples of exploitations and abuses have been reported all over the world. In Ghana for example, there was a case involving a twenty-three year old woman who was only contacted by a "baby agent" to be a surrogate mother for her special client for an amount of Ten thousand Ghana Cedis (Ghc 10,000.00), a monthly stipend of four hundred Ghana Cedis (Ghc 400.00) and a rented apartment till she gave birth. The said lady fulfilled her part of the verbal contract and became pregnant with quadruplets. However, four months into the pregnancy, the promises did not come from the unknown client and nothing was done as she became traumatised (Diasie, 2015). This situation arose because there is no legislations as a country to guide surrogacy practices. To prevent the occurrences of these problems, the sector Minister for Health in a recent statement, reiterated the need for the country to get legislation to back surrogacy since there were abuses. Again, the Minister asserted that in the

absence of legislation binding the use of surrogacy in the country, the practice was illegal and becomes dangerous for women who opt to be part of the process (Issah, 2016).

Despite these happenings, several other studies have pointed out that there is no or little complications associated with surrogates and foetus if financial and other medical obligations were met. It was argued that surrogates experience minimal psychological complications in pregnancy and after delivery if all obligations are met (Jadva et al, 2003). Andrews (1995) also asserts that “[...] the risks posed by surrogacy to women occur rarely and do not seem significantly different from the risks ordinarily assumed by women in other areas of their lives [...]” (p. 2354). Further, the harm to surrogate other children has been described as unwarranted (Jadva & Imrie, 2014). On the wellbeing of surrogate children, (Golombok, 2011) indicates that they will not be affected in anyway. Discussions on surrogacy so far can be described as a win-win situation especially when the intended parents achieve their desire of having a child or children and in the case of commercial surrogacy, the surrogates benefit financially depending on the initial agreement with clients.

Regulatory Issues and ART

Human rights are inherent to every individual. This is because these rights protect humankind from all forms of discriminations no matter the individual’s nationality, status, age, sex and colour. It therefore behoves on States under the international laws to protect and respect the rights of citizens in all spheres of life. In exercising this obligation, States must not interfere in the enjoyment of individual’s human rights including the right to procreate.

Recently, individuals who patronise ART as a means of satisfying their desire to have children have supported their actions by human right issues.

For example, an individual's right to benefit from scientific progress and/or technology has been enshrined in the International Human Right Instruments. Article 12 of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (United Nations, 1981) indicates that "States Parties shall take all appropriate measures to eliminate discrimination against women in the field of health care in order to ensure, on a basis of equality of men and women, access to health care services, including those related to family planning". Again, CEDAW further declares under same Article 12 that "States Parties shall ensure to women appropriate services in connection with pregnancy, confinement and the post-natal period, granting free services where necessary, as well as adequate nutrition during pregnancy and lactation".

Furthermore, Article 15, sub-section B of the International Covenant on Economic, Social and Cultural Rights (ICESCR) (United Nations, 1966) indicates that "States Parties shall recognise the right of everyone to enjoy the benefits of scientific progress and its applications". The scientific progress to which individuals have the right is not limited to the various ART practices. This right could be likened to the benefits that could be derived from the use of technologies such the various methods of ART that could improve upon the reproductive lives of people who are faced with fertility challenges. "Article 12 of ICESCR also asserts that States Parties shall recognise the right of everyone to the enjoyment of the highest attainable standard of health". In addition, the ICESCR Committee emphasises that the right to health must

encompass the right to the use of different health facilities, goods, services and conditions in order to obtain the utmost realistic standard of health.

From the perspective of the radical libertarians, procreation is a claim-right for an individual to resolve whether or not to reproduce (Mutcherson, 2017). Per this explanation, the decision to procreate and the technique to use is exclusively personal without any interference from any other individual, a group or the state. A critical examination of this ideology also brings to bare two distinct schools of thought: the liberty to have offspring and the liberty to avoid procreation.

The liberty or freedom to procreate embraces the freedom for an individual to apply all the necessary steps at his/her disposal or make informed choices that may end up in the birth of a biological child (Robertson, 2003). These choices may include the use of natural means such as having intercourse that may result in pregnancy or the utilisation of all reproductive technologies (the use of gametes for assisted reproduction, preservation of excess gamete, implantation of embryos and other ART methods). The use of these choices may mean that sterilization or the use of contraception and abortions may be avoided in order to have access to procreation.

On the contrary, the liberty not to procreate symbolises the liberty to take an action to circumvent the procreation of genetically connected offspring. By these acts, one could avoid practices such as having sexual intercourse that may result in pregnancy and transfer of embryos into the uterus and encouraging contraceptives use, discarding embryos, terminating pregnancies, and being sterilised.

Primarily, under procreative liberty, an actor is not obliged to be a beneficiary of any specific right. The decision to reproduce naturally or use genetic or reproductive technologies or not at all is a personal decision. However, the decision to accept a particular method may be based on a range of personal motives. These may include moral or ethical dimensions about the outcome of the use of a particular method on personal values about procreation (Robertson, 1996).

At the United Nations International Conference on Population and Development (ICPD) held in Cairo in 1994, all participated nations affirmed that population and development are mutually linked, and this can be achieved by empowering women and meeting the educational and health needs of the people, including reproductive health services. The ICPD document stipulates that “reproductive rights rest on the recognition of the basic right of all couples and individuals to decide freely and responsibly the number, spacing and timing of their children and to have the information and means to do so, and the right to attain the highest standard of sexual and reproductive health. It also includes the right of all to make decisions concerning reproduction free of discrimination, coercion and violence as expressed in human rights documents”.

Beijing Declaration and Platform for Action recognises that “Human rights and fundamental freedoms are the birth right of all human beings; their protection and promotion is the first responsibility of Governments”. By this, no state has the right to prohibit couples who are faced with fertility challenges to solicit help through the use of ART services.

In spite the various declarations, there are legal variances among nations on issues relating to the use ART especially issues concerning status, storage, and disposal of embryos; the use of donors and surrogates; embryo research; and pre-implantation genetic diagnosis (“PGD”) (Chakravarthi, 2016). As some countries have strictly banned certain assisted reproductive techniques, such as egg donation and research with embryo, others allow wide range of choices. In some other countries, utilisation of ART services is not strictly bonded by any legislation. In such cases, the discretion of the physician and client are ultimate to the supply and utilisation of ART.

For example, in the United Kingdom, there is a ban on reproductive cloning, the transfer of a non-human embryo to a woman or otherwise, germline modification, non-medical sex selection, and commercial surrogacy arrangements (Surrogacy Arrangement Act, 1985). Again, licensing fertility clinics and regulating the use of donor gametes, assisted fertilisation, pre-implantation genetic diagnosis, the storage of gametes and reproductive tissue, and research using human embryos is the sole responsibility of the Human Fertilisation and Embryology Authority (Human Embryology and Fertilisation Act, 1990).

In Canada, surrogacy (excluding Quebec), the use of the various techniques in ART for the treatment of infertility are permitted. Gametes and embryo donations for pregnancy purposes and use in scientific research is allowed by law. On the other hand, the sale of gametes, sex selection human cloning and the use of matured embryo is banned (Assisted Human Reproduction Act, 2006).

The use of ART is limited to only stable heterosexual couples of reproductive age of 18 years and above and have evidence of infertility condition in Italy. On the other hand, cloning, manipulation of embryos, the use of donated eggs or sperm, and the cryopreservation of embryos are prohibited. All forms of surrogacy and genetic testing for non-medical reasons are also prohibited (Medically Assisted Procreation Law, 2004).

In India, PGD, gametes and embryo donations are allowed. Sex selection is permissible on condition that the act will prevent the child from getting X-linked genetic sicknesses. Post mortem gametes when permitted by the deceased could be used by the surviving wife. In terms of access, all single women and lesbians are allowed. Every individual and group of persons qualify to use ART. Women who are aged up to 55 years could employ the services of a third-party in their procreation processes. (Ministry of Health & Family Welfare, Government of India, the Assisted Reproductive Technologies Regulation Bill, 2010).

Religious authorities in Iran have sanctioned surrogacy, gametes and embryo donations. Children born through a donated egg have the legal right to inherit from the said donor while the recipient mother is regarded as an adoptive mother. Children born from donated sperm will adopt the name of the fertility challenged father instead of the sperm donor (Abbasi-Shavazi, Inhorn, Razeghi-Nasrabad & Tolo, 2008)

Contemporary Halakhic law in Israel permits gametes to be cryopreserved. On approval before death, a deceased's preserved sperm could be used by the wife for procreation. Commercial surrogacy is allowed. The State subsidises PGD when there is a serious genetic risk of damage to the

offspring. IVF treatments up to the birth of two children are partly financed by the State for all Israeli women, including single women and lesbian couple.

United States is one of the countries where regulations on ART are liberal. There are minimal restrictions with regards to the various practices. However, activities are monitored by the American Society for Reproductive Medicine (ASRM) and the Society for Assisted Reproductive Technology (SART).

In Africa, there are very few countries that have promulgated laws and regulatory measures with regards to the utilisation of ART. South Africa is one of such countries in Africa that has advanced in terms of availability; accessibility, acceptability and quality of ART utilisation. The Children's Act 38 of 2005 allows cohabitating and married couples to access IVF. Again, same sex couples, and single women are permitted to access ART to have children. The Act allows commercial surrogacy to be practiced in South Africa. Tunisia, by 1997 had not specifically banned embryonic stem cell research; however, any technologically related human cloning had been banned.

A search of the literature however indicated that Ghana has no statutory regulations on the utilisation of ART even though there were fertility centres established in the country by 2001 (Ola, 2012). Currently, the state has no regulations on the utilisation of ART services. As a result, both public and private facilities that offer the service operate in legal and ethical vacuum (Gerrits, 2016).

Summary

Infertility treatment has gone through various transitions up to the modern ART. At a point, it was believed that men did not play any role in pregnancy. Women could only get pregnant through the worship of idols such as trees and stones. Traditions such as the burial of placenta under buildings, wearing of charms and the use of herbal medications were believed to assist pregnancy. These perceptions have however changed due to education. Currently, modern practices, some of which initiate pregnancy while others increase possibility of pregnancy, have been resorted to in the treatment of infertility. These practices include surrogacy, cryopreservation, gamete donation and other alternative inseminations.

International conventions and the local health policies defend some of these ART practices. Nevertheless, countries have different legislations regarding the use of some of these practices. This is based on the premise that countries vary by socio-economic, historical, political, religious and cultural backgrounds. As a result, there are important regulatory and legal discrepancies among nations in the provision and utilisation of ART service. Discussions of these socio-economic, cultural factors and empirical literature on the subject are the focus of the next Chapter.

CHAPTER THREE

DETERMINANTS OF ASSISTED REPRODUCTIVE TECHNOLOGY

USAGE

Introduction

Fertility rates are dependent on biomedical factors; they are also shaped by socio-cultural, economic and behavioural factors, particularly the decision about what procreation method to be used and the number of children to have and at what age. Against this empirical background, the chapter specifically presents detailed discussions on the influence of parental age, marital status and sexual orientation, religion, cost, success rate, health implications on the use of ART and the impacts of these technologies on fertility rates.

Age and Assisted Reproduction

Parental age is considered as one of the main factors that influences fertility in general. Currently, there is a global paradigm shift in the pattern of reproductive behaviour of both men and women from an early to relative late childbearing age (Beets, 2011). Among European Union member States, the mean age of mothers at first birth was between 28 and 30 years in 2010 (Vienna Institute of Demography, Austrian Academy of Sciences, and International Institute for Applied Systems Analysis, 2012). In Australia, the median age of women giving birth at first was 29.8 years in 2000 and 30.8 years in 2003. This had increased to 31.8 by the year 2006. France recorded an increased mean age at first birth of 28.8 years in 1994 to 30.0 years in 2010 (Institut National de la Statistiques et des Etudes Economiques, 2010). Over the last decade, fertility rate has peaked among women in the 30-34 year age

group (Australian Bureau of Statistics, 2011). The situation is not different in developing countries. For instance, Ghana has consistently had an increasing median age at first birth from 19.6 years in 1988 to 21.4 years in 2014 (Ghana Statistical Service, 1989, 2015).

Several reasons have been attributed to these current trends in reproductive behaviour which places limit to achieving biological reproductive aim among prospective parents. For example, it is argued that rise in life expectancy, the use of contraception, women's entry into the labour market and education in particular have contributed to the present delay of parenthood (Wiener-Megnazi, Auslender & Dirnfeld, 2012). This social phenomenon (delay in child bearing) has probably motivated the utilisation of ART by older couples to achieve their parenthood desires at late ages (Human Fertilisation and Embryology Authority, 2010). For instance, there is an upsurge in the population of women seeking assisted reproductive technology (ART) treatment as a result of age-related infertility especially advanced maternal age (AMA) all over the world (Balasch, 2010; Kocourkova, Burcin, & Kucera, 2014). Studies have further shown that there is the possibility of fertility decline in women from age 25 even in situations where no birth control is practised (Mills et al, 2011; Schmidt et al, 2011). This situation has been attributed to a decline in oocyte quality which is vital for conception (Schmidt et al, 2011). The incidence of infertility rises from 1 percent at age 25 to 55 percent at age 45. At age 30, women achieve 75 percent conception; 44 percent by age 40 while 20 percent of women who get pregnant aged 35 years may encounter spontaneous abortion (Schmidt et al, 2011).

Advanced maternal age has been found to be the likely cause of aging oocyte which may be the outcome of abnormal fertilisation and development, such as implantation failure and miscarriage (Schmidt et al, 2011). For example, a study on the “effect of maternal age on the outcomes of in vitro fertilisation and embryo transfer” on different age groups resulted in divergent results. Women who had advanced in age between 36-40 years and 40+ recorded relatively low oocyte ($P<0.01$) compared to their counterparts in the lower age groups. Biochemical and pregnancy rates were lower ($P<0.01$), whereas miscarriage rate was significantly higher ($P<0.01$) in women with advanced maternal age.

A converse relationship between increasing maternal age and IVF outcome has been documented (Balasch, 2010). Women who are aged may show poor ovary reaction in controlled ovary hyperstimulation (COH), low number of retrieved oocytes, oocyte fertilisation, quality embryo, embryo implantation, pregnancy, high miscarriage, preterm delivery and high birth defect rates (Griffiths, et al, 2010). It was also noted that conception after age 40 years was likely to be associated with risks of gestational diabetes, pregnancy-induced hypertensive disorders, instrumental deliveries and caesarean sections compared to younger counterparts (Ludford, Scheil, Tucker & Grivell, 2012). In 2010 for example, age 36 was the average of women who used ART treatment via self-cycle method. Live delivery among women aged 30-34 constituted 26.8 percent while women aged 40 years and above recorded live birth of less than 1 percent (Macaldowie, et al., 2012). Similarly, it was reported that women aged 40 years and above can have more

than 5 percent success in the use of ART but no record of conceptions were found among women aged 46 years and above (van Loendersloot et al, 2010).

Although successive cycles in older women have been found to be possible, other studies have found negative or insufficient evidence to ascertain the relationship between paternal age and ART success (Dain, Auslander & Dirnfeld, 2011; Sartorius & Nieschlag, 2010). The effects of paternal age on sperm production and reproductive outcomes have not yielded common conclusion especially its role in reproduction successes. It was also not clear the role paternal age played in assisted reproductive technologies (Beguier'a et al, 2014). A pioneer study on the subject confirmed a strong correlation between semen quality and age as well as time (Auger, et al, 1995). Based on the analysis of 1351 fertile men from 1973-1992, it was found that whiles semen volume remained unchanged, sperm concentration and motility declined (Auger, et al, 1995). After adjusting for age, it was established that as men got older, sperm concentration declined by 2.6 percent, 0.3 percent decrease in motile sperm and 0.7 percent decrease in normal morphology.

Data from three sperm banks in the US (1970-1994) comprising 1238 patients indicated that sperm concentration and motility differed among the three sperm banks whiles no decline in sperm count was registered when age and duration of abstinence were controlled (Fisch et al 1996). Other studies have shown decrease in the volume of sperms as paternal age increases (Agarwal & Sekhon, 2011; Stone et al, 2013). For example, the median semen volume in men aged 45–48 years was found to be 2.8ml compared to a nearly 50 percent decrease (1.95ml) in men aged 57 to 80 years (Agarwal & Sekhon, 2011). Semen volumes peaked in men who were aged between 30-35 years

(3.5 ± 1.8 ml) compared to 2.2 ± 1.2 ml in men aged 50 years and above. (Levitas et al, 2007).

On the contrary, lower volumes of semen had been discovered earlier in younger (12-25 years) and older men (46-50 years) as well compared to those in their middle ages (26-45 years) (Schwartz et al, 1983). Other studies did not find any significant association between age and the volume of sperms production (Whitcomb et al, 2011). Besides the variations in the outcome of the various studies, paternal age was found to have little impact on pregnancy and birth outcome (Duran et al., 2010). On the other hand, paternal age was discovered to have no influence on fertility rate, implantation and pregnancy outcome in IVF (Dain, Auslander & Dirnfeld, 2011).

In recent past however, new means that help women to retrieve and preserve their own egg to be used in future has been discovered (Lindheim et al, 2014). The concept is termed “Fertility Insurance” or “Social Egg Freezing.” By this principle, young women store their “healthy” oocytes as they pursue their education, job carriers and other interests. In some cases, women take this decision because they have not met their rightful partners or be sure they get their own genetic egg when they are old and cannot ovulate. A lot of benefits are deemed to come from Social egg freezing as Goold and Savulescu (2009) summarised the essence of fertility insurance as:

“Social egg freezing” or “Fertility Insurance” promotes equal participation by women in employment; it offers women more time to choose a partner; it provides better opportunities for the child as it allows couples more time to become financially stable; it may reduce the risk of genetic and chromosomal abnormality; it allows women and

couples to have another child if circumstances change; and it avoids some of the moral objections associated with freezing embryos. These views based on equal concern and respect for women suggest that women should have access to this technology despite the arguments against “fertility insurance” or “social egg freezing” (p 49).

Although this idea has been accepted as a way to overcome age related fertility challenges and also to extend women fertility, critics have raised a number of issues against this practice. For example, critics have contended that the availability of enough information to authenticate the safety, efficacy, cost-effectiveness and other related issues regarding the process as a means to avert age related fertility challenges have not been ascertained (Cobo et al, 2012).

Cost and Assisted Reproduction

Considering the economic aspect of the utilisation of ART is of a particular significance because the technology is widespread in recent years. It has become imperative as a means of solving fertility challenges in both the developed and the developing world. Due to these reasons, the economics of ART is worth discussing as it has influential effects on availability, accessibility and affordability of fertility treatment by prospective users (Connolly et al, 2009).

Costs related to ART treatment are categorised into direct; (cost incurred during the provision of ART treatment) and indirect; (cost that is borne after the use of ART treatment) (Connolly, Hoorens & Chambers, 2010). Direct cost are all the payments that are made from the beginning of ART processes to the end. These payments among other things may comprise

medical consultations, drugs, laboratory services, medical processes including retrieval of oocyte, fertilisation and transfer of embryos) and other charges. Direct cost differs from one country to another with treatment in the USA being the most expensive compared to treatments in Northern European and some Asian countries (Connolly et al, 2010).

Assisted Reproduction direct costs have significant correlation with female age and the use of donor products (Sullivan et al, 2008). For example, available estimates of the cost of successful pregnancy range from £4,202 to £90,112 (€6,139 to €131,651). However, this was dependent on the number of cycles an individual goes through. The estimated cost of live birth was also high and were comparable to ages 24 (€17000) and 33 years (€18500). The cost kept on rising up to €54000 for people aged 42 years and above (Sullivan et al, 2008).

The cost of IVF varies from one country to the other (Chambers, Sullivan, Ishihara, Chapman & Adamson, 2009). For instance, the cost of IVF cycle in the Nordic countries ranges from \$2,042 to \$4,148, \$3,950 in Iceland, \$4,326 in Italy, and \$2,955 in the United Kingdom. In Europe, IVF cycle could cost a household about 10 percent of their annual expenditure compared to USA and Canada where proportions were nearly 25 percent of their household expenditure. In other countries, the cost of accessing ART service had been identified as a potential cause to limit women in lower socioeconomic status (Chambers et al., 2009; Huddleston, et al., 2010). In developing countries, out-of-pocket cost of infertility treatment was excessively expensive that couples who patronised infertility treatment encountered financial difficulties and, in some cases, abandoned the idea of

having a child through the use of ART method. It was also argued that treatment cycles in low income countries could cost more than half of an individual's yearly income (Dyer & Patel, 2012).

Due to these exorbitant costs, some countries, especially the European Union Member States have made provision in their national policies to subsidise for the treatment of infertility for their nationals. For example, nearly 50 percent of countries had reimbursement plans for fertility treatment either through National Health Services or Private Insurance Policies (ESHRE, 2017). Comparatively, the proportion of countries with subsidisation was gradually increasing than the earlier survey in 2002 (ESHRE, 2017). Nevertheless, the extent of support by these states differs significantly. For example, as countries like France and Spain provided full funds coverage for its nationals (for fertility treatments in government hospitals), Ireland on the other hand, provided no funding at all for its nationals for fertility treatments. In other countries (Germany and Portugal), reimbursement by private insurance companies had brought partial relief to beneficiaries (ESHRE, 2017).

In countries where the state or private insurance companies were mandated to either fully or partially fund ART services, stringent conditionalities were usually attached to prevent abuses in order to ensure sustainability of the programme. Restrictions usually taken into consideration include the kind of ART treatment to be used: age, marital status, number of allowable treatment cycles or embryo transfers, parity, and where treatment is to be provided (public or private clinic).

To qualify for state funding of ART services in the UK for example, a woman should be under 40 years of age, married and has not conceived for the past three years due to unexplained reason while in Spain, the only criteria was for the couples to be in marriage (Ory et al., 2014).

In Austria, parameters were set for both men and women. A couple must be in a stable relationship (either married or living in a stable relationship) for three years or more, women must be under 40 years; men must be less than 50 years and finally, only infertility condition was treated (male infertility and female tube dysfunction) (Brigham, Cadier, & Chevreur, 2013). Women in France who wanted to benefit from state funding for fertility treatment must be below 43 years old. Couples must be living together for more than 2 years. However, no single man or woman was eligible in France (Brigham, Cadier, & Chevreur, 2013).

In other countries, the ability to support ART was strictly dependent on the present fertility rate, infant mortality rate, per capita income and governments' expenditure on the provision of health services. In most cases, these stipulated conditionalities may result in deferment of treatment due to delay. Delay and unreliable nature of States reimbursement of funds for ART treatment may stimulate out-of-pocket payments by prospective beneficiaries. Others also sought private treatments at the expense of public funds for privacy and optimal care (Matorras Weinig, 2011). On the other hand, the increasing cost of fertility treatment and state restrictions have been argued to prevent many others from accomplishing their desired parenthood wishes. This perhaps has contributed to the higher spate of cross border reproductive

care in some European countries (Bergmann 2011; Inhorn 2011; Markens 2012; Whittaker & Speier 2010).

Conversely, the various restrictions that bonded the utilisation of ART in the respective countries have been challenged by individuals and groups. The Ethics Committee of the American Society for Reproductive Medicine (2013) did not see why there should be restrictions on States provided funds for ART and even individuals or certain group of people especially single women, gays and lesbians who wanted to access ART. The committee contended that there was no justification (medical or ethical) whatsoever to restrict a particular social group from accessing fertility treatment. Others have argued that rejecting these social groups the access to fertility treatment was tantamount to oppression through medical and unlawful means (American College of Obstetrics & Gynecology, 2010).

Indirect cost on the other hand is about cost incurred after ART treatment. The biggest indirect cost associated with ART had been the expenditure on caring for mothers and babies after delivery. The cost had become compounded with the present high incidence of multiple birth pregnancies which had become obvious in most assisted reproduction births. This is possible because of the perceived need to stimulate excess follicles and transfer excess embryos to achieve reasonable pregnancy rates (Baxi & Kaushal, 2008). Multiple births result from the transfer of more than one embryo during the ART procedure.

In most cases, high multiple births are recorded because most IVF facilities want their names to be part of facilities that record high pregnancy success rate and couples desire to raise families if they conceive twins and

successfully give birth (Human Fertility & Embryology Authority (2007). It was estimated that multiple births still accounted for about 10 percent of all ART births in the USA, Europe and Australia (Wang et al, 2009). It has been argued that the cost of care for multiple births could outstrip the total cost on the entire ART treatment. For example, the average hospital cost incurred for twin deliveries were found to be four times higher compared to delivering a singleton whiles triplet and quadruplet deliveries attracted extremely high charges (Chambers et al, 2014).

The high indirect costs implications of multiple births had resulted in most European countries promulgating policies to restrict ART treatments to single embryo transfer (SET) (ASRM Practice Committee, 2009; McLernon, Harrild, Bergh et al., 2010; Jones, Cooke, Kempers, Brinsden & Saunders, 2011). This idea on the other hand, had been met with a lot of controversies. For example, critics of this policy argued that the acceptance and the implementation of the policy could limit pregnancy rates.

On the contrary findings from Finland and Sweden have proven that the introduction of SET has not resulted in the decline of ongoing pregnancy rates. Rather, a remarkable reduction in the proportion of multiple pregnancies has been achieved. Finland and Sweden have achieved a remarkable reduction in multiple pregnancies and subsequent deliveries. Multiple delivery rates in these countries dropped by nearly 10 percent against almost 25 percent in the whole of Europe. About 50 percent of cycles in these two countries were single embryo transfer (Andersen et al, 2006).

Success Rate of ART

The success rate of ART varies globally due to factors that are considered in defining success rate. Despite the differences in the determination of success rate, it is argued that ART success rates are generally low and have direct relationships with the ages of the mothers (van Loendersloot, van Wely, Bossuyt, Repping & van der Veen, 2010). For example, declining pregnancy rates and greater risk of miscarriages, high costs of IVF per successful pregnancy have been associated with older women who are above 40 years compared to women of younger ages (Macaldowie, 2012). Primary diagnosis, duration of infertility, number of previous attempted ART cycles and past reproductive history, have been identified as other possible factors that could affect the success rate of women involved in the use of ART (Tepper et al, 2012).

The definition of success in ART has been contended. For example, it has been argued that the condition that is presented for treatment determined the success rate that is recorded by a particular clinic (van Loendersloot, van Wely, Limpens, Bossuyt, Repping & van der Veen, 2010). Fertility clinics that accept patients who have had multiple unsuccessful ART cycles are likely to achieve lower success rates. On the contrary, clinics that accept clients with low complications are likely to achieve higher success rates because the application of any less technologically advanced treatment could result in pregnancy.

The proportion of unstimulated (or “natural”) cycles also influences the success rates of ART procedures. In an unstimulated cycle, the woman experiences natural ovulation instead of the use of drugs and injections to

stimulate the production of multiple eggs for fertilisation. Although unstimulated cycles are less costly, clinics that perform comparatively higher numbers of unstimulated cycles are likely to have lower success rates. In another instance, a physician may record as a success when he/she is able to perform retrieval of egg and sperm for fertilisation, implantation or live birth. In this case what may be reported as a success may not be same for other facilities.

Marital Status and Assisted Reproduction

Fertility programmes including ART are mostly confronted with demand from a wide variety of clients. However, in most countries, heterosexually married couples were the primary targets of ART programmes (Serour, 2008; Inhorn, 2012). Accordingly, society does not ask questions about parentage when a child is conceived by married couple; not even through the use of AI and IVF when their own reproductive materials (egg and sperm) are used. A child born through the use of any of this procedure is considered legal and legitimate to the said couple (Saengsook, 2010).

However, there have been repeated requests for fertility treatments and the desire to have children by unmarried persons, gays and lesbians (Kissil & Davey, 2012). In response, States and physicians vary in readiness to accept the concerns of these clients. For example, in some countries, especially Islamic countries like Iran, Turkey and Lebanon, utilisation of ART by unmarried persons are strictly prohibited by law (Inhorn, 2012). These restrictions according to the procreative liberty principle impede the rights of these social groups of people to use ART to procreate (Robertson, 2004). In other countries such as USA, Brazil, Canada and Sweden, ART services are

offered to single women, lesbian and gay couples seeking to procreate (Mishra, 2014). According to the Ethics Committee of the American Society for Reproductive Medicine (2013), ART had become a necessity for procreation by single male and gay couples probably due to human right issues.

In a survey involving physicians, it was reported that one out of every five ART providers refused treatment for unmarried women while one out of two providers also denied services for single men or gay couples. Among the reasons given for their denial included the claim that it was a sin and morally wrong to help lesbian couples to procreate. Also, some physicians refused ART services to single women in particular based on their religious belief that procreation outside of wedlock was a sin (Adamczyk & Cassady, 2009).

Despite the controversy surrounding access to ART services, it had often been argued that all individuals, irrespective of sexual orientation or marital status are faced with socio-economic barriers. These barriers include: age, cost, religion, marital status and sexual orientation (Rank, 2010; Kissil & Davey, 2012). Aside from the general barriers, provider discrimination and legal restrictions were additional impediments that were faced by unmarried individuals, gays and lesbians in the access and utilisation of assisted reproduction (Daar, 2008).

Religion and Assisted Reproduction

Religious belief is a powerful social factor that depicts meanings for people who are ill and seeking health care especially during times of crises. Equally facing these problems are health care professionals who as a result of religious beliefs are challenged in providing appropriate care and services to

people of different religious backgrounds. Assisted Reproductive Technologies is one of the technologies that have dominated in religious discourse in recent times (Inhorn, 2008; 2012; Winslow, 2006). Nevertheless, there are divergent views on the acceptability and practices of ART among the various religions and religious denominations across the world. How Islam and Christianity address issues surrounding the utilisation of ART is the focus.

According to the Holy Qur'an, 23:5, Islamic laws approve attempts to cure infertility among Moslems. This assertion has led to the establishment of fertility clinics in more than 20 Middle East nations where the desire to have biological children is perceived as paramount (Inhorn, 2008). Inhorn argues that about 50 fertility clinics are found in Egypt and Turkey had registered above 100 fertility clinics by 2011. Lebanon, an Islamic State is one of the countries that had registered the highest concentrations of fertility clinics in the world. Nonetheless, the two major Islamic groups (Sunnis and Shias) have registered varied views on the acceptability and use of ART (Inhorn, 2011b, 2011c).

Accordingly, the Sunni Islamic belief on assisted reproduction was delineated in a seminal "*fatwa*" (influential religious declaration issued by a respected religious scholar) in 1980 (Inhorn, Gurtin & Lanman, 2012). Inhorn (2012) explained that this belief had gained acceptance among the Sunni Moslems worldwide. The Sunni Islamic arguments on ARTs which are accepted worldwide are:

- Artificial insemination with spouse's own sperm was permissible. The child that comes out of this process is regarded as a legitimate child of the couple.

- In a situation where medical experts recommend, In vitro fertilisation of couple's egg and sperm, and transfer of the fertilised embryo(s) into the uterus of the same wife was allowed.
- An excess fertilised embryo could be frozen to be used by the same wife only when conjugal ties persist.
- Sperm or gonads could be frozen before cancer treatment and could be utilised by the same person who had survived the treatment of the condition.
- Pregnancy in older women (post-menopausal women) was allowable provided they used their own frozen embryos, oocytes, or, in the future, ovaries.
- Multi-fetal pregnancy reduction (selective reduction) was permitted if carrying multiple pregnancies was possible. It was also permitted if the pregnancy could pose danger to the life or health of the mother. Selective abortion is also allowed if it is done to save the life of the other foetus and reduce complications for the mother.
- Pre-implantation genetic diagnosis (PGD) was allowed and even encouraged, where feasible, as a diagnostic option to avoid clinical pregnancy terminations among couples at high risk of genetic disorders in their offspring. PGD may also be used in cases of "family balancing," when couples have children of only one sex.
- With the consent of couples, excess embryos could be used for scientific research to benefit humanity within fourteen days of the post fertilisation processes. However, embryos used in the scientific research should be given back to the uterus of the donor.

- Gene therapy may be sanctioned to control genetically inherited diseases and pathological conditions.
- Uterine transplant will be allowable in future as a cure for women who do not possess capable uterus. Women who are in their postmenopausal age or in their childbearing age but have completed delivery could be donors (Serour, 2002; 2008; Inhorn, 2012).

This means that the Sunni Moslems' doctrine bans the use of third-party in the reproduction process. In Sharia countries, the donation of sperm for fertilisation processes is prohibited. Any individual who donates sperm or oocyte for Artificial Insemination purposes donor is regarded to have committed adultery and cleansing is of key importance to this person in Islam (Inhorn, Patrizio, & Serour, 2010; Chamsi-Pasha, Albar, 2015). In most Sunni dominated countries, the ban on the use of donated gamete has been enacted as a law or as a code of ethics for medical practitioners. Couples who demand this service are refused (Inhorn, Patrizio & Serour, (2010).

Although the Shias agree with majority of the declarations by the Sunnis, Clerics from the Shia group of Moslems have openly disagreed with the Sunnis especially on issues regarding third-party involvement in reproduction processes of couples who deem it necessary (Inhorn et al, 2012). A *fatwa* was issued in 1999 allowing donor technologies to be used by the Shias (Inhorn & Tremayne, 2012). Based on this pronouncement, all forms of ART services involving third-party donations including sperm, egg, embryo donations and gestational surrogacy are accessed by infertile couples in Shia dominant countries like Iran, some parts of Iraq, Lebanon, Bahrain, Syria, Saudi Arabia, Afghanistan, Pakistan, and India (Inhorn & Tremayne, 2012).

In recent years, Shia Muslim clerics have had divergent thoughts about third-party reproductive assistance. For example, a group of clerics call for the total prohibition of the utilisation of ART as a means to solve infertility challenges among couples. Others are flexible on the laws and have resorted to religious practices called *ijtihad and mutca*. *Ijtihad* (believe about whether something is good or bad). This means that couples who believe in this faith were left to decide for themselves whether to accept ART or not. Among the Shia Islam, *mutca* connects an unmarried Muslim woman to a married or unmarried Muslim man for a fixed period of time in return for agreed amount of money. In the perspectives of *ijtihad and mutca*, Shia religious authorities allow sperm and egg donations, but have come out clearly on the circumstances under which gamete donation could be practiced. The following conditions were outlined as the principles underlining reproductive donation among the Shia Moslems:

- In a situation where a couple's condition demands the use of a donor gamete, the couple should visit a Shi'ite religious court, for a decision to be taken on a case-by-case basis;
- The couple should clearly indicate the exact religious "reference" (i.e., source of spiritual emulation) the couple adhere to
- The decision to use a donor gamete by couple should be made in the company of witnesses, the IVF specialist, and with the consent of both couple and the donor;
- The husband of an infertile woman could do a *mutca* marriage with the egg donor from the egg retrieval to embryo transfer period. This practice will help the man to avoid consequences of *zina*, (adultery).

- A Shi'ite Muslim woman cannot do a *mutca* marriage with a sperm donor because polyandry is not accepted in Islam. If this is done, the child born of a sperm donor would be regarded as a *laqit* (out-of-wedlock child).

This means that only widowed or single women can accept donor sperm, in order to avoid the consequences of *zina*. Nevertheless, single motherhood of a donor child in Islamic countries is likely to be accepted (Fauster, 2014).

Despite the debate on the utilisation of ART, fertility clinics operating in Iran and Lebanon where ART is accepted serve as the sources of donated gametes to infertile couples from both Shia and Sunni groups. Infertile couples from the Sunni background secretly travel internationally to seek infertility treatment (Inhorn, 2011). Accordingly, Muslim couples who utilise third-party reproduction prefer egg donation as more suitable to sperm donation though both processes are generally considered as “last resorts” (Inhorn, Patrizo & Serour, 2010).

From the Christian perspective, Christians all over the world accept the authority of the Holy Bible, but the various denominations differ, in the interpretation of the Scripture for ethics. Similarly, the utilisation of assisted reproduction has been met with a lot of controversies as a result of religious beliefs about marriage and sacredness of life especially among Christians. Some Christian authorities have expressed apprehensions about the moral adequacy in imitating God in human creation in relation to the use of assisted reproduction technologies (ARTs). Based on this, some Christian denominations do not accept the use of ARTs as a remedy to fertility

challenges in marriage, while others have questioned its appropriateness. Christian denominations such as Baptist, Presbyterian, Anglican and Jehovah Witness have liberal approach towards the use of ART (Schenker, 2005). On the other hand, the Vatican, for example, acknowledges that the use of ART as immoral and totally unlawful. In the view of the Vatican, utilisation of ART such as IVF separates the human procreation from what God has ordained as means of having children; that is through natural sexual intercourse between heterosexually married couple (Schenker, 2005).

Two major reasons have been raised by the Roman Catholic moral tradition for the total objection to all forms of ARTs (Winslow, 2006). First, the belief that human embryo is a soul that needs to be protected. Based on this assertion, all forms of ART services will expose human embryos to threats and dangers and are therefore morally unacceptable. From the discussions, the Catholic Church believes that if human embryo is produced, it must result in the birth of a baby. Any other practices such as sex selection and the destruction of extra embryos constitute murder which is a sin against God. A practice such as cryopreservation (freezing of embryos for future use) is forbidden since the process may expose the embryo to threats that may result in death.

The second reason for opposition to the use of ART by the Roman Catholic tradition is the belief that procreation must only occur in the confines of sexual intercourse within marriage between a male and a female. This means among other things that, no third-party reproductive services/practices including surrogacy and gamete donation should be sanctioned. To the Roman Catholic Church, all forms of ART are forbidden because they do not promote

fertilisation from sexual intercourse. Arguably, the Catholic belief about the use of ART constitutes the dominance of technology over the origin and destiny of the human person created by God (Winslow, 2006).

Nevertheless, the assertion of the Roman Catholic teachings that every child has a “right” to be conceived as “the fruit of the specific act of conjugal love of his/her parents” (Pellegrino, et al, 1990) had been contended by present-day Catholic moral theologians. Lisa Sowle Cahill, a Catholic ethicist in the United States, has stressed the significance of all reproductions happening within the context of loving relationships in marriages (Pellegrino, et al, 1990). Cahill advocates that IVF which uses the gametes of spouses should be assessed in the realms of the complete relationship of the marriage. Cahill claims that “An each and-every-act analysis of the ‘inseparability’ of sex, love and procreation distorts the valid unity among them by tying that unity to specific sexual acts rather than to the marital relationship” (Pellegrino, pp. 137-148.).

Similarly, another Roman Catholic moral theologian has expressed opposition to the traditional Catholic ideology that places premium on specific sexual acts without emphasis on the completeness of marital relationships (Shannon, 2004). Shannon is of the view that couples who access ART as a remedy to their infertility show marital faithfulness. Shannon questioned “Why the physical integrity of the [sexual] act should take moral priority over the intention of the husband and wife to become mother and father through the use of their own genetic material is both unexplained and unclear.” In his view, Christian principles permit married couples who are faced with infertility to utilise ART services to overcome their challenges. “The couple

using IVF is essentially doing what another couple is doing without IVF: cooperating in the creation of a new being from their love and their bodies” (Shannon, 2004).

Apart from the Roman Catholic Church, a study on “Third-Party Gametes and the Christian” has also rejected the use of ART by a section of Christians for three major reasons (Valji, 2010). First, utilisation of ARTs violates the sanctity of marriage. The use of Assisted Reproductive Technologies involving a third-party is morally regarded as adultery since the Holy Bible indicates that procreation is only intended in marriage (Genesis 1:28) and Christians who violate this declaration by God suffer the displeasure of God (Genesis 16 and 30). These biblical declarations according to Kharb (2007) prohibit third-party’s involvement in couples’ procreation decisions. Kharb again, posits that “Most religions do not accept the impregnation of one's wife by the sperm of a third-party, as it does not make the child one's own and it is regarded as “illegitimate even in man-made laws . . . it is redefining the concept of family and turning traditional notions of reproduction upside down” (2007, p. 4).

Further, the rejection of third-part gamete in the reproduction processes by Christians is based on the view that the act leads to exploitation of human beings, who are created in the image of God (Gen. 1:26-27). These exploitations come in the form of medical, psychological and socio-economical risks. Shanner and Nisker (2001) explained the medical risks associated with the retrieval of donor ova for ART purposes as “Ovarian hyper stimulation syndrome may pose serious and even life-threatening complications for women undergoing ovarian stimulation . . . a [potential]

increased risk of ovarian cancer has been reported . . . Small risks of punctured bladder, damaged blood vessels and pelvic inflammatory disease accompany ovum retrieval” (p.1593). Psychologically, gamete donors who are influenced by monetary factors instead of informed assurance may later suffer from creation of an unknown offspring. These regrets may be pronounced when donor later experiences infertility and any deformity after the process. Socioeconomically, people who accept to offer reproductive donations tend to be people of poorer socioeconomic background compared to recipients who may have higher economic status (Shanner & Nisker, 2001). Considering the financial coercion that may lure people to donate gamete and the possible harm such people may suffer from, Cooper & Glazer (1998) concluded that these are not “acceptable behaviour for Christians” (p.32).

The final reason cited for the rejection of third-party gamete donation was the belief that the use of ART does not respect the rights of children born through the act (Shanner & Nisker, 2001). This is based on the argument that, children resulting from the use of ART may not come into contact with their true parents. Confidentiality and concealment of the donor undermines the interest of the beneficiary to even care about the medical and ancestral background (Shanner & Nisker, 2001).

On the contrary, the Christian Dental Medical Associations (CDMA) (2010) in their Ethics Statements argued that aside from natural conception and birth, married couples who are faced with fertility challenges can adopt or pursue assisted reproductive technology as a remedy to their fertility challenges. The Christian Dental Medical Associations cited the following reasons as their support for the use of ARTs. First, adoption signifies the

reflection of God's adoption of humankind as spiritual children. As a result, there was nothing wrong if couples who were without biological children adopted and took care of other children as their own. Secondly, the successful application of the various ART was a direct expression of God-given creativity and stewardship in man. Christian Dental Medical Association found consistent with God's design for reproduction, the use of medical assistance in reproduction, the use of artificial insemination by husband (AIH), adoption, freezing of sperm or eggs for future use by couple, IVF, ZIFT and GIFT.

Despite the declaration of support by the CDMA, it had its reservation against certain ART procedures which were considered inconsistent with God's design for families. These included the destruction of excess embryos, transfer of excessive numbers of embryos which may result in high birth order, selective abortion, the use of embryos for experimentation, surrogacy which involves the provision of eggs and gestation, routine use of PGD and pre-implantation Genetic Diagnosis which causes the destruction of embryos (CDMA, 2010).

Cross-Border Reproductive Care and Assisted Reproduction

Infertility is a global health problem confronting many countries both developed and developing. However, existing policies, laws, socio-cultural factors and costs of treatment within an individual's country of residence prevent some infertile individuals from their parenthood desires. These formal and informal country-based restrictions on access to assisted reproductive technologies (ART) have resulted in relatively new dimensions to fertility treatments (Bergmann, 2011). Presently, prospective parents who are

restricted by policies and laws in their respective home countries have to travel across national borders to access ART treatments. This practice is termed as cross-border reproductive care (CBRC).

Cross-Border Reproductive Care (CBRC) describes the transnational transfer of reproductive products, ART tools, and fertile and/or infertile bodies around to achieve pregnancy and the subsequent procreation (Collins & Cook, 2010). Evidence pertaining to this phenomenon alludes that infertile persons or couples travel internationally under the pursuit of tourist activities while seeking infertility treatment (Bergmann, 2011). The total number of patients who seek CBRC globally had been difficult to estimate due to paucity of information. However, it was estimated that approximately 10 percent of ART cycles were performed in CBRC clients worldwide with Europe recording the highest number of CBRC patients (Nygren et al, 2010).

A survey of 46 clinics in Europe between 2008 and 2009 established that about 24,000 to 30,000 cycles involving between 11,000 and 14,000 foreign patients took place annually (Shenfield et al. 2010). Again, a survey of 53 clients from UK indicated that over 62 percent were seeking infertility treatment (egg donation treatment) overseas. Thirty-four percent cited access difficulties, another 37 percent indicated that their decision to embark on CBRC was due to previous treatment failure. A total of 28 percent linked their decision to accessing quality care while 26 percent of patients in UK mentioned that they needed anonymous donors as reasons for opting for CBRC (Shenfield et al. 2010). In Italy, a large number of Italians who had travelled out to seek infertility treatment elsewhere for similar reasons have been recognised (Bertolucci, 2008). Belgian ART clinics data also showed a

gradual increase in the number of patients (over 2000 patients) who travelled from Germany, France, Italy and the Netherlands to pursue assisted reproduction services (Pennings et al, 2009). Survey data from the United States showed that 4 percent of all fertility treatments were provided to non-American clients (Hudson et al, 2011). The incidence of clients who travelled to the US to seek fertility treatment was far higher than their counterparts from US who travelled outside for the same purpose although very little was known about CBRC outside Europe and America (Blyth, 2010; Hughes & Dejean, 2010).

Among the general reasons cited for this current CBRC included the fact that treatment in home countries may be costly or low quality and long waiting times. It may also exclude certain category of people. For example, same-sex, single individuals, or aged people may not be allowed due to age restrictions in their home countries. Legal restrictions on certain ART technologies such as surrogacy, third-party assisted conception may also promote CBRC. Other reasons included the desire for donor anonymity, culture and the seeming higher success rates among others (Bergmann 2011; Inhorn & Gürtin 2011; Pfeffer, 2011; Whittaker & Speier 2010, Shenfield et al. 2010).

Utilisation of CBRC was also restricted in countries where the practice was permissible even in Europe where majority of ART services were available (Storrow, 2010). For example, while France and Germany allowed assisted reproduction treatment for heterosexual couples, countries like Spain, Belgium, UK and Greece made ART available to category of people including lesbian and gay couples. Law evasion according to Shenfield et al., (2010)

constitutes 55 percent of the reasons for CBRC among patients in Europe (9 percent in UK patients, 65 percent among the French, Italians constituted 71 percent while Germans recorded 80 percent).

Despite the large numbers of people who patronised CBRC services, concerns have been raised about the practice. For example, commodification of reproductive products and body parts (human sperm, ova, embryos and commercial surrogacy) to the ARTs industry had been anticipated (Inhorn 2011). Others have associated CBRC to ‘stratified reproduction’ (Bergmann 2011; Markens 2012; Whittaker & Speier 2010). This explains the situation where “power” enables certain group of people to produce (have children) while others are disabled. For example, Markens (2012) argued that stratified reproduction empowers the affluent in the society to travel outside the home country for fertility treatment while others who were with low economic status were disempowered (Abbasi-Shavazi et al. 2008)

Concerns have also come from the players in the ART industry policy formulators’, clinicians and other support groups about the issue of quality, safety requirements and standards of treatments as well as issues on children who were conceived with the support of anonymous donors. In the UK, the media have expressed their displeasure about how CBRC puts stress on National Health Scheme. They explained that women who embarked on CBRC were old women who returned home pregnant with triplets and this causes undue pressure on the state to meet the demands of such people (Blyth & Farrand 2005; Leather, 2006).

Health Impact of Assisted Reproduction

Assisted Reproductive Technologies have been employed as one of the means that has resulted in the successful treatment of million cases of infertility all over the world (Brezina & Zhao, 2012). Nevertheless, this relatively new technology has been perceived to have brought about numerous challenges in the form of social, ethical and medical risks especially to prospective mothers and children born from the use of ART. Assisted Reproductive Technologies are considered “anti-women” due to the numerous health risks the technology poses to women. Risks associated with IVF usage can be classified into the side effects due to the use of drugs; complications due to pregnancy and multiple foetus problems associated with high failure rates (Lo Russo, 2013).

It was further argued that women who opt for the use of ART in most cases are relatively old (mean age of 33 years) and as a result, there is the likelihood of genetic problems in offspring as well as pregnancy complications which may result in abnormalities and in some cases mortalities. Again, it was argued that the pre-existing medical and genetic conditions of parents may be inherited by the offspring. Also, women who undergo ART take a combination of drugs before and after the process and this may have a detrimental effect on the embryo.

Two main fertility enhancing drugs (clomid and gonadotropin) have been identified as posing serious health risk to women (Lo Russo, 2013). It is explained that clomid contains anti-estrogen that is administered to women to prevent miscarriage. However, it was later discovered that this same estrogen causes infertility among male offspring and abnormalities in the uterus of

women which can subsequently result in inability to carry pregnancy to a successful term. Women who use clomid may also experience stomach upset, breast tenderness, blurred vision and dizziness as the side effects (American Society of Reproductive Medicine, 2012). Similarly, gonadotropin presents same side effects in addition to a higher risk (about 5 percent) of hyperstimulation syndrome. Further, women who used human gonadotropin drugs may be susceptible of acquiring breast cancer than their counterparts who had never used any fertility drug. Additionally, infertile women may have higher risk of ectopic pregnancies if any of these drugs was used frequently (Courbiere, 2011).

Multiple pregnancies and births have been reported as one of the complications of ART due to drugs that are administered to stimulate ovaries (American Society for Reproductive Medicine, 2012). Multiple pregnancies are sometimes linked to complications such as caesareans, gestational diabetes, anaemia, pre-eclampsia, and postpartum haemorrhaging (American Society for Reproductive Medicine, 2012). Multiple pregnancies are likely to be associated with hospitalisation of clients. The possibility of women undergoing multiple pregnancies to be admitted in the hospital was at times higher than other women who go in for single embryo transfer. Caesarean and mortality rates among women who opt for multiple pregnancies were also higher than other women who resorted to single pregnancies (Valji, 2010). Due to the high risk associated with multiple pregnancies, some mothers resort to selective reduction of foetus. However, this was dependent on the number of foetus the woman was carrying as well as her health condition. Others have argued that multiple births can be controlled only when physicians reduce the

number of transferred embryos at a particular time. Others have also suggested that the embryo was regarded as human therefore reducing it could mean a murder (Valji, 2010).

In a broader perspective, States involvement in the regulation of the incidence of multiple gestations has been acknowledged. In recent years, countries like the United Kingdom, Germany and Italy have enacted laws that specify the acceptable practices in ART services. Current efforts to reduce the risk associated with multiple pregnancies include restrictions on multiple embryo transfers to prospective mothers, cryopreserved or fertilised per IVF cycle. Further, social cost and health risk accompanying the process have been assigned as some of the possible causes of the restrictions (McLernon et al, 2010; Setti et al., 2011). Estimated cost of healthcare system as a result of singleton birth was £3313 while twin births cost £9122 and £32,354 resulting from triplet birth in addition to increased health risk to both infants and their mothers in the United Kingdom (Ledger et al, 2006).

Other forms of abuses have been reported against women who sought medical care through ART to avert their infertility. For example, there was a case that indicated that a medical doctor had stolen his clients' embryos for other people without the consent of the former. In 1992, a physician was accused of using his own sperm to fertilise 75 eggs from clients who were to receive anonymous sperm donors. Labelling mistakes have also been documented. For example, there have been instances where specific embryos have been inadvertently placed in the wombs of unrelated women (Anderson & Brruchalski, 2004).

Apprehensions have been expressed about the medical risks involved in the donation of eggs by women either for monetary gains or on humanitarian grounds for use in ART. It was argued that egg donation involved a medical procedure that may impede the health of the donor. Ovum donation was a medical procedure with major risks and effects (President's Council of Bioethics, 2003). The effects have been summarised as:

“...And that’s because I believe in two things ... Number one, that there should be no purchase and sell[ing] of eggs; ...the commercialisation of eggs is a problem, and it’s a subterfuge to call this just giving money for inconvenience. And, number two, that any physician who is worthy of the name would not subject his patient to a risky procedure just for the sake of being paid for their inconvenience. It can’t be done. It can’t be justified. ... The role of physicians is problematic, and if you’re going to be a physician and deal with things like egg alternatives that don’t put healthy women at risk for “money” donation, you have to, it seems to me, put the best interest of your patient first, do no harm first, and there are some things that you just have to say we can’t do” (President’s Council of Bioethics, 2003)

Studies suggest that women who go through ART procedures suffer psychologically whether they were successful or not. However, those who go through unsuccessful cycles suffer the most due to the invasive and expensive treatments they go through. Since the onset of this relatively new technology, the failure rate has outstripped the success rate (Moragianni & Penzias, 2010). Based on this, women who had received negative pregnancy test results have always been depressed (Volgsten et al, 2010).

The stress accompanying infertility and its subsequent treatment may also have debilitating effects on parenting and parenting style. Parents who longed to have children may naturally overprotect and emotionally overinvest in their children. Financial stresses are common, especially in the case of having multiple births. Multiple births which bring about additional costs of feeding, clothing, housing, and caring for other siblings and the entire family have also been reported as some of the negative impacts of assisted reproduction on women (McLernon et al, 2010; Setti et al., 2011).

Other issues that have emerged as a result of the use of ART have been questions on the possible health risks on the development of embryo and the psycho-social development of children born from ART (Odom & Segars, 2010). It was further put forward that human manipulations of egg, sperm, cryopreservation, embryo transfer and other processes may result in alteration of natural processes and this may influence natural developmental outcomes in infants (Squires & Kaplan, 2007).

So far, earlier studies did not identify clinically significant relationship between IVF and contradictory maternal or fetal effects (Wennerholm et al., 2009). However, literature from other epidemiological studies suggests that infants born of IVF may experience minimal risk for rare epigenetic and other defects (Odom & Segars, 2010). The prevalence of birth defects in infants born of IVF can be analysed by taking into consideration two critical factors by way of comparison. These factors are the method of conception (spontaneous versus assisted reproduction) and plurality (singletons versus twins or multiple births) at one hand, and the combination of both factors at the other hand (Ooki, 2012).

By these methods, studies have indicated that children born through the use of ART experience higher risk of birth defect compared to children conceived spontaneously (Williams & Sutcliffe, 2009; Williams, Sutcliffe & Sebire, 2010). Data from meta-analyses indicated that birth defects in infants born after ART were 30 percent higher than their counterparts who were spontaneously conceived (Hansen, Kurinczuk, Milne de Klerk, & Bower, 2013). A national survey in Sweden also depicted increased birth defects in infants after assisted reproduction (IVF) even after maternal age and parity had been adjusted (Källén et al., 2010). No significant difference of birth defect was found in infants born after IVF/ICSI (intracytoplasmic sperm injection) in a study that used 15,405 offsprings conceived by ART (Yan et al, 2011).

Birth defects by plurality perspective has largely been linked to multiple pregnancies and birth compared to singleton. Between 1995 and 1997, a study in the USA that involved 304,466 twins and 17,696 higher order births found a higher risk of early death in each extra foetus (Zhang, Qiu & Huang, 2011). The tendency of multiple pregnancies resulting in a risk of low birth weight and mortality in infants had also been documented (Sunderam et al, 2010). It was identified that infants conceived with ART may experience low birth weight such as (<2500g), very low birth weight (<1500g), preterm birth (<37 weeks) and very preterm birth (<32 weeks) (Sunderam et al, 2010). Additionally, ART and multi-fetal pregnancies may result in higher rates of caesarean delivery, preeclampsia, abnormal placentation, cardiac morbidity, thromboembolism, postpartum haemorrhage, and pregnancy-related death (Practice Committee of American Society for Reproductive Medicine, 2012).

Outlined are a number of factors that are likely to impact on the health of children born through the use of the various assisted reproductive technologies (Miller et al, 2010). Further, girls who are born from mothers who use this particular drug (clomid) may be highly susceptible to vagina cancer.

Several other studies have discussed the birth defects and ART. For example, a survey on the long-term health of children conceived through IVF found that children conceived by IVF procedure may experience higher blood pressure, glucose levels and generalised vascular dysfunction compared to children conceived spontaneously (US Centre for Disease Control & Prevention, 2013). Children born through the use of IVF procedure reported a 2 to 3 times higher risk of suffering from some types of muscle and liver cancers than infants born spontaneously (Williams et al., 2013).

It was also found that children conceived through IVF are likely to have premature cardiovascular disease and generalised vascular dysfunction (Scherrer et al., 2012). It has also been confirmed that children born through IVF are 10 times likely to have genetic disorders including Angelman syndrome, which may result in severe mental retardation, speech impairment, and Beckwith-Wiedemann syndrome (Blackwell, 2010). The Center for Disease Control and Prevention also reported that babies conceived with IVF, or any other method which involves the direct injection of sperm into eggs may exhibit birth defects such as cleft lip, malformed rectum, improper development of the esophagus and other heart related problems (American Society of Reproductive Medicine, 2012). It has also been asserted that children conceived through IVF were often admitted and they spent

significantly more days in the hospital for treatment than their peers who were conceived spontaneously (Koivurova et al, 2007).

Despite these controversies, there is the assertion that IVF poses a measurable increased risk in congenital abnormalities among children born through IVF compared to the general population. However, this is secondary to the population of infertile patients (Fortunato & Tosti, 2011). These risks may not be influential enough to discourage couples who are faced with infertility from pursuing parenthood agenda through ART methods.

Summary

The chapter discussed empirical studies on demographic and socioeconomic factors that influence the use of assisted reproduction. It was discovered that parental age has demographic significances on the health of the mother, child and the society on the whole. From the religious perspective, none of the three religions in Ghana (Islam, Christianity and Traditionalists) seems to abhor the treatment of infertility. However, they vary in their beliefs about the causes and treatments of infertility. The chapter also identified that cost played a major role in the use of assisted reproduction. Cost had been classified into two: direct and indirect (Connolly et al, 2009). Direct cost involves all the expenses that is incurred throughout the treatment process while the indirect cost covers expenses after the treatment including the cost of caring for the mother and the babies. Cost of assisted reproduction was identified to be very high and varied widely among countries especially where there are no state and insurance supports.

The health implications of the utilisation of ART are one of the areas that received extensive discussions. This was probably based on the assertion

that the procedure was not natural and, in most situations, it was based on human handling of egg and sperm for fertilisation which could pose potential threats to both the prospective mother and the foetus. However, the risks found to be associated with spontaneous deliveries were not significantly different from ART births while birth defects after ART was found to be high with multiple births.

To better understand and conceptualise the varied factors that influence the use of ART and the general healthcare utilisation, several frameworks and theories have been discussed. These stem from both social and medical perspectives. The next chapter has been devoted to a detailed discussion of these theories and models and how they influence infertility treatment. It further discusses the conceptual framework adopted for the study.

CHAPTER FOUR

THEORETICAL AND CONCEPTUAL FRAMEWORK FOR STUDYING INFERTILITY TREATMENT

Introduction

Provision and the use of healthcare services are considered as complex behaviour and social phenomena. Empirical studies affirm that seeking preventive and curative services are directly dependent on numerous factors such as service accessibility in terms of cost and quality, social support and user characteristics (Anderson, 1995). Based on these factors, a number of theories and models from the medical, sociological and psychological perspectives come to play in the study of seeking infertility treatment. This chapter specifically reviews theories and models which have been developed to better understand infertility treatment from both the social (Andersen, 1968; Pescosolido, 1992) and medical sciences viewpoints. Specifically, the Behavioural Model (Andersen, 1968), Choice-making model (Young, 1981), Network-Episode Model (Pescosolido, 1991), Sick role theory (Parson, 1951), Help seeking theory (Mechanic, 1978), Stages of Illness and Medical Care (Suchman, 1965), Health Belief Model (Rosenstock, 1966), God-centric healing model (Padela, Gunter, Killawi & Heisler, (2012), Ill-health causation theory (Murdock, 1980) and the theory of stigma (Goffman, 1963) have been reviewed. Further, the chapter discusses the conceptual framework that underpins the study.

Behavioural Model

One of the most extensively applied health care utilisation and access frameworks is the behavioural model of health services by medical sociologist

Andersen (1968), which was revised by Andersen & Newman (1973). Originally, the model was used to test hypotheses about inequalities to access health services in USA. The model established that ethnic minority groups, who lived in inner cities and rural areas, did not receive the best health care delivery compared to the rest of the population. The import of the framework according to Andersen & Newman (1973) was that individual's decision to seek treatment depended on three interrelated factors: (a) predisposing factors (i.e. age, gender, socioeconomic status, health beliefs); (b) enabling factors (insurance, poverty status, access to medical care, and other individual, family, and community resources) and (c) perceived and evaluated need (such as perception of a problem or an existing health condition). The model opines that an individual's ability to utilise health services may be based on his/her decisions which are influenced by their role in society as well as the existence of the needed services at that particular time.

The predisposing factors are grounded on the fact that the tendency for an individual or a family to use health services can emanate from a set of personal characteristics even before the start of the condition. Individual predisposing characteristics are grouped into three distinct collections. These are demographic characteristics (age and sex), social conditions and perceptual influences in terms of belief (Andersen, 1968). These sets of variables come together to determine the social status of the individual or family in the society, lifestyle, physical and social environments and the use of health services.

Andersen (1968) argues that a family may have predisposing factors to utilise health services but there must be enabling characteristics such as

financial and institutional resources to enhance utilisation. Financial resource includes individual's income, wealth and health insurance status. Institutional factors on the other hand take into consideration services availability, site, organisation and delivery of services, workforces and accessibility. In most cases when these factors are favourable, individuals tend to utilise health services the more and vice versa.

The final factor which was considered by the model was the need factors. At the individual level, Andersen and Davidson (2001) distinguished between perceived need for health services (i.e., how people perceive and experience their own general health, functional state and the symptoms the condition presents) and evaluated need (i.e., professional assessments and objective measurements of patients' health status and need for medical care). All things being equal, after self and medical assessments have proven the need for health care service, individuals who are ill are likely to seek health services.

Anderson's model has gone through a number of modifications to suit health services use by individuals. For instance, in the 70s the model was modified to include three mutually related characteristics: health care system, use of health services and consumer satisfaction (Anderson, 1995).

The health care system comprised three sets of features: health policy, resources, and organisation. Health resources included the availability and distribution of labour and capital. It also catered for the educational level of health staff and availability of tools to be used for the provision of health care. Organisation on the other hand referred to how the health care system managed resources in order to promote access. At this level, the policy

regarding how resources are distributed and the availability of quality and adequate labour were believed to influence an individual's decision to use health services.

Secondly, the revised model considered the fact that there were several health services available. As a result, utilisation of service was directly related to the availability of desired services and the nature of the healthcare service (primary or secondary).

Further, the updated model also predicted that consumer satisfaction comes to play and this particular factor had the potential in motivating health care users in making a choice whenever they were confronted with a health problem. In summary, the revised model established that the characteristics of users and that of health service providers have correlation with seeking health care and these factors also influence the frequency of times such services will be utilised by consumers (Andersen, 1995; Andersen & Newman, 2005).

During the 1980's -1990's, Andersen's model was once again revised into a three-component linear model: primary determinants; health behaviours; and health outcomes. Primary determinants connoted the direct characteristic that formed the basis of health behaviours. Primary determinants included characteristics of the population (demographics). Health care system on the other hand was the policies, resources and organizations that guided the health care system whilst the external environment represented the political, physical, and economic influences of utilisation. The model predicted that primary determinants such as population characteristics, the health care system and the external environment determined an individual's health behaviour (personal health characteristics) and the ability to utilise health services. In effect, an

individual's health behaviour had a direct impact on his/her health outcome (Anderson, 1995).

Critics of this particular model assert that Andersen did not consider the influence of genetic or psychological components as well as the social environments (such as the community and social networks) where medical attention was sought by the individual (Pescosolido, 1992; Wolinsky, 1978). To this group, genetic factors and social ties could also influence an individual's decision to seek treatment for a particular illness. Again, to utilise health service depends on a number of factors which includes choice. An individual's choice to use a particular service is also influenced by several internal and external factors. These factors are discussed in the choice-making model.

Choice-Making Model

Young (1981) proposed a choice-making model in ethnographic studies of health services utilisation in Mexico. According to the Choice-Making Model, there are basically four main elements that essentially impact on an individual's health service choice. First, perception about the gravity of the illness. This perception included both the individual's and that of their social network's consideration of the seriousness of the illness. In most situations, individuals seek treatments of their conditions when they perceive that their condition is serious. Gravity assumed that culture classifies illnesses by level of severity; second, the knowledge of a home treatment. If a person knows of a home remedy that was efficacious and readily available, there was that likelihood for the individual to seek home treatment before utilising a professional health care system if the ailment was still persistent; third, the

faith in the remedy. This component incorporated the individual's belief of efficacy of treatment for the present illness. Individuals will not utilise the treatment if they do not believe in its effectiveness. The final factor that was considered by the choice-making model was accessibility of treatment. Accessibility incorporates the individuals' evaluation of the cost of health services, affordability and the availability of those services. According to Young, access may be the most important factor that may influence individuals' decision to seek health assistance for a condition (Wolinsky, 1988b).

Interactions between individuals who are suffering from infertility and their social relations have also been identified as a major factor that could promote the treatment of infertility. The benefits of social network in the treatment of health conditions including the treatment of infertility has been elaborated in the Network-Episode Model.

Network-Episode Model

Network-Episode Model (NEM) of health care services utilisation was developed by Pescosolido (1991; 1992). The strength of the NEM was the significant influence of the interaction between an individual and the social networks (size, density, proximity, associations, interactions and decisions) on how, when, and the need for individuals to seek health care.

According to Pescosolido (1991; 1992) the NEM was underpinned by four main assumptions. Key among them is the assumption that an individual who was affected by a condition discusses with many individuals in his/her social group (social ties) for a remedy when confronted with any form of illness. These social ties could be the source of information about the cause of

the sickness and may also provide emotional as well as financial support when the need arises for treatment. Second, the model acknowledges that the actor depends on more than economic rationality (i.e. cost-benefit) when making decisions about seeking treatment. This meant that one's ability to seek treatment may not be based on only a personal decision or any voluntary actions or cost and benefit analysis of seeking treatment for a particular condition. Instead, utilisation of medical care could be influenced by the decision of an individual's social relations which could be internal (family) or external influences (friends and other social groups) that an individual belongs to. Third, the Network Episode Model perceived decision-making-process to be dynamic; as a result, individuals take variety of decisions as events unfold. Fourth, the NEM considered the interaction within social networks as the key factor which influences all other decision-making processes. The decision of an actor becomes meaningful only when members of the social network have been involved in the decision-making processes and have given their approval (Pescosolido, 1991).

As an individual experience's signs and symptoms of particular sickness or infection, the perception about the condition interacts with one's social network to ascertain whether to seek medical treatment or otherwise. Typical of these social factors include emotional support from family and friends, encouragement from other people who have had a similar condition and have sought medical help. Beliefs and perceptions of the society as well as an individual's social network about the efficiency of medical professionals and particularly the institutions where care/treatment would be sought also influences one's decision to seek treatment.

The Network-Episode Model has been criticised against the back drop that genetic, socio-economic and other personal factors were not taken into consideration although these very factors come to play to influence one's decision to seek health care. As a result, the sick role theory that considers socio-economic and individual factors have been considered to influence an individual's decision to utilise medical services.

Sick Role Theory

One of the theories that have been used to explain the utilisation of health care by individuals who were sick is the sick role theory by Parsons (1951). According to this theory, an individual portrays a role of being ill whenever he/she falls sick. This sick role is made up of four main constituents: first, the individual believes that he/she is not responsible for the present state of illness and is not expected to be well without seeking assistance. Second, the individual is discharged from performing usual roles and tasks as a result of the sickness. Thirdly, there is a general perception that the state of sickness is undesirable. Finally, the theory assumes that to enhance recovery from the sickness, the individual must pursue medical assistance and ensure compliance to treatment. Parsons' theory demonstrates a true behaviour found in individuals who are ill. Critics of the theory argue that the sick role did not recognise the unpredictability in behaviour of the sick and therefore assumed that different sicknesses make individuals behave the same way. As a result, scholars have proposed multifaceted models and theories which identify factors influencing health care seeking (Wolinsky, 1988a). A typical of these multifaceted models is the help seeking theory which considers the utilisation

of health services to be influenced by social, psychological, economic and other related factors.

Help Seeking Theory

Mechanic's (1978) general theory of help seeking uses psychological approach to health care utilisation. The theory is made up ten decision points which predict illness behaviour: 1) the salience of deviant signs and symptoms; 2) the individual's perception of symptom severity; 3) the interruption of the individual's daily life as a result of the illness; 4) the frequency of symptoms and their persistence; 5) the individual's tolerance of symptoms; 6) the individual's knowledge and cultural beliefs about the illness; 7) denial of illness as a result of basic needs; 8) whether or not response to the illness disrupts needs; 9) alternative interpretations of symptom expression; and 10) treatment availability via location, economic cost, psychological cost (stigma, humility, etc.), and treatment resources. Apart from these ten points, Mechanic posits that response to illness is influenced by one's self and/or others who impact on the decisions of the individual who is sick (Wolinsky, 1988b).

Stages of Illness and Medical Care

A stage of illness and medical care theory was propounded by Suchman in 1965. According to Suchman, individual's decision to utilise health care is a process that moves through five distinct stages. The first stage is individual's symptom experience; including pain, emotion, and recognition of experience as symptomatic of illness; 2) the individual's assumption of a sick role. At this stage, the individual considers his/her lay referral system (non-professional individuals, such as family members or friends, who assist

the ill person to understand the symptoms and find treatment) (Cockerham, 1982) for validation of the sick role and for exploration of treatment options; 3) Medical care contact. During this stage the individual seeks a professional health care system. However, the decision to enter into this stage is influenced by their membership to the parochial (those with a close and traditional relationship who are hesitant to accept new information and have the likelihood to rely on lay referral) (Wolinsky, 1988) and cosmopolitan (social relationship where individuals are opened to new information and have the tendency use scientific approach to medical care) (Wolinsky, 1988) social networks.

If the individual has a parochial social network, medical care contact is delayed while he/she continues with the first two stages for a very long period compared to an individual who belongs to a cosmopolitan social network; 4) the assumption of a dependent-patient role through approval of professional health care treatment. This particular stage is likely to be interrupted if the sick individual and the professional health care provider have divergent ideas about the illness; 5) the individual's recovery from illness. The role as a patient is abandoned as soon as the individual recovers. On the other hand, an individual may assume a chronically ill role if it is realised that the illness cannot be treated (Wolinsky, 1988). In other situations, if an individual becomes aware of the consequences of a particular illness, steps are taken to prevent that particular condition. This action point is particularised by the health belief model.

Health Belief Model

The health belief model (HBM), originally developed by Rosenstock in 1966 presents how individuals take actions to treat and prevent diseases. Fundamentally, the original HBM concept is that an individual's health behaviour is determined by personal beliefs and perception about a disease and the strategies available to minimise the occurrence. Theoretically, four main perceptions serve as the main import of the HBM: First, is an individual's perceived susceptibility to disease. All things being equal, an individual will seek preventive health services if it is believed that the individual is susceptible to a particular disease. Second, is the individual's perception about the severity of the illness. If individuals do not perceive the illness as serious, they will not seek treatment or prevention. Thirdly, individual's rational perception of benefits versus costs. An individual will not act unless the treatment or prevention is perceived as having greater benefits than costs.

Finally, individual's cue to action. This explains the influence of the media, friends, family, or well-known citizens who provide motivation for prevention. The absence of cues to action may reduce the likelihood of prevention. There are other individuals who may not take any of these actions explained by the health belief model because they perceive that some sicknesses including infertility could only be treated by God. The God-centric healing model gives further explanation to this perception.

God-centric Healing Model

This model emerged when a qualitative exploration studies on the key agents of healing among the major ethnic groups within the American Muslim

community was conducted. In the study, God-centric healing narration emerged as the means of granting good health or the plight of illness. The God-centric healing model describes the exploration of agents and their roles in healing (Padela, Gunter, Killawi, & Heisler, 2012).

The model postulates that for an individual to gain good health there is the need for such an individual to seek help directly from God. According to Padela et al (2012), this could be done directly through prayer, supplication, and recitation of the Qur'an, or indirectly through human agents, and in some cases, the use of both. The indirect means of gaining health are perceived to dwell in the dominion of agents of God such as the Imams (the individual who is a prayer leader, chief sermon giver, and spiritual advisor to the congregation of a mosque), family members, health care providers, friends and the community. Each agent is considered as a vessel of God and therefore possesses the power and has a role in the healing process.

The model has been criticised on the grounds that it emphasises the spiritual causes of illness. This may prevent certain conditions that may require medical treatment to be addressed as spiritual problems. Spiritual and natural causes of illness and how they are treated have further been expatiated in the ill-health causation theory.

Theory for Ill-health Causation

The theory for ill-health causation was propounded by Murdock in 1980. According to Murdock, disease causations can be ascribed to theories of natural and supernatural causations. For the natural causes of infirmities, the theory linked health challenges to physiological concerns that conform to modern medical science causes of sicknesses. With regards to this, Murdock

(1980) considered five divergent types of illness causations. These included infection, stress, organic deterioration, accident, and overt human aggression (1980:9-10).

The other key component of the theory is what is classified as supernatural causes of illness (Murdock, 1980). With this, the theory groups ill-health causation into three main categories with each having its own sub-categories: theories of mystical causation (fate, ominous sensation, contagion, and mystical retribution); theories of animistic causation (soul loss, and spirit aggression); and theories of magical causation (sorcery and witchcraft).

Critical analysis of the natural and supernatural causes of illness may vary culturally. While in some cultures illness may be strictly associated with either the natural or supernatural causes, others may consider illness to be associated with both. For example, modern societies associate sicknesses and other health challenges including infertility to infections, lifestyle and organic deterioration whilst others may strictly attribute health problems including infertility to mystical vengeance, spirit anger or any other causes of disease or illness.

Similarly, couples in Ghana who suffer from infertility in most cases attribute causal explanations to their conditions which may either fall directly or indirectly to Murdock's theory of ill-health causation. There are others who may not accept any of these two positions due to their sociocultural background. It is also possible that some individuals may link their health challenges to combination of the two causal explanations. No matter the attribution of the causes of infertility, individuals who suffer the condition are

stigmatised. Theory of stigma highlights how individuals who suffer infertility are stigmatised differently.

Theory of Stigma

Goffman explains stigma as attributes that are deeply discrediting to an individual (Goffman 1963: 3). He claims that a stigma “constitutes a special discrepancy between virtual and actual social identity” (Goffman 1963: 3). For Goffman, the process of stigmatization occurs in situations of mixed social contact, which force the stigmatized individual to confront the causes and effects of stigma (Goffman 1963: 12-13). In fact, one can be stigmatized by many different means. Specifically, Goffman identified three preliminary types of stigmatisation: abominations of the body, blemishes of individual character, and tribal stigma (Goffman 1963:4-5). Abominations of the body are physical deformities that are visible to others (Goffman 1963: 4). Blemishes of individual character are all the characteristics of an individual’s life that discredit them. Examples of these characteristics include alcoholism, homosexuality, or radical political behaviour (Goffman 1963: 4). The third type of stigmatisation identified by Goffman was tribal stigma. This implies stigma as a result of an individual’s affiliation to a particular heritage. This type of stigma can be transferred from a generation to another (Goffman 1963: 4). The three types of stigma may overlap and reinforce each other

Other Psychologists and Sociologists have built on Goffman’s classifications of stigma to include the concepts of felt and enacted stigma (Jacoby, 1994; Scambler, 2004). Felt stigma is internalised perception about an individual’s self as being devalued or the feeling that ‘an individual is not as good as’. Individuals with this kind of stigma perceive themselves as being

treated differently or labelled by others, however, the attributes of the stigmatisation may not be physically known (Scambler, 2004).

Enacted stigma on the other hand describes the perception of other people towards an individual who is perceived differently. It is a situational response of others to a visible stigmatising attribute of another (Jacoby, 1994; Scambler, 2004). One of the criticisms levelled against Goffman's theory of stigma came from studies from mental illness. Studies on mental illness refuted the view that stigma could lead to severity and chronicity of mental illness. Instead it was argued that stigma could lead to labelling which is a resultant from negative social beliefs about behaviour which leads to discrimination and devaluation and other related social consequences (Link et al, 1997)

Conceptual Framework

The model of help seeking for infertility was adopted as the conceptual framework for the study (White, McQuillan, Griel & Johnson, 2006). The model which draws inferences from the Behavioural Model (Andersen, 1968); Network-Episode Model (Pescosolido, 1991) and the Help seeking theory (Mechanic, 1978) posits that once infertility was perceived as a challenge, the individual who is considered to have the challenge may think of a solution including seeking medical treatment. White et al (2006) argued that the perception to seek medical treatment is directly influenced by a number of key factors. In the model, symptom salience, life course variables, individual and social cues, and predisposing and enabling factors were assumed to affect perception of infertility medical help seeking either directly or indirectly.

The model considered problem and severity of symptoms as a key factor that influences the pursuance of medical treatment. Symptoms recognition in infertility may be difficult as compared to other forms of sicknesses but it is assumed that women who have fertility challenges may experience emotional and psychological challenges which are mostly not physical. However, the impact may be felt as some women may break down and, in most cases, become depressed (White, McQuillan, Griel & Johnson, 2006). It is also believed that how a particular disease impacts on the quality of an individual's life, emotions or symptoms severity may influence the decision to seek treatment (Sheppard, Kumar, Buckley, Shaw & Raza, 2008).

Secondly, the influence of life course cues was highlighted by the model as one of the factors that may have effect on seeking treatment for infertility. For example, a young unmarried woman may not envisage fertility challenge even though she may be indulging in unprotected sexual intercourse. If there is no pregnancy, the tendency of seeking treatment may be low compared to a middle-aged married woman who may be having unprotected sex without getting conception (White, McQuillan, Griel & Johnson, 2006). Parity was also considered under life course cues. This explains that the number of children one has is likely to influence the decision to seek medical treatment for delay in pregnancy and childbirth. For example, women who experience primary infertility are likely to seek early help compared to others who have ever given birth or are having at least a child because an additional birth decreases the perception of infertility (White et al, 2006).

An individual's social network plays a key role in deciding for a social member who is experiencing symptoms to seek help (Vogel, et al. 2007).

Network ties promote various resources including emotional, informational, and instrumental support. Emotional support explains the provision of comfort, sympathy, and/or understanding, while informational support is about advice or knowledge useful for effective decision making in relation to infertility treatment. Instrumental support on the other hand, is the provision of financial, physical and other material goods, as well as supportive services that promote the utilisation of medical treatment for infertility condition. In the case of infertility, it is likely that the partner's desires may be paramount to influence the decision to seek help. Friends and family may also give advice to either cope with symptoms and/or encourage medical help seeking (Sheppard, et al. 2008). For example, it was found that women who had discussions with friends, husbands and relatives were more likely to seek help than those who did not (Bunting & Boivin, 2007).

Predisposing conditions, such as education, health locus of control, general health, and attitudes toward treatment are likely to influence the decision to seek treatment. An individual's level of education may have a direct influence on information search on the causes of infertility and where to seek treatment (Slauson-Blevins, 2011). Medical locus of control which signifies the likelihood for individuals to either perceive their health to be either controlled by their own influence (internal locus) or external forces such as medical practitioners is likely to impact on help seeking behaviour. Knowledge, awareness and acceptability of treatment for a given condition including infertility is key (Sheppard et al, 2008). Shaw, Brittain, Tansey & Williams (2008) identified that when people are aware of treatment availability, cost and the possible implications, they are likely to seek

treatment for their conditions. Acceptability of treatment which relates to individual's willingness to seek for health conditions is another factor that influences decision making. This is mainly influenced by cultural and social distance. In most instances, acceptability is low when patients perceive services to be ineffective or when social and cultural factors such as language or the age, sex, ethnicity or religion of the health provider is in conflict with individuals who seek services.

Enabling conditions, such as income, health insurance, and location influence the decision to seek healthcare either directly or indirectly. To a greater extent, income and wealth promote better health because richer people could afford resources that could prevent sickness and also seek treatment anytime, they are affected. Another key determinant of access to health care utilisation is health insurance. In most cases, conditions that are fully or partially covered by health insurance are likely to be reported at health facilities for care. In the case of Ghana, issues of infertility treatment are not covered by the National Health Insurance Scheme (NHIS). As a result, infertility treatment in Ghana is paid by individuals who are affected. The implication of out-of-pocket payment of medical bills is that, clients either delay or completely refuse treatment because they may not be able to pay.

The adoption of the model for the study is based on its comprehensiveness and integration of other reviewed theories and models (theoretical triangulation) such as the Behavioural Model (Andersen, 1968), Health Belief Model (Rosenstock, 1960), Choice-making model (Young, 1981); Network-Episode Model (Pescosolido, 1991); Help seeking theory (Mechanic, 1978); Stages of Illness and Medical Care (Suchman, 1965).

Again, the objectives of the study which are to explore the experiences infertile women who have successfully delivered and others who are undergoing assisted reproductive technologies treatment make the use of this framework feasible. This is because the key variables used in the framework are the very variables that influenced infertile women' decision to seek ART treatments.

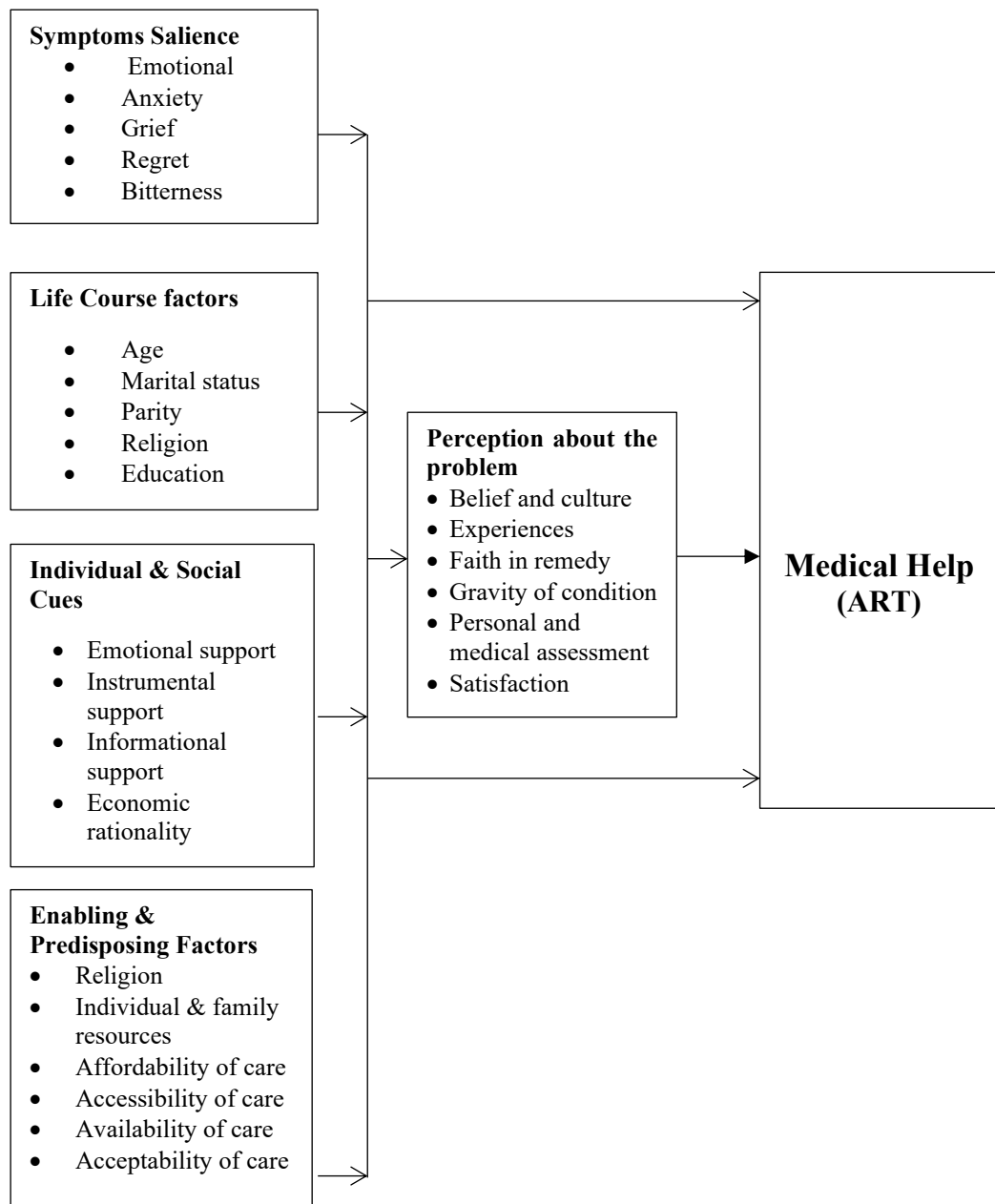


Figure 1: Conceptual framework for seeking health for infertility
Source: White, McQuillan, Griel & Johnson, (2006)

Summary

This chapter draws on several bodies of theories/models, including studies in the area of behavioural, choice making and social networks, medical sociology, help-seeking, sick role, God-centric healing model and theory for ill-health causation. Reviewed literature on these theories and models so far suggest that treatment seeking behaviour is not dependent on a single factor but multidimensional issues which include integration of both individual characteristics (age, sex, acceptability, economic resources and social status), social network and the healthcare system (e.g. resources, quantity, location of facilities, costs and the availability medical professionals).

The role of social network in the decision to utilise healthcare services was another factor that was emphasised by a number of models that were reviewed (see Pescosolido, 1992; Anderson et al, 1983; Mechanic, 1978 & Suchman, 1965). The social networks within which an individual finds him/herself may have both direct and indirect impacts on beliefs, behaviours, and decisions over a period of time (Borgatti et al, 2009).

From the review of theories so far, it is difficult to identify which determinants are most influential in the decision making to utilise healthcare. However, existing knowledge suggests that culture, economics, access, perceptions, health knowledge and literacy, belief in efficacy, age, gender, social roles and even the health system are among other factors that determine whether or not to seek health care which the conceptual framework puts into perspective. The next chapter discusses the methodological issues and the characteristics of the study respondents and how they were selected for study.

CHAPTER FIVE

RESEARCH METHODS

Introduction

The chapter is structured in distinct sections that portray a framework that describes the methodological plan of the study. Specifically, the chapter outlines and describes into detail the research philosophy, research design and source of data collection. The instruments used for data collection, sampling and sampling procedure, sample size and technique of data analyses, pretesting of instruments and challenges during the fieldwork are also presented in this chapter. The chapter ends with a summary to illustrate the relationships among the main sections presented as the methodology for this study.

Study Area

Twelve (12) fertility clinics and hospitals were identified in the country and all the facilities were privately owned and concentrated in Accra, Tema and Kumasi (Gerrits, 2016). Although an attempt was made to include all the 12 identified facilities in the study, only five (5) accepted to be part in the study. These hospitals and clinics involved in the study were Lister Hospital and Finney Fertility Centre located in Accra. Tema Women's Hospital found in Tema whiles Ruma Fertility Centre and Trustcare Specialist Hospital and Fertility Centre are found in Kumasi. These health facilities are well known fertility centres currently using the various assisted reproductive technologies as treatment for infertility and have also practiced more than four years in Ghana. Again, these were the only facilities that accepted to be part of the study. The rest of the fertility centres were contacted personally and through

letters obtained from the Department of Population and Health, University of Cape Coast about the intention to conduct fieldwork in their hospitals. These facilities refused to grant permission outrightly after the receipt of the letters. In some other facilities, the person to give final approval was never met. In a particular facility, it was indicated there were renovation works going on and due to undisclosed ethical issues, the hospital could not be a good research site for the study. Two facilities indicated that they would not allow their staff and clients to be involved in any form study. As a result, three facilities in Greater Accra and two in the Ashanti Regions that accepted for their facilities to be used as the research sites for the study were the main focus.

Lister Hospital and Fertility Centre

Lister Hospital and Fertility Centre started operations in July, 2004. The facility has accreditation from the Ministry of Health and also regulated by the Ghana Medical and Dental Council. It is also a member of the Private Clinics and Maternity Hospitals in Ghana. The assisted reproductive unit (ARU) is headed by a consultant Obstetrician Gynaecologist and fertility specialist with other team members made up of 3 embryologists, including one consultant embryologist, other doctors, nurses and scientists all of whom specialise in various forms of assisted reproduction techniques. The fertility centre at the hospital offers modern and advanced medical facilities to clients. Services provided include donor sperm, sperm freezing, embryo freezing, embryo donation (donor eggs), surgical sperm collection, intra-uterine insemination, in-vitro fertilisation (IVF), intra-cytoplasmic sperm injection (ICSI) and natural cycle IVF.

An average of nine (9) transfers is done every month. Clients who access services from the fertility centre come from all parts of the sub region notably Nigeria, Sierra Leone, Liberia, and the world at large. A good number of the Ghanaians who patronise the centre live outside the country mostly in the United Kingdom and the USA.

Finney Hospital and Fertility Centre

Finney Hospital and Fertility Centre is located at New Bortianor, near Accra. The centre was established in 2008 but was officially opened in September, 2009. The Assisted Conception Unit (ACU) was opened purposely to cater for the increasing demand for fertility services in the country. The facility has accreditation from the Ministry of Health and is also regulated by the Ghana Medical and Dental Council. It is also a member of the Private Clinics and Maternity Hospitals in Ghana. The facility has a team of consultant Obstetrician Gynaecologists, consultant embryologist, other resident doctors, nurses and scientists all of whom have specialised in the provision assisted reproduction technology services. The hospital has a modern sperm bank, offers specialised services such as sperm and egg freezing for oncology patients, embryo freezing, surgical sperm retrieval, sperm donation and surrogacy, among others, to help couples who have difficulty in having babies.

Services provided by the ARU include assisted hatching, blastocyst embryo transfer, donor insemination, egg donation, frozen embryo transfer, gamete intra-fallopian transfer (GIFT), in-vitro fertilisation (IVF), IVF with egg donation, Intra cytoplasmic sperm injection (ICSI), intrauterine

insemination (IUI) stimulated and unstimulated, surrogacy and zygote intrafallopian transfer (ZIFT)

Tema Women's Hospital

Tema Women's Hospital was established in April 1996 as the second fertility centre to be opened in the country. The hospital provides services in obstetrics and gynaecology as well as general clinic for both in-patients and out-patients. In 1999, the fertility unit was established. The facility is accredited by the Ministry of Health and is also regulated by the Ghana Medical and Dental Council. It is also a member of the Private Clinics and Maternity Hospitals in Ghana. The facility has a team of consultant obstetrician gynaecologists, consultant embryologist, other doctors, nurses and other scientists who are specialised in the provision assisted reproduction technology services. The hospital has a modern sperm bank and offers specialised services such as sperm and egg freezing for oncology patients, embryo freezing, surgical sperm retrieval, sperm donation and surrogacy, among others, to help couples who have difficulty in having babies. It also has theatre, wards, laboratory and delivery rooms.

ART services offered include ovulation induction, intra uterine insemination (IUI), in vitro fertilisation (IVF), intra cytoplasmic sperm injection (ICSI), gamete intra fallopain transfer (GIFT), zygote intra fallopian transfer (ZIFT), PESA, TESE, assisted hatching, cryopreservation egg/embryo donation. The facility recorded its first ART pregnancy in February 2000 and delivery in October 2000. First twin delivery was recorded in 2002.

Ruma Fertility and Specialist Hospital

Ruma Fertility and Specialist Hospital is located in Kumasi. Ruma Fertility and Specialist Hospital focuses on the provision of infertility treatment services as well as other specialist services such as antenatal care and delivery, treatment of gynaecological conditions, advanced urogynaecological and urological services. Assisted conception treatment started in 2012. The facility has accreditation from the Ministry of Health and is also regulated by the Ghana Medical and Dental Council. It is also a member of the Private Clinics and Maternity Hospitals in Ghana. The facility has a team of consultant Obstetrician Gynaecologists, consultant embryologists, other doctors, nurses and scientists all of whom specialise in the provision assisted reproduction technology services.

The hospital has a modern sperm bank, offers specialised services such as sperm and egg freezing for oncology patients, embryo freezing, surgical sperm retrieval, sperm donation and surrogacy, among others, to help couples who have difficulty in having babies. It also has theatre, wards laboratory and delivery rooms.

The assisted conception services include in vitro fertilisation with embryo transfer IVF-ET, intra-cytoplasmic sperm injection (ICSI), intrauterine insemination IUI, egg donation, sperm donation, surrogacy, pre-implantation genetic diagnosis and screening (PGD &PGS), IUI, Surrogacy, Ante-natal and delivery services. Success rates have always been in the range of 50-60percent.

Trustcare Specialist Hospital and Fertility Centre

Trustcare Specialist and Fertility Centre is a 30-bed medical facility located in Kumasi. The facility was established in November 2012. The facility offers full range of general and specialist services in four major clinical disciplines. These include internal medicines, general paediatric surgery, paediatric/child health and obstetrics/gynaecology. Trustcare Specialist and Fertility Centre has accreditation from the Ministry of Health and is also regulated by the Ghana Medical and Dental Council. It is also a member of the Private Clinics and Maternity Hospitals in Ghana.

Assisted conception services include in vitro fertilisation with embryo transfer IVF-ET, intra-cytoplasmic sperm injection (ICSI), intrauterine insemination IUI, egg donation, sperm donation, surrogacy, pre-implantation genetic diagnosis and screening (PGD &PGS), IUI, Surrogacy, Ante-natal and delivery services. It has a team of consultant gynaecologist and fertility specialist, three visiting consultant gynaecologists and fertility specialist, three fertility nurses and embryologists. Pregnancy rate for the facility ranges from 50-70 percent.

Research Philosophy/Paradigm

Research philosophy or paradigm expresses the belief about the means through which data about a phenomenon should be gathered, analysed and used. Creswell (2003) noted four major paradigms in social inquiry: positivism, post-positivism, critical theory and constructivism. Neuman (2003) also acknowledged three paradigms: positivism, interpretative social science and critical social science but cited that positivist and interpretive paradigms

are typically employed in the study of social science. The distinction between these two sets of philosophy stems from how each perceives reality.

For instance, the positivists assume that there is an objective reality and this can be ascertained when the right methods and research designs are used. To the Positivists, reality is stable and can be seen and described from an objective viewpoint. Positivism therefore focuses on facts obtained through direct observation and experiences which have been empirically ascertained through the use of theories, surveys, statistical analysis and other scientific methods (Eriksson & Kovalainen, 2008).

The interpretive school of thought on the other hand, believes that reality is not standard among individuals and social groups which can be explained, described, or translated. Knowledge and reality are constructed through experience which may result in divergent interpretation and are only exhibited through communication, interaction, and practice (Tracy, 2013). According to Rubin & Babbie (2010), interpretive methods of research start from the position that knowledge of reality, including the domain of human action, is socially constructed by human actors based on experiences and values people attach to a phenomenon under study. Thus, there is no objective reality which can be discovered by researchers and replicated by others, in contrast to the assumptions of positivist science.

The interpretive philosophical approach has been utilised for the purpose of this study. The choice is influenced by the fact that the interpretive philosophy offers an ideal opportunity to explore multiple interpretations from individuals' experiences and perceptions about reality. The interpretive paradigm, also perceives reality as a human construct and naturalistic in terms

of understanding real-world situations in the way they seem without any manipulations and these principles underpinned the study (Woods & Trexler, 2001). Although the interpretative research paradigm has been perceived as being time consuming and subjective since biases may occur in the interpretation of lived experiences (Creswell, 2003), by the application of the interpretive philosophy, objectivity is likely to be achieved since reality is based on respondents' experiences and interpretations of reality. This was crucial during the data collection, analysis and in identifying the emergent findings in the study.

Research Approach

The study utilised qualitative research approach in an attempt to gain insight into the Acceptability and Experiences with Assisted Reproduction in Ghana. The choice was based on the premise that the study was designed to achieve depth and meaning based on the real-life information about persons' lives, lived experiences, behaviours, emotions, feelings and acceptability of the phenomenon under study. Qualitative research helped in the identification and interpretation of important characteristics of human experiences that are put up in the study.

Research Design

Exploratory design was adopted for the study. The research design for the study is based on the premise that there were limited studies in the area of infertility treatment through the use of ART in the country. As a result, an exploratory study utilising a phenomenological approach was used. Exploratory studies examine phenomena, attitudes, perceptions, and ideas of

specific group of individuals that have not been consistently examined (Creswell, 2013).

In this study, the opinions and experiences of infertile women, key religious figures and service providers regarding the utilisation of ART were explored using in-depth interviews. It is concerned with the lived experiences of the people who are directly involved in the phenomenon under study. In a phenomenological research, respondents are asked to describe their experiences as they perceive them. It is therefore applicable when there is the need for deeper understanding of experiences that are common to individuals or a group of individuals (Creswell, 2013).

Data Source

Data for the study was mainly obtained from the primary source. Primary data was obtained directly from respondents through the use of interviews which comprised open-ended questions.

Target Population

The target population considered a group of individuals who have experience in the area of study. These included self-cycled women and/or couple (a woman or couple who used her or their own reproductive resources for ART treatment) who had gone through treatment processes and were yet to be tested for pregnancy, women who had delivered through the use of ART, embryologists, representative of the National Chief Imam, General Secretary of the Church of Pentecost and a Traditionalist. Women who had gone through the procedure and had failed to achieve pregnancy were not involved in the study because it was difficult to locate them. The few (3) who were located declined to be part of the study because they thought they did not have a fair

deal with the medical teams they visited. One woman indicated that she does not want to remember the kind of pain and disappointment she went through when she could not achieve pregnancy after the entire procedure. The Catholic Church does not accept the use of ART while other churches including the orthodox and Charismatic are not explicit on the use of ART

The Church of Pentecost was purposively selected because it was the only church in the country that had a policy on the use of ART. It has also established a fertility hospital that treats infertile individuals according to the Church's belief and principles. Embryologists were purposively selected for the study because they dealt directly with clients. Key religious leaders were also targeted for the study because couples who are faced with fertility challenges might consult their religious leaders for guidance. Furthermore, religious views could shape the perception of health-related behaviours such as the use of ART.

Sample and Sampling Procedure

The sampling technique adopted for the study was purposive. The logic behind this decision was to gain an in-depth understanding of the perceptions and the experiences of assisted reproduction service from providers and respondents who are known to have gone through the ART processes and are yet to be tested for pregnancy. Considering the very personal nature of the topic and the specific population under study, purposive sampling was used to reach out to the participants. This was achieved by making personal contacts to the heads of health facilities, clients seeking treatment and offices of the religious leader and other opinion leaders. This was followed up with an introductory letter from the Department of

Population and Health of the University of Cape Coast which explained the purpose of the study, respondents to be involved in the study and also sought permission for the study to be carried out in the respective facilities and offices.

Sampling Size

Creswell (2013) asserted that between 5 and 25 interviews with research participants for a phenomenological study was enough for saturation. After a review of doctoral theses which utilised interview-based qualitative research in Britain and Ireland, Mason (2010) posits that 10-40 respondents may be enough to get to the saturation point.

Based on the various assumptions of sample size determination in qualitative studies, sample size for the study was 43. This was made up of 5 service providers (embryologists), one from each facility. Twenty-five (25) clients (couple or single mothers) who are undergoing ART treatment and 10 women who have given birth through ART were also selected for the study. In addition, a key religious figure each from the Church of Pentecost, Islamic and Traditional faith (3) was purposively selected for the study.

A check of the Out Patients Register at the facilities indicated that an average of about 5 clients is treated within every month. Based on this, clients who were present in the study facilities at the time of data collection were all targeted. It was also ascertained that at least two clients will always come back to the facilities after delivery for review or Child Welfare Clinic (CWC), as a result, two clients who had delivered through the use of ART were targeted in each of the five treatment clinics and hospitals Table 1 presents details of the sample size for the study.

Table 1: Names of hospitals and the number of respondents selected for the study

Name of Hospital	No. of Service providers	No. of women seeking ART treatment	No. of women who delivered through ART
Lister Fertility	1	5	2
Finney Fertility	1	5	2
Tema women's	1	5	2
Ruma Fertility	1	5	2
Trustcare Fertility	1	5	2
Total	5	25	10

Source: Fieldwork, (2017)

Tools for Data Collection

In-depth interview guide with open ended questions was employed to solicit thoughts and experiences from respondents. The open-ended nature of questions offered the opportunity for in-depth discussions of the topic at stake. It also allowed the use of cues to help the participants to further deal with a posed question.

In-depth interview guide for service providers was structured into twelve main themes. These themes included providers' profile; clinic set up/infrastructure, practice, information and counselling, egg retrieval and embryo transfer, donor services, surrogacy, cost, health risks, success rate and regulations regarding the use of ART in Ghana. All respondents were asked the same questions in the same sequence, but key responses were probed for detail and further information.

In-depth interview guides for women who were undergoing ART treatment contained sixteen open-ended main questions. Probes were made as follow ups based on the responses of the participants, the interview protocol, and research objectives especially when answers do not bring out critical

topics or areas of interest. The interview guide was categorised into themes of inquiry which included socio-demographic profile, treatment trajectory, decision, cost, information and counselling, informed consent, donor services, health risks, socio-cultural influences, perception and other.

The in-depth interview guide for women who had delivered through the use of ART was categorised into themes of inquiry which included socio-demographic profile, treatment trajectory, and decision to have another child through the use of ART. Respondents were also asked about their major form of assistance they received from the society.

Key religious figures' in-depth interview guide included themes such as the religions perception about children born through the use of ART and specific practices such as gamete donation, surrogacy, and cryopreservation, utilisation by individuals who are single, lesbian and gay partners. Same questions in the same sequence were answered by the key religious figures. However, peculiar issues regarding their religion's stance and the use of ART were further probed.

Training of Research Assistants

Five Research Assistants, (one from each of the selected health facilities) were recruited and trained for data collection. In each facility, the hospital's counsellor was identified, recruited and trained to assist in data collection processes. The key reason for the recruitment of these health staff as research assistants was based on their experiences and constant contacts with clients.

The recruited research assistants were trained to develop practical understanding of the research problem and the rationale of the study, along

with an understanding of the timeframe of scheduled activities. Again, the team was trained on informed consent procedures and skills in conducting in-depth interviews, using interview schedules and conformity to ethical issues involved in data collection. Further, the research team was trained to strengthen their interviewing skills while interacting with respondents from different religious and socio-economic backgrounds as well as dealing with or referring clients to the appropriate person for counselling in case of any emotional breakdown that may arise in the course of the interview. The training also provided guidelines and strengthened the skills of research assistants for the documentation of interactions and maintaining daily account of events in the field. Finally, the training hinged on how to audio-tape interviews and the importance of revisiting and completing interviews whenever there was a break to address gaps during the transcription processes.

Pre-testing of Interview Guides

The interview guides for service providers and clients were pre-tested at DEL International Fertility Hospital in Accra while that of key informants was done in Takoradi in the Western Region. Through the pre-testing, some portions of the instruments were refined. For example, during the pre-testing, issues about the health risks associated with ART came under discussion. Service providers indicated that health risks may connote fear to clients. It was therefore suggested that side effects as a result of going through ART would be appropriate.

Ethical Considerations

First, ethical approval was obtained from the University of Cape Coast Institutional Review Board with approval number UCC/IRB/A/2016/54.

Secondly, approval was also sought from the Ghana Health Service Ethics Review Committee (approval number GHS-ERC:02/10/2016). See appendices K and L for copies of ethical approval letters. These permitted the research work to be carried out in the specified health facilities, institutions and bodies involved in the study.

Despite obtaining permission for the fieldwork from the above bodies, other ethical principles were followed in order to protect research participants. One of these ethical principles was to obtain informed consent from participants. This particular principle was adhered to by explaining to participants about the nature and purpose of study, type of questions to be asked, the sensitivity of questions and the consequences thereof before they took part in the study. Participants were also informed about the audio tape recording of the interviews with them. Upon agreement, respondents and the Principal Investigator or the assistant signed informed consent form and copies of the forms were given to the respondents for keep. This principle made participation in the study voluntary without any form of compulsion

Participants were assured that information offered was solely going to be used for research purposes and not for any other purpose. Participants' right to privacy and confidentiality was achieved by ensuring that recorded materials (recordings of interviews and transcripts) and personal conversations were protected with access only to the principal investigator.

Again, all forms of information that could explicitly identify the respondents, such as names, telephone numbers, house numbers, personal addresses and other clues were eschewed in the presentation and analysis of

the data. Instead, pseudonyms were used in the presentation of the research findings.

Participants were assured that there were no anticipated risks involved in the study. Nevertheless, there may be discomfort giving the nature of questions that are bordered on personal experiences. As a result, arrangements were made with counsellors from the various health facilities to counsel respondents who may be affected.

Participants in this study were informed that their participation may not benefit them directly. Findings from the study may influence policy perspectives on ART in the country. Findings may also influence the State, MoH, GHS and other institutions to quicken recommendations and approaches to the use of ART which may have overall effect on making the process safe and efficient for the at-risk population who intend to utilise ART.

Participation in this study was voluntary. Participants had the right to withdraw from the study at any point in time and this decision did not affect clients' treatment at any point in time. Participants were informed that if they wish to withdraw, they must inform the interviewer and their request would be granted. Nonetheless, participants were encouraged to participate in the study.

Feedback about the study will be provided through dissemination in public presentations including but not limited to audio, slide-tape presentations, plays, or exhibits. Information gathered may be used for publications including but not limited to articles, books, or newsletters. Key findings will be shared with Ghana Health Service and the Ministry of Health

Fieldwork

Consultative meetings with managers of the various fertility treatment hospitals were held about the feasibility of including their staff and clients as participants of the study began in November, 2016. Key religious figures were also contacted within the same period. This was followed up with copies of proposal of the study and introductory letters from the University of Cape Coast. Facility heads consented to the proposal and accordingly supported the carrying out of the study in their respective facilities by writing to the principal investigator. See copies of letters at appendix J. Other facility heads also called and consented to be part of the study. Before interviews started, introductory letters, approval letters from the facility managers, ethical clearance letters from the Institutional Review Board of the University of Cape Coast and Ethical Review Committee of Ghana Health Service were shown to staff and clients to confirm the authenticity of the study.

Data Collection

Data collection for the study commenced in February, 2017 and ended in April, 2017. In each of the treatment facilities, the principal investigator conducted face-to-face in-depth interviews with clients who were going through ART procedures and women who had given birth through ART and had come for review or Child Welfare Clinic (CWC). In all the meeting sessions with clients, the principal investigator administered the questionnaire either in English language or in Twi (a local dialect among the Akans). Service providers and key religious figures interviews were also conducted by the Principal Investigator. Throughout the data collection period, the research

assistants recorded the proceedings and also took field notes to back up the data being collected.

Data Collection Procedure

The face-to face interview technique was used to obtain information from participants. English language was used as the medium for data collection because majority of the respondents understood and spoke English. However, the interview guide was also translated into Twi by the principal investigator where necessary to allow some respondents who could speak Twi to participate and express themselves freely. Before the start of each interview session, information about the study, the use of the data being collected, and an estimated time frame of the interview were made known to participants. Confidentiality of respondents and their information were maintained throughout the study by conducting the interviews at the convenience of respondents and also keeping data out of the public. Prior consent was also sought from participants for audio documentation of the interview. Upon agreement, participants and the Principal Investigator and/or the assistants signed the inform consent form and a copy of the form was given to participants for keep. In a situation where the participants were not able to read and write, an interpreter was employed to do that on their behalf.

Anonymity was ensured by maintaining codes during data entry instead of names, contact numbers and other cues that could lead to the identification of participants. The essence of these measures was to ensure that respondents participated in the study willingly without any form of coercion and also ensure that information obtained was kept safe.

Data Management

Data obtained from the research participants including audio recordings, transcription of interviews were stored electronically on a hard drive with password known only to the Principal Investigator. The hard drive with data was kept under lock by the principal investigator. Data will be destroyed after three years of completion of the study.

Experience from Field

Largely, targeted participants accepted to be part of the interviews. There were some challenges and opportunities that were experienced. First, some targeted health facilities refused the application to be part of the study. They cited lack of some basic equipment; close down of the IVF unit for renovations and the fact that the facilities do not accept proposals for their facilities and clients to be participants of research as some of the reasons for their refusal. However, some other facilities were convinced and later accepted for their facilities to be used for the study when they were shown ethical clearance from the University of Cape Coast Institutional Review Board and Ghana Health Service Ethical Review Committee.

Secondly, some of the participants especially clients who came to the hospitals felt uncomfortable and doubtful about the purpose of the study. Some of the participants indicated that their conditions were not known to their families and doubted whether information about them could be kept secret. There was a situation where a participant was going to refuse to be tape-recorded for the fear that her voice could be identified by the husband. This challenge was overcome when informed consent that bonded the study was

vividly explained to respondents and copies signed by both the respondent and the principal investigator and a copy given to the respondent for keep.

Another issue that emerged was postponements and cancellations of interview appointments. There was an instance where some respondents who were booked for interviews refused because their schedules were cancelled or were feeling uncomfortable just after going through the treatment procedure. Appointments had to be rescheduled with other clients on different dates. Finally, the interview was conducted but it affected planned activities for the study.

Data Quality Concerns

Issues of data quality concerns have been expressed especially in the field of qualitative research (Smith & Noble, 2014). In most instances, four concepts have been broadly discussed to work together to achieve trustworthiness in qualitative studies. These thoughts have been indicated as: credibility (precise account of participants' views and thoughts), transferability (suitability of findings to theory and future studies), auditability (clearly defined research procedure to allow critique by others) and conformability (ability of other researchers to confirm findings) (Lietz & Zayas, 2010). Practically, prolonged and varied field experience, time sampling, reflexivity (field journal), triangulation, member checking, peer examination, interview technique, establishing authority of researcher and structural coherence have been outlined as strategies to ensure quality qualitative data (Anney, 2014). Among these, peer debriefing or examination, member checks and stepwise replication were employed to improve the credibility of the study.

By utilising the peer debriefing approach, findings from the field were presented to colleagues, supervisors and the academic staff of the Faculty of Social Sciences, University of Cape Coast for their feedback on the study processes. Pertinent issues presented during the meetings included background information, data collection methods and process, data management, transcripts, data analysis procedure and research findings. Feedbacks from these meetings built on the quality of findings.

With reference to member checks, five participants, (a client from each of the five health facilities and one embryologist) were arbitrarily selected to read through the information they provided after transcription and comment on the depth and appropriateness of the information they provided during the interview sessions with them. In all cases, respondents made just minor modifications to the transcribed responses which were incorporated into the study.

Finally, the stepwise replication was another strategy that was used to ensure data credibility. This approach employed the services of two other colleagues who were conversant with qualitative data analysis to analyse the data separately. Results from these analyses were compared to identify similarities and differences. In this event, insignificant differences emerged due to poor sound. This challenge was however resolved after playing the recorded data repeatedly and comparing with the field notes.

Data Processing

To accomplish this task, interviews conducted in the local dialects were accurately translated and transcribed into English language. Gaps identified during this process were filled by making references to field

notebooks and interview tapes whenever there was the need. Phrases and words which did not have English equivalents were quoted and explained as they were. NVIVO version 11 was employed to run the categorisation of themes and sub-themes that emerged from respondents' interview for analysis.

Data Analysis

Data was analysed based on the framework for conducting thematic analysis as outlined by Braun & Clarke (2006). First, the transcripts were read several times and compared to field notes and the recorded interactions with respondents. The essence of this exercise was to ensure accuracy, comprehensive understanding and familiarisation of the content of the transcribed data. Initial codes were then generated from those sections of the data which were relevant to the objectives of the study with the help of the NVIVO software. Based on the collated codes, data located under them were put together into potential themes and reviewed to ensure that they were coherent and reflected the content of the data set. Data was finally analysed and interpreted using examples from previous studies that are related to the formulated themes, objectives and reviewed literature supported with empirical evidence.

Summary

This chapter has outlined detailed theoretical and practical methodological principles that underpinned the diverse processes in carrying out the study. The study's philosophical ideology emanated from the interpretivist/phenomenology. To achieve the main aim and objectives of the study, a qualitative approach was adopted as it has the tendency to provide a richer understanding of the phenomenon being investigated. Using semi-

structured interviews and direct observation methods, experiences of service providers and individuals who employ ART to meet their desire of parenthood have been explored. Again, the religious perceptions about the use of ART practices have been ascertained. The chapter also defined the specific approaches employed to ensure data quality issues which included peer debriefing, member checks and stepwise replication. Finally, the chapter ends with ethical considerations that underpinned the study.

The next chapter presents the ART service provision and other related issues in Ghana. An attempt was made to describe the typical procedure a client who uses self-cycled procedure goes through. Cost and health implications of using ART to achieve maternity will also be discussed.

CHAPTER SIX

ASSISTED REPRODUCTIVE TECHNOLOGY SERVICE PROVISION AND RELATED ISSUES

Introduction

This chapter describes the types of ART procedures provided by the fertility hospitals in Ghana. The cost of providing the various services and other related issues such as success rate and the perceived health risks associated with the use of the various services have been discussed. The section ends with discussions on providers' perception about the regulation of ART services in the country.

Table 2 describes the themes and categories obtained from service providers on ART service provision and related issues. These themes and categories were obtained by assigning special numbers to each of the transcribed participant narratives. Example, SP1 represented Service Provider 1 whiles R1 represented Respondent 1 etc. The essence of this was to ensure that distinct data were obtained when themes were described and reinforced by quotes in the study. The next stage was to read the transcripts repeatedly in order to derive patterns and how they could be put together for coding purposes. This involved the identification and naming of the various classes of expression, critically examining and comparing them to identify how they were reflected in the themes of inquiry. Similar phenomena were given the same identity names. These names were rationally assigned to each theme to reflect the central idea the data represented. For example, the various services provided were named under the theme 'Types of services provided'. After this process, similar and related themes from the respondents were identified and

put together into clusters. Examples of themes obtained from Assisted reproductive services provided in Ghana and other related issues included the types of ART services provided in the country., nationality of users of the services, sources of information about the services, the kind of staff involved in the provision of ART services, sources of gametes and surrogates, cost for the various services, health implications for mothers, health implication for children born through ART, success rate of the various ART services and regulations on the provision of ART services in Ghana (See Table 2 for details). These procedures were repeated to obtain themes, sub themes and categories for the other objectives for analysis.

Table 2: Themes and categories obtained from the interview with ART service providers

Themes	Categories
Types of ART services provided	<ul style="list-style-type: none"> • IVF • ICSI • IUI • GIFT • TESE • MESE • Egg freezing • Egg sharing • Donor services • Surrogacy
Nationality of user of ART in Ghana	<ul style="list-style-type: none"> • Ghanaians • Foreigners from all over the world
Source of information about facility	<ul style="list-style-type: none"> • Internet • Satisfied clients • Referrals from other facilities • Friends and other relatives • Special programmes
ART Staff	<ul style="list-style-type: none"> • Gynaecologist • Embryologist • Fertility nurses/midwife

Table 2 continued

Sources of gametes and surrogates	<ul style="list-style-type: none"> • Counsellor • Laboratory technician • Pharmacist
Cost of ART	<ul style="list-style-type: none"> • Commercial source • Fertility agencies • Fertility hospital • Family and friends
Health implication for women	<ul style="list-style-type: none"> • IVF for women less than 40 years costs GHC 15,000 • IVF for women more than 40 years costs GHC 18,000 • Self-Cycle service costs GHC 16,000 • Recipient cycle costs GHC 20,000 • There is no fixed amount for any of the services
Health implication for children	<ul style="list-style-type: none"> • Ovarian Hyperstimulation Syndrome • Swollen belly • Nausea/vomiting • Dizziness • Weight gain • Weight loss • Drowsiness • Multiple pregnancy
Success rate	<ul style="list-style-type: none"> • No health implication for Children
Regulation of ART services	<ul style="list-style-type: none"> • 45-65percent for pregnancy rate • 45-75percent for take home babies • 45-62percent for overall success rate
Regulation of ART services	<ul style="list-style-type: none"> • Services are not regulated in Ghana • Bonded by regulations in countries where trainings were received

Source: Fieldwork, 2017

Types of Assisted Reproductive Technology Procedures Provided

Over the years, the nature and the kind of services provided in the field of treatment of infertility have changed tremendously. However, public information about the various types of procedures offered by fertility hospitals in Ghana is limited. It is therefore necessary to explore the types of ART procedures available as this will have an influential effect on the decision of users. Service providers reported that a wide range of ART procedures were offered and these procedures were common to all the facilities. For example, a service provider had this to say on the kind of services the facility provides:

‘ART methods used in this facility are: IVF, where eggs are taken and fertilised outside, we also do intracytoplasmic sperm injection (ICSI) used for those with very poor low sperm count, GIFT, TESE are also used’.

(Service Provider 2)

Another service provider explained:

‘...in this facility, we do Artificial insemination or Intra Uterine Insemination, In-Vitro fertilisation, TESE for men with ozoospermia, ICSI, we do semen analysis, cryopreservation ie freezing of sperm, egg and embryos all in our centre’.

(Service Provider 5)

Table 3: Assisted Reproductive Technology Services

Provider	ART services available							
	AIH/ DI	IVF	GIFT/ ZIFT	Gamete donation	Egg sharing	Embryo freezing	TESA	ICSI
Provider 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Provider 2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Provider 3	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Provider 4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Provider 5	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Source: Fieldwork (2017)

Country of Origin of Clients for Assisted Reproductive Technology Services in Ghana

Infertility is a global challenge that confronts many people all over the world. However, policies, laws, socio-cultural factors and costs of treatment in some countries prevent their citizens from accessing treatments in their home countries. To meet their parenthood desires, these categories of people have to travel to other countries where restrictions are relatively low or are non-existent. Narrations from service providers indicated that apart from clients who came from in country (Ghana) to access ART services, relatively higher number of clients came from all over the world. A service provider who receives client mainly from African countries, Europe and the USA said:

‘We receive clients from Ghana and non-Ghanaians from all over the world. Some come from Ivory Coast, Burkina Faso, Senegal, Mali, Nigeria (Africa) and even European nationals. Others are from USA and Lebanon...’

(Service Provider 1)

Another service provider reported that:

'...We have also had European women who for the love of the black complexion come to use donor sperm in order to have black children. Others access our services because donor services and surrogacy cost cheaper in Ghana...

(Service Provider 5)

Assisted Reproduction Technology Provision

The provision of treatment to infertile individuals through the use of ART requires the services of many players. Each member of the team plays an array of functions to complement each other in order to complete the treatment procedure. Typically, the medical team comprise the gynaecologist, embryologist, fertility nurse, pharmacist and a counsellor. Service Provider (4) disclosed that:

'The fertility team is made up of the gynaecologist; he initially examines couples to find out why they are not getting pregnant. The second team member is the fertility nurses. They work directly and hand in hand with the gynaecologist. The Embryologists, are key in the team. They do the main back room jobs. Lab technicians run all the lab tests. We also have a resident counsellor who works on the psyche of clients...'

(Service Provider 5)

Other service providers indicated that there were other equally important players such as gamete donors, surrogates in the provision of ART services especially when couples for medical reasons cannot give birth naturally. A service provider explained that:

‘...There are other players who are outside the medical team who come to play when a client’s egg/womb or sperm cannot be used for the process. This includes surrogates, surrogacy agents. The surrogate agents help in the recruitment of the surrogates and also take care of them until they deliver and hand over the babies to their intended mothers’.

(Service Provider 1)

Information and Counselling

The need for counselling and information to clients on the use of ART have been demonstrated by a number of studies (Karatas et al., 2011; Wischmann et al., 2012; Gameiro et al., 2014). In particular, it has been argued that clients experience emotional grief during treatment (Knoll et al., 2009; Karatas et al., 2011). It has also been opined that in all cases, about 23 percent of clients abandon infertility treatment due to the perceived cumbersome nature of the processes involved in the treatment such as daily injections, semen analyses, multiple ultrasounds, and invasive procedures involved in the treatment (Brandes et al., 2009) whilst one-third of clients complete treatment without achieving their parenthood aspirations therefore making it extremely difficult for such clients to comprehend their unmet desires (Gameiro et al., 2014; Wischmann et al., 2012; Johansson et al., 2010). In a situation where pregnancy was achieved, anxiety about carrying the pregnancy to term and the health of the foetus becomes a concern to clients (Hammarberg et al., 2008). As a result, service providers narrated the typical work of a fertility counsellor:

'Counselling is very key in the provision of ART. The counsellor takes clients through the processes and medications. All lab results are given to the counsellor to disclose to patients. When the process is successful or not, it is the same counsellor who will disclose it to the client'.

(Service Provider 1)

Another service provider who is not a professional counsellor but does counselling had this to say about why he does the counselling:

'Ideally, counselling should have been mandatory for every client who intends to start the process but we don't have a professional counsellor here but because I did some courses in guidance and counselling at the University, I try to do it myself ...'

(Service Provider 2)

Donor Services Arrangements

Donation services can be explained as a situation where an individual offers him or herself to give out sperms or oocytes (egg) to prospective individuals or couples whose situation calls for the use of sperms or eggs to undergo any of the ART procedures. All service providers mentioned that they either arrange donor services for clients for a fee or allow clients to arrange donor services for themselves. There are other clients who come in voluntarily to offer gamete for a fee. A service provider had this to say about donors who come to the facility to offer themselves for donor programs for a fee:

'There are a lot of young males and females who come to the facility themselves to donate gametes to us at a fee. Sometimes they come at the time you don't even need them...'

(Service Provider 3)

Other service providers indicated that they usually go into the tertiary institutions all over the country to look for gamete donors because they are perceived to have higher intellect, which is preferred by majority of the clients. A service provider had this to say about the donors who came from tertiary institutions:

'We mostly go into the tertiary institutions to talk to students about gamete donation and some come to donate at a fee. We also get a lot of people who offer themselves voluntarily'.

(Service Provider 1)

Nature of Gamete Donor Programme

Gamete can be obtained from fertility clinics, either from known or unknown donor. However, the identity of an unknown donor may be anonymous or be known to the child at 18 years (Stuart-Smith, Smith & Scott, 2012). However, in Ghana, ART facilities ran anonymous programme in gamete donation. By this means, donors do not meet their recipients physically. A service provider narrated how his facility runs anonymous donor programme:

'The facility runs complete anonymous programme and so recipients do not get the chance to meet their donors physically. We have a catalogue of donors, which specifies their height, weight, blood type, complexion, educational level etc but we do not show their pictures. Clients who come in are made to select the specifications of their donors'.

(Service Provider 4)

Other facilities only allow beneficiaries see the pictures of their donors. For instance, a service provider who allows clients to select their donors after they had seen their pictures had this to say:

'Beneficiaries are offered the opportunity to see and select the pictures of their donors but they do not meet personally...'

(Service Provider 1)

In some instances, recipients arrange for their own preferred donors. Another service provider explained how recipients are made to select their own donors

'Recipients are allowed to look out for their own gamete donors and we run the necessary test to ensure that they are compatible for the particular service needed...'

(Service Provider 3)

Financial Compensation for Gamete Donor

Gametes could either be donated freely or sold to the recipient depending on the kind of arrangement that exists between the donor and the recipient. In Ghana, most people donate gametes for monetary purposes instead on humanitarian grounds. Services providers outlined how much is charged for gamete donation:

'Recipient of the egg will pay GHC 3600.00 (\$800) to the facility and the donor will receive GHC 2,250.00 (\$ 500) out of the charge. In the case of the males, the facility will charge the recipient GHC 562.00 (\$ 125) and the donor will receive GHC 338.00 (\$75) out of the total charge. The rest of the money goes to the facility.'

(Service Provider 5)

Another service provider indicated that donors are not paid, instead they are compensated. The service provider had this to say:

'Most of the time such people who donate sperms are not paid they are rather compensated with an amount of GHC 300.00 or 400 (\$ 70 or \$90)'.

(Service Provider 2)

Surrogacy Services and Cost

Surrogacy is an arrangement between two women of which one agrees to conceive and carry a baby to term on behalf of the other, who for medical reasons or unwilling to become pregnant and give birth herself. Surrogacy can be free or paid for depending on the kind of arrangement that exists between the surrogate and the recipient. In a situation where the surrogate offers services for free, it is termed altruistic surrogacy while a commercial surrogate offers services for monetary purpose or other forms of payments agreed upon by the individuals involved in the process (Agnafors, 2014). Results from the study indicated that all facilities offered surrogacy services. However, respondents were not willing to disclose the amount of money involved in hiring the services of surrogates. A service provider only guessed about the cost of hiring a surrogate in his facility:

'Surrogacy services (from the start of the procedure to the time of delivery) cost about \$ 7500 (GHC 33,750.00) and this whole money goes to the surrogate mothers.'

(Service Provider 5)

Other facilities provide services for clients who need surrogates but the facilities have no hand in the arrangement for surrogates. Arrangements are wholly done by agencies without the involvement of the hospitals. Based on

this reason, respondents could not tell how arrangements were done with surrogates and had no idea on the monetary aspect of the whole process. A service provider had this to say:

'Surrogacy services are carried out by an agency. We normally refer clients who may need surrogate assistance to this agency. I do not know much about their agreements and the cost...'

(Service Provider 3)

Another service provider who directs his client to the surrogacy agencies pointed out that:

'... We direct clients who need the services of a surrogate to the agencies we work with but I can't tell you the names of those agencies. I also don't know the kind of arrangements they have with surrogates and the prospective parents. In fact, I don't know how much is charged for being a surrogate...'

(Service Provider 4)

Total Cost of ART

Cost for the provision of ART services is a significant factor that influences the decision of access and use. Direct cost which talks about all the expenses incurred during treatment together with the cost of drugs differed from one hospital to the other. Again, cost also depended on the kind of treatment a client opts for, the age and the involvement of other players such as gamete donors and surrogates in the reproduction processes. A service provider who stated the cost of infertility treatment was not fixed had this to say:

'Cost for infertility treatment is not fixed. It depends on your age, and mostly the type of procedure you want to do. Artificial Insemination is about GHC 3,015.00 (\$670). IVF for less than 40 years is about GHC 15,000.00 (\$3,334) with IVF stimulating drugs. Those beyond 40 years mostly employ donors and they pay about GHC 18, 000 (\$4000) ...'

(Service Provider 5)

Another service provider who explained how much is paid for the various services in his facility said:

'Self-cycled patients will pay about GHC 16, 000. 00 (\$3,556) ... For those who are given donor eggs (recipients), they pay an average of GHC 20,000.00 (\$4,445). But if you are coming for the donor egg service, then you will pay GHC 3,500.00 (\$778) in addition to either \$4000 or \$4500.'

(Service Provider 1)

A service provider whose facility charged separately drugs and service had this to offer:

'...The facility takes \$3500 (GHC 15,750.00) excluding drugs. But the total cost including services and everything may be about \$7000 (GHC 31,500). However, cost may not be the same for every client. For example, women who fall within the ages 24-26 years will need about GHC 3,280 (\$729) worth of drugs for the entire process, 27-29 years will require about GHC 4,300 (\$956). Somebody who is over 40 years will spend about GHC 7, 360 (\$ 1,636) on drugs together with the service cost of \$3500'.

(Service Provider 2)

Health Risk Associated with ART

Health risks associated with ART can be considered from the perspective of women and children who are born through the use of the technology. According to Lo Russo (2013), risks associated with ART usage can be classified into the side effects due to the use of drugs, complications due to pregnancy and multiple foetus problems associated with high failure rates. A service provider who explained that ovarian hyperstimulation syndrome has been identified as the side effect of hormonal drugs had this to say

'The use of the technology for procreation is very safe. The only health risk associated with ART services has got to do with the hormonal we give. Overdose may lead to ovarian hyperstimulation syndrome which is a reaction to the hormone stimulating drugs and when this is not controlled very well, the patient may die'

(Service Provider 4)

Contributing to the discussion on the health implications of the use of ART service providers noted that:

'Dizziness, weight gain, drossiness, nausea and sleepiness which are normal with ART and any other normal pregnancy may be recorded'.

(Service Provider 1)

Another service provider also identified that:

'...multiple pregnancies have been identified as challenges associated with ART...'

(Service Provider 3)

The study also sought to find out the health implication of ART on children born through the procedure. On the whole, all service providers

indicated that children born through the use of ART procedure have no health defect. For instance, a service provider had this to say:

'Children born through the use of ART do not have any defects; they are very strong, normal and intelligent...'

(Service Provider 4)

Success Rate

Globally, there have been uncertainties in the determination of success rate in ART outcome. The parameters for defining success rates differ from one facility to the other. In this study, varied success rates were reported by the various service providers. For example, a service provider had this to say about success rates in his facility:

'Over the years our success rate has been 60-65 percent (for pregnancy). Take home baby rate is between 50-55 percent.'

(Service Provider 1)

Another service provider who gave a different dimension of how success rate is determined explained that:

'...the chemical success rate (14 days after transferring the embryo) is about 55- 60percent, the clinical, where the heart beat is seen is about 45-50 percent and the take home baby rate is about 45 percent.'

(Service Provider 2)

A service provider who further categorised the success rate by age and the overall success rate for the facility said:

'...in our facility, 37 years and younger who are using their own eggs record 64 percent success rate in IVF or Sperm Injection is about 64 percent, 38 years and more who use their own eggs have about 25

percent chance of getting pregnant. Success rate for women who use donor egg is about 78 percent. Take home baby rate is about 65-70 percent. Success rate for all clients irrespective of age, source of egg and other processes will be about 45percent for the facility’.

(Service Provider 4)

Regulation of ART in Ghana

With the current advances in the field of medicine and the increasing awareness of human right issues, it has become necessary that there is the establishment of ethical and legal framework that will guide both medical practitioners and patients. Ethical and legal considerations have become integral aspect of our everyday lives especially in the provision of medical care as this helps to address concerns that may arise from the use of medical technologies such as ART. Medical regulations are principally enacted as means of assuring quality care; preventing medical malpractice and negligence; improving performance and efficiency; and as a way of even achieving set objectives. With regards to how the medical activities in the form of provision of ART are regulated in Ghana, a services provider said:

‘As at now, ART activities in the country are not regulated. We are trying very hard to form an association called the Fertility Society of Ghana’.

(Service Provider 1)

A service provider who also said ART service provision is not regulated in Ghana had this to say on how the facility regulated its own activities.

'Presently, Ghana has no regulatory body to regulate the activities of fertility hospitals. This notwithstanding, we try to regulate our own activities'.

(Service Provider 4)

Another service provider who indicated that the facility belongs to an international organisation had this to say on how their activities were regulated:

'We are members of the European Society and other international organisations and so we are bonded by their rules and regulations.'

(Service Provider 5)

Discussion

Findings from the study indicate that apart from practices such as sex determination, sex selection, cloning and the use of post-mortem gametes, all other forms of ART techniques which promote the insertion of sperm into a woman's body for fertilisation and subsequent procreation are offered by the various hospitals in Ghana. The ART techniques used by the facilities include intracytoplasmic sperm injection (ICSI), which helps in the treatment of male-factor infertility, microsurgical epididymal sperm aspiration (MESA), and testicle, testicular sperm extraction (TESE) techniques which are used to retrieve sperm from the epididymis for fertilisation purposes (Burns & Covington, 2006). Other techniques that are employed by the fertility hospital are GIFT, IUI, semen analysis, gametes donation and preservation. The implication is that all ART procedures are offered by fertility hospitals in Ghana as they are done in the Western world and this has attracted other foreign nationals. This has resulted in exploitation and commodification of the

service (Pande, 2011; Deonandan, Green & Beinum, 2012). In Ghana for example, issues about abuses and exploitations have been reported (see Diasie, 2015).

The results further showed that clients who could not use their own reproductive resources required that of donors. However, donors may not be required to play any significant role in the up-bringing of children who may come out of the use of their reproductive resources probably because the said resources were either sold completely or donated freely to beneficiaries. It is therefore obvious that the use of donor gamete will result in interference in the traditional means of reproduction. For example, other players who are outside the marital circles who may donate their reproduction resources such as the sperm or egg must be involved in partner's decision to procreate indirectly. The implication is that a donor's religious or socio-cultural barrier could render a couple permanently childless or otherwise. Again, in countries where donor gamete and surrogacy are banned by law, procreation may either be delayed or illegal for couples who are faced with fertility challenges and need these services. In this situation, the only remedy could be the use of cross boarder reproduction means which is deemed as very expensive in nature (Bergmann 2011; Inhorn 2011; Markens 2012; Whittaker & Speier 2010).

The study findings also revealed that surrogacy was widespread in Ghana and most fertility hospitals run this service. However, surrogacy arrangements were mostly carried out by surrogate agencies who are affiliated to fertility hospitals. In a situation where fertility agencies were consulted for surrogacy arrangements, the fertility hospitals only carried out the medical screening of surrogates without getting involved in the contractual agreement.

Commercial surrogacy was found to be common in Ghana because of monetary compensations surrogates receive. However, hiring a surrogate in Ghana was far cheaper than in the Western countries

Evidence from the result show that cost of treatment is high and differs from one facility to the other. In Ghana, self-cycled patients could pay up to \$ 4000 whiles clients whose condition demanded donor services could pay up to \$7000 excluding drugs. There are no standard charges for ART treatments among the various health facilities in Ghana. This is probably due to the fact that there is no law in the country that regulates the activities of these hospitals and for that matter, their charges. This finding is contrary to policies in some European countries such as France and Spain where the state supports citizens who used ART services (Brigham, Cadier, & Chevreul, 2013). In Ghana where total fertility is already high (4.2 percent), and where there is a national policy on fertility and population control coupled with strong religious and cultural stance on fertility treatment, committing state resources into financing infertility treatment through the use of ART will need some careful national consultations.

The main risk found to be associated with ART treatment was reported as ovarian hyperstimulation syndrome which comes as a result of the drugs that are used to stimulate follicles. American Society of Reproductive Medicine (2012), found that women who use clomid during ART treatment may experience stomach upset, breast tenderness, blurred vision and dizziness as the side effect. Epidemiological studies have suggested that infants born of ART may experience minimal risk for rare epigenetic and other defects (Odom & Segars, 2010). Among the risks found in children born through the

use of ART included infections like Syphilis that could affect the babies, pre-term babies, low birth weight and other genetic problems (Centre for Disease Control & Prevention, 2013; Williams et al., 2013; Scherrer et al., 2012). However, these findings were not confirmed by the present study in Ghana.

Success rate was recorded and interpreted differently by the various hospitals and clinics in Ghana. To some facilities, pregnancy was a success, others considered the combination of the entire ART processes and determined success rate. Other facilities determined their success rate based on age categories while others were not specific with figures. Again, all facilities mentioned their success rate without mentioning the total number of clients who were admitted for specific procedures (denominator) and even the time frame within which those procedures were performed. Other studies have reported similar findings about the inconsistencies in calculating the success rate of ART processes due to factors such as age of women, type of diagnoses and ART technique used (Macaldowie, 2012; Tepper et al, 2012).

Findings from the results further revealed that all fertility hospitals and clinics in Ghana operated without any state regulations, even though service providers ascertained that they followed treatment protocols of countries where they had their trainings. One cannot be sure of the strict adherence of treatment protocols. Apart from this, there are significant differences in the cultural, religious, social and political beliefs between Ghana and the Western world which may or may not make some of these foreign protocols and regulations applicable and acceptable. The absence of these rules and regulations in the country presently is serious since it has the tendency to compromise on quality of services provided. It may also infringe on the basic

human right of users especially women and other players of the ART industry. It may also have debilitating effect on the formulation of policy and monitoring that will prevent misuse and malpractices. There is therefore the need for an extensive regulatory framework which could be developed in consultation with all the stakeholders in the ART industry including the MoH and GHS to ensure national guidelines for accreditation, standard treatment protocols, systematic and credible data and monitoring system of all ART clinics and hospitals in Ghana.

The next chapter presents the experiences of women seeking assisted reproductive technology services as a treatment to their infertility conditions. In this chapter, focus is on cost and the implications of going through ART treatment procedure.

CHAPTER SEVEN

EXPERIENCES OF WOMEN SEEKING SELF-CYCLED ASSISTED REPRODUCTIVE TECHNOLOGY PROCEDURE

Introduction

This chapter presents the experiences of clients who were undergoing ART procedures. It specifically draws experiences from clients who had gone through self-cycled ART procedure and were awaiting pregnancy tests. Socio-demographic characteristics such as age, education, religion, occupation, income, marital status, duration of marriage and number of years spent on alternative medications have been examined. Socioeconomic characteristics of clients have been presented in Table 4.

Socio-demographic Characteristics of Clients Undergoing ART

Treatment

Table 4, shows the summary of socio-demographic characteristics such as age, education, religion, occupation, income, marital status, duration of marriage and number of years spent on alternative medications.

Age of Clients

From Table 4, the ages of ART clients who were interviewed for the study cut across the reproductive ages. The youngest who patronised ART services was 26 years while the oldest was 49 years. Ten (10) clients fell within the age bracket of 35-39 years while 6 were identified to be in the ages of 40-44 years and 4 falling into the age bracket of 45-49 years. All the ART users were in their reproductive ages. However, more than half of clients were in their third decade of life without children.

Educational Level of Users

Education is considered as one of the key factors that is likely to have influence on users in terms of access to information about ART procedures and practices. From Table 4, half of ART users (N=13) had attained tertiary education followed by nearly a quarter (N= 6) that had attained secondary education. Five clients had completed basic education (Primary and Junior High/Middle Schools) while one client had no formal education. Critical analysis of the sample indicates that ART is accessed by all manner of clients with different educational levels. This could be explained that infertility affects every individual no matter the educational level. The higher number of clients with tertiary education could mean that they have access to information on infertility and treatment options and could also afford the treatment cost because they might be gainfully employed. The pursuit of higher education might have also taken women beyond the critical periods

Marital Status of Users

Twenty (N=20) clients during the period of interview indicated that they were married except two. The clients who were not married indicated that they were in stable relationships and their ability to conceive could result in marriages. This probably explains how important children are in marriages.

Years Spent on Alternative Medications before the Use of ART

Ten women who utilised ART services had spent between 5-9 years on alternative treatment for infertility from different sources which included herbalists and spiritual leaders before attempting treatment with ART. Another 8 women had spent 1-4 years compared to 5 women who had spent between 10-14 years. Only 2 women had spent 15 years and above on alternative

treatment from the same sources without success. The data shows that quite a significant number of women try to give birth in their first 10 years of marriage probably because it is an expectation by the society. However, the desire declines as they advance in age perhaps due to age related complications and menopause. It could also mean that women give up the hope to have children when they try unsuccessfully.

Religion of Users

Religion is one of the factors that influences the utilisation of ART among the infertile population. It has the tendency to determine access and the kind of technology or practice to be used by clients. Out of the 25 users who were involved in the study, 9 belonged to the Protestant fellowship followed by the Charismatic group (8). Roman Catholics constituted 5 and Moslems, 3. No client belonged to the Traditionalist group.

Occupation and Income of Users

Occupation was considered as a factor that could influence clients' decision to use ART because it has a direct relationship with income. The type of work could also indicate whether users would have enough time or give up their work temporarily or permanently to go through the ART procedure since it required time. Half of the clients (13) were engaged in Business/Trading Activities followed by 10 users who were Civil/Public Servants. One client was unemployed.

Income of Clients

Majority of the respondents (21) failed to disclose their monthly and/or annual income levels. Thirteen of the respondents indicated that they did not know how much they earn from their business activities at the end of the

month or year. They mentioned that they always reinvest the money they accrue into their businesses. Seven respondents expressed their unwillingness to disclose information about their income. One of the respondents was unemployed. The few who disclosed their annual income received between GHC 21,600 and GHC 30,000 annually.

Table 4: Socio-Demographic Characteristics of Users

Socio-demographic Character	Frequency
Age	
20-29 years	2
30-34 years	3
35-39 years	10
40-44 years	6
45-49 years	4
Educational Level	
No Formal Education	1
Primary	1
JSS/Middle	4
Secondary	6
Tertiary	13
Marital Status	
Married	23
Unmarried	2
Years spent on alternative medications before the use of ART	
1-10 years	20
11+ years	5
Religion	
Roman Catholic	5
Protestant	9
Charismatic	8
Moslem	3
Occupation & Income	
Manufacturing	1
Civil/Public Servant	10
Business/ Trading	13
Unemployed	1

Source: Fieldwork, 2017

The chapter further examines themes and categories based on clients' decision to seek medical treatment through the use of ART, information about the treatment procedure and informed consent, cost of accessing ART, self-reported health risks associated with the treatment and other experiences.

Themes obtained from the interviews are presented in Table 5. Themes developed from experiences of women who were seeking ART treatment included reasons for seeking ART intervention, source of information on ART, cost of ART, source of funds for ART procedure, content of counselling, consent, self-reported health and other implications of ART on users were the main themes obtained. See Table 5 for detailed description of themes and categories which have been used for analysis.

Table 5: Themes and categories obtained from women seeking ART

Themes	Categories
Reasons for seeking ART intervention	<ul style="list-style-type: none"> • Embarrassment/stigma for not having a child after years of marriage • Failure • Pains • shame • Pressure from spouses, family and in-laws • Depression • Aging
Source of information on ART	<ul style="list-style-type: none"> • Internet • Family and friends • Pastor • Television • Magazines and news papers • School
Cost of ART	<ul style="list-style-type: none"> • \$3500-\$9000
Affordability of cost	<ul style="list-style-type: none"> • Very expensive • Normal cost • Don't care about cost provided the procedure is successful
Source of funds for ART procedure	<ul style="list-style-type: none"> • Personal savings • Spouse • Parents and other family members • Sold personal asset

Table 5 continued

Content of counselling	<ul style="list-style-type: none"> • Borrowed from bank • Information about the entire ART procedure • Information about cost • Information about side Effect
Consent	<ul style="list-style-type: none"> • Just signed without reading • My spouse signed on my behalf • Was given
Self-reported Health and other implications of ART on users	<ul style="list-style-type: none"> • Weight loss • Weight gain • Joint pains • Anxiety • Abdominal pains • Changes in menstrual flow • Weak and always sleeping • Normal had no side effect • Interfered with daily course of work • Interfered sexual life

Source: Fieldwork, (2017)

Reasons for Seeking ART Intervention

Individuals' decision to seek medical intervention for infertility condition is influenced by a number of factors. From the interview, respondents cited a number of reasons for seeking ART treatment. Mainly, it emerged from Table 5 that delays in getting children after long years of marriage was a major driving force. Again, while the fear of entering into one's menopausal age would prompt them to seek for a medical support, demands from spouses and/or family members, as well as quarrels, shame and pain were also realised to be influential in respondents' decision to seeking for ART treatment. For instance, a respondent who took the decision to utilise ART services due to the embarrassment she was going through as a result of delay in having children said:

'It is very embarrassing when you marry for years and you are not able to give birth. My husband picks up quarrels with me on the slightest issues at home. He sometimes abuses me and tells me that he has regretted marrying a fellow 'man' especially when he drinks. I have cried a lot and I think enough is enough. I have prayed, consulted Malams, Traditionalists and the situation is still the same. I am very sure that going through ART treatment will help me to get a baby else, I will kill myself one day to end all these embarrassments'.

(A 48year old client)

A respondent who went through pains and shame and at a point decided to take her life narrated her experience:

Pains and shame from my friends, family and neighbours forced me to utilise ART. Let me tell you one of several incidences that nearly caused me to hang myself. One day, I bought food and did not buy fish because I thought I was okay. This food vendor told me that I don't buy paracetamol syrup, I do not pay schools fees for any child and yet I cannot buy common fish for my food. In fact, I could not eat the whole day... I cried and asked God a lot of questions. From that day, I decided to use whatever means possible to have a baby'.

(A 43year old woman)

Another respondent who did not have children after 22 years of marriage had this to say:

'After 22 years of marriage we have not seen anything... I am getting old...We need to have at least a child who will inherit our property. Because my husband and I have worked hard to acquire some wealth, I

have been accused of using my children for money ritual. I think about it a lot and have realised that seeking ART services may help us’.

(45year old client)

Sources of Information on ART Availability and Preferred Facility

Access to, and source of information help users to decide whether to seek ART treatment and which facility to seek treatment from. Similarly, it helps clients know the kind of treatment to use and whether or not, a client would move from one service provider to the other. Data gathered from this study from Table 5 revealed that respondents got to know about ART from family and friends, internet, electronic media (TV and radio), and from school. A 45year old respondent who had information on ART treatment from a family friend said:

‘My husband's friend spoke to us on the use of ART... It was after the discussion that we got to know that his twins were born through the use of ART. In fact, we became encouraged and quickly went to the facility he had his children for enquiries’

(45year old client)

Another 33year old respondent who had information on the internet had this to say:

‘My husband and I read about ART on the internet. After sometime, reading and discussion on ART became a hobby we performed every evening. He accompanied me here [to the facility] to ask a lot of questions that we did not understand when we read on the internet. I became convinced that I will get a child’.

(33year old client)

A health worker who heard about ART in school said:

'I heard about ART through my education at the nursing school but I did not believe it was done in Ghana until I watched a health programme on the television... I did know I will ever use this technology'

(A 36year old client)

Cost and Affordability of ART Services

Cost and affordability of ART procedure is considered as one of the key variables that affect individual's or couple's utilisation (Connolly et al, 2009). Costs related to ART treatment is categorised into direct; (cost incurred during the provision ART treatment) and indirect; (cost that is borne after the use of ART treatment) (Connolly, Hoorens & Chambers, 2010). For the purpose of the study, direct cost was considered. Direct cost is all the payments that are made from the beginning of ART processes to the end of the procedure. These payments among other things may comprise medical consultations, medicine, laboratory services, the medical procedure including retrieval of oocyte, fertilisation and transfer of embryo and other charges. Affordability on the other hand, refers to how much users could spend on the provision of ART services. Cost of going through ART varied from one facility to the other. From Table 5, majority of the women (20) complained about the high cost of going through ART treatment. For example, a 34year old respondent recounted how much she paid for the ART procedure:

I paid \$3,550 (Ghc 15,750.00) for my treatment... In fact, I never expected that the cost could be so high but when I could not rescind my decision for the treatment, I had to find money and pay because it was the only way that could save my marriage.

(34year old client)

Another respondent had this to say about how much she paid for the ART treatment:

'The cost for my treatment was \$4500 (GHC 20,250.00) ... The cost is on the higher side but if you think of what you need; that may be more valuable than the money...'

(37year old client)

A respondent who had no problem about the cost of treatment provided the procedure was successful had this to say:

I have spent about \$9000 (Ghc 40,500) so far. Although it is very high, I don't care about cost. I am ready to invest all my money and wealth to have a baby; I don't care about money at all provided I will be successful...'

(A 49year old client)

Sources of Securing Funds for ART Treatment

The cost of accessing ART has been a challenge to many seeking the service; especially couples in developing countries including Ghana (Dyer & Patel, 2012). For example, it was found that the cost of going through ART treatment was more than half of an average individual's annual income in developing countries (Collins, 2002). Similarly, Donkor and Sandall (2007) also estimate the cost of one IVF procedure in Ghana to be equal to one and a

half year's salary of a nurse. Due to this reason, respondents sourced money from different avenues to pay for their infertility treatment with ART. Particularly, respondents sourced money from parents, friends and loans from the bank or sold their property in order to pay for their ART treatments (see Table 5). A respondent who sourced money from parents, friend and through her personal savings before she was able to access the treatment narrated that:

I sourced money from my parents, friends and through my personal savings. My husband told me he has no fertility challenge and so he did not pay a pesewa...'

(A 36year old client)

Another respondent who was supported by her mother in addition to the money she raised from the selling of their property narrated that:

'...My mother supported me with half of the cost and the rest was paid by my husband and I after we sold our property...'

(A 40year old client)

A respondent who took a bank loan in order to have the ART treatment done had this to say:

'I took a loan from the bank in order for me to go through this treatment.... I am a civil servant and it is going to take me years to pay back this loan. My only prayer is that God grants me my request because the cost is too much'

(48years old client)

Counselling

Counselling is integral part of the ART services and processes. The study identified that counselling was offered to clients before, during and after

the procedure. Generally, counselling is centred on the entire ART procedure, cost of the procedure and success rate of ART. The counselling session also offers clients the opportunity to ask questions concerning the entire procedure. Women shared aspect of the entire counselling procedure and how satisfied they were with it. For example, a client who received counselling and was satisfied had this to say:

'I was counselled that the treatment procedure was not 100percent and some of the possible implications. On the whole, I was satisfied with the counselling process because I was able to get answers to questions that bothered me'.

(33year old client)

A respondent who was taken through the counselling processes was also satisfied and recounted how she got to know more about the treatment procedure:

'I was taken through counselling on the whole ART procedure... It included the drugs, retrieval of gamete and preservation of excess gametes and embryo. The counselling session was okay. It took my fears away'.

(A 37year old client)

A 34year old client who could only remember the counselling on cost and payment mentioned that:

'I was satisfied with the counselling. I only remember that I was counselled on the amount of money I will pay for the process...and the fact that it was not refundable once it's paid to the facility... I became

scared and so I did not listen to the rest of the counselling even though I was in the counselling room’.

(34year old woman)

Consent

After clients had gone through the counselling processes, it was mandatory for them to sign the consent form to affirm their willingness to comply with the rules to go through the procedure. Service providers were keen on ensuring that clients signed the consent form because it was perceived as a legal document that detached service providers from any legal complications that may occur during and after the procedure. Evidence from Table 5 indicated that, majority of respondents perceived the consent form as a mere paper that required their signatures before the whole procedure starts. Others could not read and write and so the consent was signed on their behalf by their spouse. A client who out of frustration did not want to see the consent form in her home had this to say:

‘... I just signed a copy of the consent form for the hospital that is all. I don’t need the consent for anything... It will always hunt me whether I become successful or not’

(A 30year old woman)

Another respondent who was not interested in the content of the consent form but just appended her signature because of the frustrations she was going through explained that:

‘I was given consent form to sign but I did not read at all. All that I looked for was where to sign. I signed and returned it to the doctor...I

was very much frustrated and wanted the process done. That is all I needed’.

(36year old client)

A 40year old client who could not read and write but was handed a consent form said:

‘We were given some form to sign after the counselling processes. I cannot read and so my husband signed the form. I do not remember the exact things the document contained’.

(40year old client)

There were other respondents who did not sign any consent form because they were not given by service providers or they were not aware of such forms. For instance, at Tema Women’s Hospital, a respondent who did not sign any consent form before going through the processes said:

‘I was not given any consent form to sign and I was also not aware about it... I think they might have forgotten about it’

(40year old client)

Another respondent who thought her infertility condition did not demand the signing of a consent form had this to say:

‘The counsellor promised giving me a consent form to sign but I have not been given up to now... maybe my condition does not demand the signing of the consent form’.

(36year old client)

Self-reported Health and other Implications of ART on Users

The use of Assisted Reproductive Technologies has resulted in the treatment of millions of infertility cases. Nevertheless, the use of the

technology has been perceived to have resulted in varied health challenges especially to women. For example, Anderson & Brruchalski, (2004) have described the use of ART as “anti-women” due to the numerous health risks associated with medications used in the process, complications due to pregnancy and multiple foetus problems associated with high failure rates the technology poses to women. From Table 5, two major categories of implications of ART treatment were reported by respondents. The first category was physical implications which included anxiety, weight loss, body pains and changes in menstrual flow. Some of these health-related implications are shown in the expressions below:

‘I started experiencing abdominal and joint pains anytime I took my medications...

(34year old client)

Another client who felt dizzy and sleepy anytime she took the prescribed medications had this observation:

The only thing I observed was that anytime I took the injection, I felt dizzy and sleepy. This affected my work’.

(28year old client)

Apart from the medical implications of going through ART, there were also some socio-economic implications for using ART treatment. The treatment required clients to stay in the facility for a period of time not less than five days after the transfer of the embryo. For this reason, clients who were unable to go to work indicated that the treatment had effect on their job. For instance, for fear of losing their jobs, some of these respondents would work with their laptops while receiving treatment at the facility. These

responses confirmed this assertion during an interview in a facility in Accra. A respondent who was working even when she was at the hospital because the period of treatment coincided with payment period of her workers said:

'Do you see my laptop? I am busily working because this is a busy season at work. I shouldn't have been off during this period but here I am undergoing this procedure. I either sleep or sit on the bed with my laptop. I may lose my job if I don't do this.

(33year old client)

Another client who had to prepare the time sheet for her employees had this to say:

'The treatment has affected my work. I am an accountant and as the month is getting to an end, I have to prepare the time sheets and salaries of the staff. This period is my busiest time at work and so as I am here, I don't know what will happen. I sometimes think about it but getting my baby is more important to me.'

(37year old client)

Other respondents who took their annual leave and permission from their work places did not have to force themselves to work when they were at the hospital. For instance, a respondent who purposely took her annual leave for her to go through the treatment confirmed that:

'I took my annual leave before I started the procedure...The treatment has not affected me in anyway because I have handed over properly to my next in command'

(36year old client)

A 37year client who took an excuse duty note from the hospital to her boss had this to say:

'The treatment would have surely affected my work but as I have moved to Ghana, I took one-month vacation leave so there is no problem. I have also taken another one-month excuse duty note from the Doctor to my Boss...'

(37year old client)

Other respondents reported that they were psychologically disturbed. This was because they were thinking about the success of the procedure especially when they were waiting for pregnancy test after the transfer of the embryo. For example, a client who was psychologically disturbed as she was thinking about her pregnancy test result shared her anxiety:

'The anxiety to know the result of the whole procedure is too much for me. It gives me sleepless night and this has affected me psychologically. I wish the pregnancy test could be done as soon as the embryo is transferred.'

(35year old client)

Other respondents who went through the entire treatment procedure did not feel any side effect as a result of going through ART treatment. A 40year old respondent who went through the treatment procedure without any complication shared her experience:

I did not encounter any problem going through the ART treatment. Life was so normal for me as if I had gone through any treatment procedure. Sometimes I become surprised when others in the recovery room complain about dizziness, abdominal and bodily pains

(40year old client)

Discussion

In the Ghanaian society, parenthood is considered as an important life event. Due to this, infertility is often not expected. The experience of infertility is therefore considered as crisis by the society (Donkor & Sandall, 2007). The implication is that individuals who experience infertility must seek treatment for various reasons. For example, some women indicated that they were embarrassed by their infertile condition after long period of being in marital relationships. The source of embarrassment could be attributed to the extended family system that perceives that the family grows when individuals in the family begin to procreate (Pequegnat & Bell, 2012). To such an individual, parenthood is a lifetime goal that must be fulfilled. Again, the belief that the purpose of marriage was not complete until couples procreate could also serve as a source of embarrassment especially to the women who are without children (Horbst, 2010). Pressure and abuses from spouses, friends and in-laws were also observed to have influenced the decision to seek ART treatment. These findings corroborate the ten decision points in the Help Seeking Theory by Mechanic (1978). These decision points predict how individuals affected by conditions such as infertility will take treatment decision. First, the individual affected by any condition considers the salience of deviant signs and symptoms; second, the individual's perception of symptom severity; third, the interruption of the individual's daily life as a result of the illness; fourth, the frequency of symptoms and their persistence; fifth, the individual's tolerance of symptoms; sixth, the individual's knowledge and cultural beliefs about the condition; seventh, denial of the condition as a result of basic needs; eighth, whether or not response to the

conditions disrupts needs; ninth, alternative interpretations of symptom expression; and finally, treatment availability (location, economic cost, psychological cost) and treatment resources.

Furthermore, the behavioural model by Andersen & Newman (1973) supports the decisions why women sought ART treatment. The import of the model is that individual's decision to seek treatment including infertility depends on three interrelated factors: (a) predisposing factors (i.e. age, gender, socioeconomic status, health beliefs); (b) enabling factors (insurance, poverty status, access to medical care, and other individual, family, and community resources) and (c) perceived and evaluated need (such as perception of a problem or an existing health condition). The implication of this model to the study is that an individual's ability to utilise ART services may be based on couples' decisions which are influenced by their role in society as well as the existence of the needed services at that particular time.

Sources of information about the availability of ART to clients varied considerably. In Ghana, sources of information about the availability of ART services include the electronic (internet, TV and radio), print (magazines and newspapers) and most importantly satisfied clients, friends and members of social networks. This finding supports the Network-Episode Model (NEM) of health care utilisation which was developed by Pescosolido (1991; 1992). The model describes the influence of the interaction between an individual and his social networks in seeking health care. These social groups could be the source of information about the treatment of the condition and may also provide emotional as well as financial support when the need arises. Also, utilisation of ART could be influenced by the decision of an individual's

social relations which could be internal (family) or external influences (friends and other social groups).

Cost of using ART services in Ghana was observed to be high and varied among the various facilities. A similar observation made by Chambers, Sullivan, Ishihara, Chapman & Adamson (2009), indicated that the high cost of utilising ART could serve as impediment to a lot of couples who are faced with fertility conditions. Again, Huddleston, et al., (2010) identified that the cost of accessing ART service had been acknowledged as a potential cause to limit couples who had lower socioeconomic status. It was also found that the cost of infertility treatment was excessively expensive that couples who patronised infertility treatment encounter financial difficulty and, in some cases, abandoned the idea. Other studies have also identified that the treatment cost in low income countries including Ghana could cost more than half of an individual's yearly income (Dyer & Patel, 2012; Donkor & Sandall, 2007).

Despite the high cost of accessing ART treatment and services in Ghana, couples who needed babies had to save, borrow and even sell their asset in order to get money to go through the procedure. The implication of this is that individuals who go through such ordeals will be very disappointed when the result is not positive. Again, other people who are faced with infertility challenges and have limited financial resources cannot utilise ART to meet their parental desire. This is related to previous studies that identified that the cost of accessing ART service has a potential cause to limit usage by women with lower socio-economic status (Chambers, Sullivan, Ishihara, Chapman & Adamson, 2009; Huddleston, et al., 2010).

Couples who start with ART treatment procedures in most situations have higher expectations of accomplishing positive results thereby meeting their parenthood desires. However, the uncertainty about treatment may result in increased physical and psychological effects on couples. Studies have confirmed that women who go through unsuccessful cycles suffer the most due to the invasive and expensive treatments they go through. (Moragianni & Penzias, 2010; Volgsten et al, 2010). Other studies have also established that stress accompanying infertility and its subsequent treatment may also have effects on prospective couples even when they become successful with the treatment procedures (McLernon et al, 2010; Setti et al., 2011).

Despite this condition, infertile couples did not report anxiety and depressive symptoms to the medical teams of these hospitals. It appears that clients considered these symptoms as normal which accompany the use of ART treatments. Others may not disclose these symptoms because complaints about the symptoms could probably lead to the postponement or cancellation of the procedure.

Self-reported implications of going through ART treatment were also identified by the study. Adversely, jobs of women were affected due to the treatment schedules. Almost all civil and public servants who were involved in the study either took their annual leave or took some days off to go through the treatment procedure. Others who were not able to take their leave periods were found working even when they were on their hospital beds. However, the hospital environment was not conducive as clients were not able to work to their satisfaction probably because they were thinking about the treatment procedure. This discussion clearly shows the demands from work conflicted

with the psychology and time needed for people who went through ART treatment. Support from workplace and job flexibility would have been key to clients who went through ART treatment but these were absent probably because employees had concerns to inform their employers about their infertility condition due to the societal perception about infertility

Some women who went through ART treatment complained of experiences such as having lost weight, others gained weight, had sleepless nights, joint pains, whole body pains, breast tenderness while others bled. These conditions may be linked to the medication aspect of the treatment. The general medications and other hormonal drugs used to treat infertility may cause a variety of psychological side effects in women. These may include sleeplessness or interruptions, mood swings, depression, mania, irritability, and thinking problems (Courbiere, 2011).

Conclusion

The chapter explored the experiences of clients who had gone through self-cycled treatment and were waiting to be tested for pregnancy. It became apparent from the discussions that couples go through various experiences before they finally decide to use ART services. The decision to use ART is influenced by both physical and psychological consequences such as anxiety, depression and low self-esteem.

In most cases, couples anticipate ART treatments to be successful, safe and free from any physical or emotional effects. Others become anxious about the medical procedure and this requires counselling from professional counsellors who are attached to the hospital. The counselling processes were carried out before, during and after the treatment procedure and it highlighted

the entire procedure of treatment and their implications, cost, success rate and how treatment may influence daily course life. Counselling was also a medium for information gathering and critical exploration of the procedure which may influence couples' decision making. Clients who went through the counselling were satisfied because they got to know more about the treatment procedure while others alleviated fears associated with going through the treatment.

Self-reported health effects of going through ART treatment were also evident in the discussion. Conditions such as lost and weight gain, sleepless nights, whole body pains, breast tenderness and bleeding were reported. Daily course of work was also affected. However, most women did not consider these factors as impediments to achieving the gender and social roles of being mothers.

The next chapter focuses on the experiences of women who have achieved motherhood status through the use of assisted reproductive technologies. An attempt was made to establish relationships between women who have achieved motherhood through the use of ART and the rest of the society.

CHAPTER EIGHT

EXPERIENCES OF WOMEN AFTER DELIVERY WITH ASSISTED REPRODUCTIVE TECHNOLOGY

Introduction

The chapter explores the experiences of women who have successfully delivered through the use of ART. Precisely, relationship with the husband, in-laws, own family and the rest of the community before and after child birth were explored. Furthermore, the kind of support women received in their pursuit to have babies, how their babies were born, how it feels to be a mother and the intention to give birth to other children through ART were also investigated. Lastly, the change women have experienced ever since they delivered and how they intend to help other women who are faced with infertility were also investigated. Results have been presented in Table 6.

Socio-demographic Characteristics

Socio-demographic characteristics discussed under this section include, age, education, religious affiliation, marital status, and the number of years spent on other alternative treatments before the use of ART. These characteristics were considered to determine their relationships with the use of ART.

Ages of mothers

From Table 2, the youngest who delivered through the use of ART was 38 years while the oldest was 53 years. Three women who had delivered through the use of ART were 45 years each. One person each represented the rest of the age categories. This result supports the finding of Kocourkova, Burcin, & Kucera (2014), who identified that most women who seek assisted

reproductive technology (ART) treatment is as a result of age-related infertility (Balasch, 2010).

Education Level of Mothers

Education is considered as one of the key factors that is likely to have influenced users in terms of access to information about ART procedures and practices. All respondents had some form of education ranging from Junior High/Middle schools to tertiary education. From Table 4, half (5) of the women who had delivered through the use of ART had completed Junior High/Middle Schools. Four clients had completed tertiary education while one person had secondary education. The high number of clients with education could mean that they have access to information on infertility and treatment options and could also afford the treatment cost because they might be gainfully employed.

Marital Status of Mothers

During the period of interview, all respondents were married except one who had lost the husband before the child was delivered. The trend may mean that childbearing in marital relationship is very key among Ghanaians. As a result, infertile couples may go through pressure from the society and so they try to avert their infertile situation through the use of ART.

Years Spent on Alternative Medications before Giving Birth

Infertility is explained as absence of pregnancy after a year of being in a stable relationship and having unprotected sexual intercourse with a particular partner. Despite this definition, women spent longer periods before seeking treatment through the use of ART to have children. The least years spent by a woman to have the first born through the use of ART was 4 years

whilst another woman spent up to 22 years. Three respondents had spent 10 years each before they had their first born through the use of ART.

Religion of Mothers

Religion influences the choice of a particular ART technique by clients. Table 4 shows that 5 women who delivered through the use of ART belonged to the Protestant group followed by the Charismatic group (3). Roman Catholics and Moslem constituted 1 each. No client belonged to the Traditionalist group.

Table 6: Socio-demographic Characteristics of women who delivered through ART

Socio-demographic Characteristics	Frequency
Age	
38	1
39	1
40	1
45	3
46	1
47	1
49	1
53	1
Educational Level	
JSS/Middle	1
Secondary	5
Tertiary	4
Marital Status	
Married	9
Widowed	1
Years spent on alternative medications before giving birth	
4 years	1
10 years	3
11 years	1
12 years	1
13 years	1
16 years	1
20 years	1
22 years	1

Table 6 continued

Religion	
Roman Catholic	1
Protestant	5
Charismatic	3
Moslem	1

Source: Fieldwork, 2017

In Table 7, themes and categories obtained from women who delivered through the use of ART have been presented. The main themes obtained included women's relationship with spouse and family before and after giving birth through the use of ART, method of delivery, motherhood experiences, intention to deliver again and integration into the bigger society.

Table 7: Themes and categories obtained from the interview with women who delivered through the use of ART

Themes	Categories
Relationship with spouse and family before delivery	<ul style="list-style-type: none"> • Stigmatised • Hostile attitude • Names calling • Quarrels • Pains • Shame • Total confusion • Blames and insults
Relationship with spouse and family after delivery	<ul style="list-style-type: none"> • Happiness • Husband supports in household chores • Husband has stopped seeing other women • Have gained respect from spouses' family
Support received from family, friends and neighbour	<ul style="list-style-type: none"> • No support came anywhere • Received prayer support • Received encouragement • Received advice
Method of delivery and reason	Caesarean section

Table 7 continued

Motherhood experience	<ul style="list-style-type: none"> • Motherhood is a great feeling • Motherhood is the sweetest • Motherhood makes a complete woman • Motherhood is an interesting moment in life • It simply feels good to be a mother
Intention to give birth again	<ul style="list-style-type: none"> • One child is lonely • I have a boy, I want to have a girl • I want two or more so that they can care for me when I am old • Because of the privileges I enjoyed when I was pregnant • No because I am old • No because my husband is dead
Integration into family and society	<ul style="list-style-type: none"> • Counted among mothers • Able to attend community functions • My voice is heard • Gained respect from in-laws • Respected in the society • Hostile because of the death of my husband • Accused of killing people for birth rituals

Source: Fieldwork (2017)

Relationship with Husband before Childbirth

Due to the premium put on children in the Ghanaian society, marriages without childbirth are regarded as a serious challenge that affects the couple, their families and the society at large. For example, a woman had this to say about her relationship with her husband before she gave birth:

'My husband was very supportive. He took me to wherever we heard we could be assisted to get a baby even till we heard about IVF...'

(49year old woman)

A 40 year old respondent whose husband regarded her inability to conceive as a punishment from God because she refused to be a Catholic sister shared her experience:

'My husband told me that my situation was a punishment from God because I stopped from the seminary to get married to him.... I totally regretted my action but it was too late for me to go back... The man who persuaded me to leave the seminary now turned against me and tells me that I will never give birth... I knew my end had come and so I prayed to God for forgiveness'

(40year old woman)

Another respondent whose husband always picked up quarrels with her because she was not able to conceive had this to say:

'I always quarrelled with my husband because we had married for 7 years without a child. He had already told me that he did not have a child in his previous marriage so I knew the problem came from him...'

(38year old woman- IDI)

Relationship with In-Laws before Childbirth

A respondent who received support from the mother in-law till she conceived and gave birth had this to say:

'My mother in-law was the best woman I have ever met in my life. After 7 years of marriage without a child, she realised there was a problem. She took me to wherever she heard I could be helped till we got to know of ART treatment'

(A 45year old woman)

Another respondent whose in-laws pressurised her and threatened to marry another woman for their son in order to have a child shared her experience:

I did not have it easy with my in-laws at all. My husband is a chief and so custom demanded that he gets a child preferably a son to succeed him in future. My in-laws always pressurised and insulted me to give birth. They married another woman for my husband to give birth to family in order to preserve their lineage.

(A 45year old woman)

Couples who delayed in having children were perceived to witches/wizards and sometimes are labelled as such by their families and neighbours. Some women recounted the challenges they had with their neighbours and communities when they had no children. For example, a 49year old respondent who was called names shared her experience:

'I have suffered a lot from the hands of my neighbours. Sometimes they called me names and insulted me with my infertility condition...'

(49year old mother)

Another respondent who was accused of being a witch who had killed the husband had this to say:

'People referred to me as a witch who had eaten all her children in the womb and killed the husband too...'

(45year old mother)

Child Delivery

Many of the respondents who gave birth had advanced in age. The youngest among them was 38 years while the oldest was 51 years. To this group, spontaneous delivery was mostly difficult. All respondents interviewed mentioned that they delivered their children through caesarean sections (CS).

From Table 7, various reasons have been cited as the possibilities why women who give birth through ART go through caesarean sections. For example, a 45year old mother narrated that:

'After going through all the treatments, the pregnancy is so precious to me that I do not want to take any risk going through the spontaneous delivery and related complications.'

(A 45year old woman)

'I am old, and I am afraid that I may find it very difficult to deliver spontaneously'

(A 53year old woman)

'For medical reasons the doctor advised me to deliver through caesarean section so that I can deliver safely without encountering any complications.'

(A 49year old woman)

Motherhood

In the Ghanaian society, motherhood is celebrated. As a result, women employ various means to achieve motherhood because of the importance attached to children. Mothers expressed their feelings about motherhood. A 47year old mother had this to say:

'Being a mother is the 'sweetest'. Recently, I felt sick and surprisingly my little girl pulled the rosary and said Mummy let's pray and you will be okay. It was this period that I felt that being a mother was the best thing to ever happen to me...'

(47year old woman)

A 45year old mother narrated the joy she had when her child first called her:

'...The very first day my child called me 'mama', I felt so happy and tears of joy flowed just like that. I said 'God thank you I have been called mama at last'. I knew my name had changed from that moment and I will be called mama for the rest of my life...'

(45year old mother)

Other women mentioned that motherhood has helped them to improve upon their relationships with people in their neighbourhood. For example, a 40year old mother stated that:

'When people see and greet me, I feel so good and reply them with ease and with all truthfulness. I always felt very bad when people greeted and asked about my health and that of my husband and children...There were situations where I intentionally avoided greeting people because they might ask of the health of my children which I did not have by then...'

(40year old mother)

Relationship with Husband after Delivery

After delivery, all women (10) confirmed that the attitudes of their husbands changed. Husbands were caring, provided their needs and supported them in caring for their children. A 40year old mother confirmed that:

'The clock has turned; he is always with me. He spends most weekend at home. He took his annual leave and helped me with household chores. In fact, I never knew childbirth could change everything'.

(40year old woman)

Another mother whose husband started playing the role of a father had this to say:

'...My husband is now playing the role of a father. He has stopped seeing other women and the care is great...'

(45year old woman)

Integration into the Family after Delivery

Motherhood is celebrated traditionally in Ghana especially when a child is one week old. This marks the outdoor ceremony for the new child and the mother. At this ceremony, the entire community and family members come together to celebrate with the couple for going through pregnancy and successful delivery. This is mostly done because motherhood is often seen as a life-fulfilling goal and this brings joy and self-fulfilling satisfaction to women. A mother had this to say about how she has been integrated into the community after delivery:

'I feel very good in my neighbourhood and community. I am counted among mothers...What is better than this? I now attend community functions such as Parent Teacher Association meetings. My voice is now heard among parents'.

(49year mother)

A respondent whose relationship with her in-law has become better shared her experience:

'My in-laws who were against me have now been closer to me. Some have apologised to me that it was a way to force me to get a child for their son...'

(38year old mother)

Other women had challenges with their families after a successful delivery through ART. Neighbours who heard that the women had their children through ART perceived that the couple had gone to either buy or adopted babies. A respondent narrated how her relationship with her families and the people in her communities had worsened after delivery:

'My relationship with my family and neighbour has worsened after delivery. They accused me of going to buy babies. This has forced me to move from where I was staying...'

(45year old mother)

A respondent who lost her husband before she delivered shared her experience on how she was accused of killing her husband for rituals:

'... Society is very wonderful; could you believe that when I delivered after the death of my husband, my own family members and in-laws accused me of using my husband for birth ritual? I never felt good and I had to relocate to another part of the city just to avoid stigmatisation...'

(45year old woman)

Intention to Give Birth Again

Women who gave birth for the first time indicated that they would like to give birth again no matter their age. Evidence from Table 7 indicated that women claimed that their neighbours and other people in the society have perceived them to be infertile and the only way they could attest that they were not was to give birth again. To others, they would like their neighbours to know that they had voluntarily decided not to give birth and so a second child will prove that. Others claimed that just a child was not enough because such a child will be lonely at home. A mother narrated that:

'... a second child is very much needed, it will prove to people that I am not barren and I did not buy my baby...'

(46year old mother)

Another mother who did not want the child to be lonely in the house had this to say:

'I will be more than grateful to God to have another child... I don't want my child to be lonely. Loneliness is not good and so I want him to have other siblings so that they can think together and care for me when I am old...'

(51year old mother)

Other women who had multiple births did not have the intention to give birth again due to their ages or had got their hearts' desires. For example, a 50year old mother indicated that:

'I am now 50 years, I am not as strong as before and so I have to end it. I am okay with twins'

(A 50year old woman)

Another woman who had delivered triplets had this to say about the intention to give birth again:

'I don't have any intention to have another child. Triplets are okay for me. Instead, God should give it to other women who are struggling to have children'.

(45year old mother)

Discussion

The Ghanaian culture attaches great importance to the family, community, and kinship groups at the expense of personal goals. As a result, the family has a hand in who a family member marries and in some cases the number of children to give birth to. Again, in the Ghanaian culture, children are often believed to be the source of fulfilment of personal joy, marital satisfaction and a way a wife becomes accepted into the husband's family. Due to these reasons, families and even the entire society have always been hostile and stigmatise women who are faced with infertility. Family members and husbands blame women and quarrel with them for not giving birth. Several studies have reported these treatments that are meted out to women when they face infertility in marriages (Nahar 2010, 2012; Nahar & Richters, 2011; Cui, 2010; Nachtigall, 2006). The consequences of these treatments on

women include depression, isolation and stigma. However, it is not every individual who attaches stigma to his/her health challenges such as infertility. Most of the time, people adopt coping strategies to deal with their infertility situation.

Coping strategies are the specific efforts, thoughts and behaviours used to manage the internal and external demands of situations that are appraised as stressful (Taylor & Stanton, 2007; Folkman & Moskowitz, 2004) However, this unreceptive relationship changed immediately women gave birth. The results showed that women gained social acceptance and became integrated into the bigger society.

Women during their infertility periods may receive support that will help them to cope with their situation. For example, some women received instrumental and/or emotional support from families and friends which influenced their decision to seek treatment. For the fear of being stigmatised, other women either concealed their infertility conditions or treatment from friends. This may motivate users to resettle in other locations in order to maintain privacy and confidentiality of their ART usage. Given such situations, it is common to identify that users may not even inform close family members about the usage of ART procedure. This is probably due to the societal perception about ART produced babies. Concealing infertility at family gatherings was reported among women in Iran (Morshed-Behbahani, Mossalanejad, Shahsavari & Dastpak, 2012). Similarly, Slade, O'Neill, Simpson & Lashen (2007) in their study of the experiences of infertile women established that revealing the process of treatment was negatively correlated

with social support and was predictive of distress because of the stigma attached to infertility.

All women who delivered through the use ART went through caesarean sections. Several factors could influence this decision. First, all respondents were advanced in age. It was also noted that conception after age 38 years was likely to be associated with instrumental deliveries and caesarean sections compared to younger counterparts (Ludford, Scheil, Tucker & Grivell, 2012). Other women perceived their pregnancy to be precious to them considering the cost and the treatment procedures they had gone through and would therefore not risk to go through spontaneous deliveries and its associated complications. These women personally opted for caesarean sections during delivery. Caesarean sections were also recommended for women by the medical team because it was thought to be safer. This finding is contrary to the findings of the American Society for Reproductive Medicine (2012); Valji, (2010) that identified that caesarean sections were recommended to women who had complications with multiple pregnancies.

The results of the study revealed that women who gave birth through the use of ART had the intention to give birth again probably to fulfil the fertility replacement principle. One other major reason for this intention might be that women wanted to prove to the society that they were not barren and so a second or third child will exonerate them from being perceived as barren. For other women, it was necessary to give birth to two or more children so that their homes will become lively while others maintained that two or more children could better cater for them when they are old. However, other women

who had delivered multiple children did not have any intention to give birth again because they had got what their hearts desired.

Conclusion

From the discussion, most women faced hostile treatments from their spouses, families and the entire society because infertility is frowned upon by the Ghanaian society. However, these hostile treatments ceased as soon as women achieved motherhood status. Again, most women who gave birth through the use of ART went through caesarean sections to have their babies mainly due to their age and in some cases based on the recommendation of ART service providers.

Women who gave birth with the use of ART had the intention to give birth again as long as their ages could permit them. Such women viewed children as their 'social security' at old age. Others who gave birth to boys wanted to have girls probably to fulfil fertility replacement principle.

The next chapter presents and discusses the religious acceptability of assisted reproduction in Ghana. Specifically, how the various religious ideologies have influenced the acceptability and usage of Western biomedical treatment of infertility particularly through the use of Assisted Reproductive Technologies. Practices such as donor services, cryopreservation, surrogacy and the general usage of ART have been investigated.

CHAPTER NINE

RELIGIOUS ACCEPTABILITY OF ASSISTED REPRODUCTION IN
GHANA**Introduction**

The use of ART has generally become an accepted means which couples that are faced with fertility challenges could employ to meet their parental desires. Despite the improved usage and successes in western countries, the extent to which the provision of assisted reproductive services is accepted in Ghana has not been examined. This chapter explores questions regarding acceptability and beliefs about ART in Ghana from Islamic, Christian and Traditional faith perspectives and discusses the findings. Themes and categories obtained from the religious acceptability of assisted reproduction have been presented in Table 8.

Table 8: Themes and categories obtained from key religious figures on the acceptability of ART

Themes	Categories
Perception about the causes of infertility	
Moslems	God determines who is infertile
Christians	God determines who is infertile
Traditionalists	God determines who is infertile
	Abortion
	Curses
	Punishment from God/gods
Treatment of infertility	
Islam	Seeking the face of Allah
	Use of talisman
	Washing the affected part of the body
Church of Pentecost	Seeking the face of God
Traditionalist	Use of traditional/herbal medicines
Acceptance of ART as treatment for infertility	
Islam	Accept treatment with spouses own reproductive resources (sperm and egg)

Table 8 continued

Church of Pentecost	Accept treatment with spouses own reproductive resources (sperm and egg)
Traditionalist	Do not believe in ART treatment
Acceptance of donor gamete Islam	Do not accept donor gametes because of genetic and spiritual implication
Church of Pentecost	Disapprove because it has ethical, social and spiritual consequences
Traditionalist	Disapprove because it is against the will of God
Acceptance of surrogacy Islam	Disallow because of ethical reasons
Church of Pentecost	Disapprove because it is not biblical
Traditionalist	Disapprove because it is not natural
Acceptance of cryopreservation Islam	Accept cryopreservation of spouses own gametes
Church of Pentecost	Accept cryopreservation of spouses own gametes
Traditionalist	Disapprove
Use of ART by guys, lesbians and single women Islam	It is against the natural way of giving birth
Church of Pentecost	Disapprove because it defeats the purpose of marriage
Traditionalist	Disapprove because it against the wish of God
Perception of children born through ART Islam	Legitimate child if born with donor reproductive resources,
Church of Pentecost	Legitimate child
Traditionalist	Illegitimate Children may not be normal Children may grow and have health challenges

Source: Fieldwork (2017)

Perceptions about the Causes of Infertility

The belief of the various key personnel from the three main religions is that infertility is a natural phenomenon. From Table 8, all the three major religions in Ghana held the view that being fertile or infertile is determined by the sovereignty of God as evidenced in the responses from the in-depth interviews. However, the Traditionalists further indicated that infertility was a curse or punishment for not being truthful in life. The Traditionalists also hold the view that infertility could be the result of abortion at younger ages. For example, a Traditionalist had this to say about the causes of infertility:

'Abortion is one of the key causes of infertility in women. Gods punish everyone who does an abortion. Let me use myself as an example. When I was a young girl in the primary school, I became pregnant and gave birth. In the middle school, I became pregnant again but this time I aborted the pregnancy. Since then, I have never conceived again. I have tried different medications but I have not been pregnant as at the age of 57 years. Do I say it is God who made me barren? No! It's myself and probably gods of the land'.

(A Traditionalist, IDI)

A contradictory perception was held by the Christian and the Islamic individuals on the teachings about causes of infertility. The Holy Bible and Quran did not come out clearly on the causes of infertility. Though there were characters in these Holy Books who had fertility challenges. The Chief Imam explained:

'Islamic teachings mention that God did not create any individual to be infertile but in marriage if childbearing becomes a challenge, the couple must accept it as the will of God'

(Imam, IDI)

Similarly, a leader from the Church of Pentecost mentioned that:

'It takes the Sovereignty of God to determine who gives birth and who does not...'

(Church of Pentecost (COP), IDI)

Treatment of Infertility

Treatment of infertility is mostly influenced by one's belief about the causes and access to treatment options available. In most cases, people who have fertility challenges seek various treatment options including the use of traditional medications and religious assistance. Treatment in hospitals are mostly the last resort probably due to the perceived cost, non-availability and the perceived fear associated with the use of ART. From Table 8, different opinions were expressed by the key religious figures. The Christian leader had this to say about how Christian couples with infertility condition could be treated:

'We seriously believe that God gives children and so we always pray and counsel our members who have fertility challenges to seek the face of the Lord for their fertility challenges to be solved...During prayer sessions, special prayers are said for such people'

(COP, IDI).

The Islamic leader had this to say about how infertility could be treated according to the Islamic faith:

'The use of prayers which 'blows off' ailment of any particular part of the body that is affected is a means of treating conditions including infertility. One can also use talisman or the wash of slate which is referred to us 'Rubutu' in Hausa to heal all sicknesses including infertility...'

(Imam, IDI).

Traditionalists presented different opinion:

'Infertility can be treated with the use of traditional herbal medications. I know a lot of women who have used traditional and herbal medicine to treat their infertility...The children they give birth are strong and healthy'

(A Traditionalist, IDI)

Perception about the use of ART as a Treatment Option

None of the religions abhor the treatment of infertility especially among married couples. However, there were divergent views on the acceptability of specific practices such as gamete donation, cryopreservation, surrogacy and the use of ART by single or same sex couples among the key religious figures. This might be due to the differences in the interpretations by the various religions on addressing issues surrounding the utilisation of ART.

The Chief Imam remarked:

'According to the Holy Qur'an, 23:5, Islamic laws approve attempts to cure infertility among Moslems. In a situation where a man's sperm is put together with the wife's egg by a doctor to assist them to have children, Islam allows that...'

(Imam, IDI).

The perception of the Traditionalists about the use of ART for infertility treatments was doubtfulness:

'I have heard that sperms and eggs could be collected and a child created in a bottle for couples. To me, I doubt it if that is possible ...How can a human being be created by a fellow man?'

(A Traditionalist, IDI).

The Church of Pentecost upon seeing the need for the use of ART by its members with fertility problems formulated a policy that could guide its members:

'...the church recommends the use of ART to needy couples provided the egg and sperm come from the couple themselves. This is because the Church believes that physical intimacy between a husband and wife remains Biblical means of producing children...'

(COP, IDI)

Gametes Donation

Gamete donation has been accepted by the players of ART industry as one of the means of helping infertile couples especially those who have problems in the production of viable oocyte and sperm to enjoy parenthood. However, concerns have been raised that accepting donor gametes implies the involvement of a third-party in the process of reproduction which may have spiritual consequences because it is regarded as adultery (Kharb, 2007). Excerpts from the interactions with key religious figures on gamete donation are captured below. For example, the Church of Pentecost believes that accepting donor gamete has spiritual influence on both the donor and the recipient. The view of the Church is presented as:

'The Church does not encourage its male members to donate or sell their sperms to needy couples. In the same way, women are not allowed to either donate or accept oocyte from a fellow woman for pregnancy purposes. Often times there are serious social, ethical, psychological and even spiritual consequences that emanate from using these services'

(COP, IDI)

The belief about the use of donor gamete has been captured as:

'Islam does not allow gamete donation. We believe that there is something genetic and spiritual about donated gametes and therefore it is not allowed'

(Imam, IDI)

Surrogacy

It has been reported that surrogacy practices are on the increase all over the world especially in developing countries including Ghana due to the benefits derived from their engagement (Inhorn & Patrizio, 2012; Hudson et al. 2011, Council for Reproductive Genetics & Gugucheva, 2010). However, concerns have been raised about the acceptability of the practice in Ghana probably because it lacks legal backing and creates the opportunities for the exploitation of prospective surrogate mothers. The religious figure from the Church of Pentecost had this to say about surrogacy services:

'The Church's position on surrogacy is that it discourages its members from accessing surrogacy services or third-party methods in the ART treatment. The Church does not encourage its female members to donate or sell their eggs to needy couples. Female members of the

Church are also discouraged from offering themselves as surrogate mothers...'

(COP, IDI)

The Muslim leader added that:

'Islam does not accept surrogacy. Instead, Islam allows adoption but the adopted child must be identified to his/her biological parents. Islam says the identity of an adopted child with respect to his/her genealogy must be preserved'.

(Imam, IDI)

Cryopreservation

It has been noted that the process of egg retrieval especially is costly, painful and invasive. Due to this reason, it may not be desirable for couples who have fertility challenge to always repeat the process (Paulk, 2014). Again, donor gametes may not be readily available at the time of need. It is therefore prudent to store excess or surplus gametes for future use by individuals or couples undergoing infertility treatment. From Table 8, this notion has not been wholly accepted by the religious groups (Islamic, Pentecost Church, Traditionalist) in Ghana. For example, the religious figure from the Church of Pentecost believes that:

'Cryopreservation is not accepted however; whenever freezing becomes necessary, the wife's eggs and the husband's sperms should be frozen separately...and be used by the same couple at the time the couple is alive'

(COP, IDI)

The Chief Imam supported the Christian view on cryopreservation and further explained that:

‘Because there is the possibility of death and divorce, cryopreservation is not allowed. In Islamic laws, once there is a divorce or a spouse dies, cryopreserved sperm or egg cannot be used by the surviving spouse’

(Imam, IDI)

Utilisation of ART by Gays, Lesbians and other Single Individuals

Legislations in some countries have assented to the utilisation of ART by gays, lesbians and single individuals. For example, Ethics Committee of the American Society for Reproductive Medicine (2013), has promulgated an Act for ART to be used by single males, gay and lesbian couples in the USA probably due to human right issues. On the other hand, in Islamic countries like Iran, Turkey and Lebanon, the utilisation of ART by unmarried persons, gays and lesbians are strictly prohibited by law (Inhorn, 2012). In Ghana, same sex marriages are also prohibited. According to the Church of Pentecost Policy Guidelines on Assisted Reproductive Services:

‘The church does not accept these groups of people to access ART services at all. The reason is that in God's own wisdom, He blessed a man and a woman to come together as a husband and wife to procreate. When same sex marriage is encouraged, it defeats God's purpose of blessing marriage’.

(COP, IDI)

The Islamic leader had this to say about the use of ART by gays, lesbians and single individuals:

'In Islam, there is nothing like a single mother or father. Islam is radically against lesbianism and gay. This is against God's natural way of giving birth...'

(Imam, IDI)

'This act is an abomination. It is not part of our culture as a country. How can two males or females give birth? God is against this and so if we allow this as a country, God will punish all of us in this country.'

(A Traditionalist, IDI)

Acceptability of Assisted Reproductive Technology

Social acceptance of the practices and the procedure involved in ART is a key factor that influences utilisation. It ensures that ART is recognised and accepted as a credible procedure to help fertility challenged individuals to avert their situations. It also guarantees that social supports are available to individuals who have used ART and their offspring. On this issue, the Chief Imam explained that:

'I will recommend to couples who are faced with fertility challenges the type of ART procedure that is accepted by Islam. I mean the procedures that do not involve the use of third-party reproductive resources. It is important to note that if a couple after exhausting all means possible and there is still infertility, the couple must accept that it is not a curse. Probably God knows why.'

(Imam, IDI)

The Church of Pentecost shared their stance on the acceptability of ART:

'Church members who are faced with fertility challenge should seek the face of God. The Church does not approve of surrogacy or third-

party methods in the ART. However, it is recommended that, once a baby is born out of surrogacy, that child should not be discriminated against by the Church...'

(COP, IDI).

On the contrary, a Traditional herbal practitioner had this comment on the acceptability of ART in Ghana:

'I will not entreat people to use ART as a means of getting children. The procedure is not from God. You may end up giving birth to a strange thing that you cannot call a child...'

(A Traditional Herbal Practitioner, IDI).

Perceptions about Children Born through the Use of ART

Despite the increased usage of ART and the total number of children born through the technology, many still have the perception that children who are born through the use of the method may not be healthy due to human handling the gametes and the use of drugs. The Traditionalist shared her perception about ART born children:

'I have not seen any child born through the use of ART but I doubt whether they will be normal... I am sure the children we see around who are handicapped may be as a result of the use of this new procedure'

(A Traditionalist-IDI)

On how the leadership of the Church of Pentecost perceive children born through the use of ART, it was clarified that:

'Children born through ART services are recognised by the Church. We dedicate them as long as it came from the sperm and egg of a

couple. We pray with them and the children are accepted. We do not show any form of discrimination to such children...'

(COP-IDI)

Contrary to the view of the Pentecost Church, the Islamic leader had this to say about how the religion perceives children born through the use of ART:

'Children born through ART services are legitimate provided couples used their own gametes. On the other hand, if the child is born with donor reproductive resources, he or she will be accepted but that child will not inherit the property of the adopted father...'

(Imam-IDI)

Discussion

According to the Church of Pentecost Policy Guidelines on Assisted Reproductive Services, the Islamic teachings, and the belief of the Traditionalist, infertility is determined by the sovereignty of God. Thus, children are considered as gifts from God. Therefore, to have a child or not depends on God's will. However, the Traditionalist further perceived that inability to have children could be as a result of one's sins. It is perceived that abortions, curses and evil spirits could cause infertility. This perception is in line with Murdock's (1980) supernatural ill-health causations. According to Murdock, (1980), the causes of ill-health could be grouped into three main categories with each having its own sub-categories. These are theories of mystical causation (fate, ominous sensation and mystical retribution); theories of animistic causation (soul loss, and spirit aggression); and theories of magical causation (sorcery and witchcraft). The Traditionalist belief about the causes of infertility is consistent with the animistic and the magical causations

of sickness. Similarly, witchcraft, co-wives, envious neighbours, past lovers, Voodoo, curses by ancestors or deities and evil spirits have been ascribed as the traditional causes of infertility among Africans (Mabasa, 2002; Upton, 2001; Washija, 2001). The implication of this position is that individuals who believe in the traditional causes of infertility may seek traditional and/or spiritual interventions as treatment while others of orthodox medical interventions such as ART. This means that religion and spirituality play a very critical role in determining the meaning, causes and seeking treatment for infertility.

Subjective stance was expressed by key religious figures about how infertility could be treated. The use of herbal medication was mentioned as the Traditionalist's stance on the treatment of infertility. This claim has been confirmed by Bardaweel et al (2013); Soladoye et al (2014) who asserted that the use of herbal and/or complementary and alternative medicines (CAM) could help significantly in enhancing fertility or in the treatment of infertility conditions among couples. A similar observation was made by Adewunmi et al (2012) in Uganda as women used herbal medications even before they commenced orthodox medical treatment for their infertility conditions.

The key religious figure from the Church of Pentecost and the leader of Islamic faith on the other hand believe that infertility could be treated by seeking the face of the Lord. This position confirms the God-centric healing model by Padela, Gunter, Killawi & Heisler (2012). The model postulates that for an individual to gain good health there is the need for such an individual to seek help directly from God. According to Padela et al (2012), this could be done directly through prayer, supplication, and reading of the Qur'an/ Bible,

or indirectly through God's agents such as Imams or pastors and in some cases, the use of both direct and indirect means. Moslems further indicated that prayers could be used to 'blow off' the particular part of the body that is affected as a means of treating conditions including infertility. Again, the use of talisman and the washing of slate which contains written portions of the Quran could be drunk or used to wipe the affected part of the body for healing.

These practices have been described by some orthodox practitioners such as ART service providers as a delay in seeking medical treatment to infertility and partially the reason why most women who seek ART treatment are aged (Kocourkova, Burcin & Kucera, 2014). Although successive cycles in older women have been found to be possible, it is also ascertained that advanced maternal age is associated with complications which may result in abnormal fertilisation and development, such as implantation failure and miscarriage (Schmidt et al, 2011).

Policy Guidelines on Assisted Reproductive Services of the Church of Pentecost and Islamic teachings on the treatment of infertility accept the use of ART to treat infertility among their members. However, there are conditions attached to the use of ART for treatment. For example, Islam allows a situation where a man's sperm is put together with the wife's egg by a doctor to assist them to have children. This position is consistent to the Sunni Islamic belief on assisted reproduction, which was delineated in a seminal "fatwa" in 1980 (Inhorn, Gurtin & Lanman, 2012). It indicated that artificial insemination with spouse's own sperm was permissible. The child that comes out of this process is regarded as a legitimate child of the couple (Inhorn, Gurtin & Lanman, 2012). A similar perception is held by the Pentecostal group. This

group believes that the use of ART to treat infertility is allowed provided the reproduction resources came from the couple who have fertility challenges and used by the same couple.

Contrary to this view, the Vatican, for example, acknowledges the use of ART as immoral and totally unlawful. In the view of the Vatican, utilisation of ART such as IVF separates the human procreation from what God has ordained as a means of having children; that is through natural sexual intercourse between heterosexually married couple (Schenker, 2005). The implication is that Catholics who are faced with infertility conditions could not make use of ART but wait upon the Lord. Conversely, some Catholic moral theologians have opposed this belief by the Vatican. For example, it has been argued that couples who access ART as a remedy to their infertility situations show marital faithfulness (Shannon, 2004). Again, couples who utilise ART are doing what other couples are doing without ART, thus cooperating in the creation of a new being from their love and their bodies (Shannon, 2004). Similarly, the Christian Dental Medical Associations (CDMA) (2010) in their Ethics Statements argued that aside natural conception and birth, married couples who are faced with infertility challenges could pursue assisted reproductive technology as a remedy to their fertility challenges. The Christian Dental Medical Association argued that the successful application of the various ART was a direct expression of God-given creativity and stewardship in man. Christian Dental Medical Association found the use of medical assistance in reproduction, especially the use of artificial insemination by husband (AIH), adoption, freezing of sperm or eggs for future use by couple, IVF, ZIFT and GIFT consistent with God's design for reproduction.

The Traditionalist was doubtful about the use of ART. The Traditionalist although had heard about the use of ART to treat infertility, did not believe that was possible. The Traditionalist assumes that pregnancy should be natural between a man and a woman without the involvement of a third person or the use of technology. The Traditionalist pointed out that if technologies are used to create human beings instead of the natural way, then babies could be manufactured and their sex, complexion, height of such children determined by man. In this way, man may be likened to God.

The use of donor gametes was strictly prohibited among the Traditionalist, Moslems and the Christian denominations including the Catholic and the Church of Pentecost. This assumes that the use of donor gamete portrays a third-party's interference in sanctified marriages. A similar finding came up in a study, which purported that countries with Islamic sharia laws prohibit the use of donor sperm for fertilisation processes (Albar, 2002; Inhorn, 2003). Previous studies further indicated that any individual who donates sperm or oocyte for Artificial Insemination purposes is regarded to have committed adultery and cleansing is of key importance to such an individual in Islam (Albar, 2002; Inhorn, 2003). Other studies also confirmed that in most Sunni dominated countries, a ban on the use of donor gamete has been enacted as a law and it is also against the code of ethics for medical practitioners. Based on this reason, couple who demand this service are refused (Hussain, 2003; Inhorn, 2003).

Similarly, three reasons have been cited why Christians must reject the use of third-party gametes (Valji, 2010). First, according to Valji (2010), the utilisation of ART violates the sanctity of marriage. The use of Assisted

Reproductive Technologies involving a third-party gamete is morally regarded as adultery since the Holy Bible indicates that procreation is only intended in marriage (Genesis 1:28) and Christians who violate this declaration by God suffer the displeasure of God (Genesis 16 and 30).

Further, the rejection of third-part gamete in the reproduction processes by Christians emerged from the view that the act leads to exploitation of human beings, who are created in the image of God (Gen. 1:26-27). These exploitations come in the form of medical, psychological and socio-economical risks. The final reason cited for the rejection of third-party gamete donation by Christians is based on the belief that the use of ART does not command respect for the rights of children born through the act.

It has also been argued that, there is the possibility that children who are born through the use of donor gametes may not come into contact with their true biological parents. This situation has been described as violation of human rights (Burr, 2010; Sauer, 2009). Furthermore, Kharb (2007), posits that “Most religions do not accept the impregnation of one's wife by the sperm of a third-party, as it does not make the child one's own and it is regarded as “illegitimate even in man-made laws . . . it is redefining the concept of family and turning traditional notions of reproduction upside down” (2007, p. 4). Based on these reasons, the use of donor gametes and other reproductive practices that involve third-party resources should be abolished.

The Roman Catholic Church in particular has also cited two major reasons why its members should shun away from the use of third-party reproductive resources and ART in general. First, the belief that human embryo is a soul that needs to be protected. The Church believes that all forms

of ART services will expose human embryos to threats and dangers and are therefore morally unacceptable. The Catholic Church believes that if human embryo is produced, it must result in the birth of a baby. The second reason for opposition to the use of ART by the Roman Catholic tradition is the belief that procreation must only occur in the confines of sexual intercourse within marriage between a male and a female. This means among other things, that no third-party reproductive services/practices including surrogacy and gamete donation should be sanctioned because they do not promote fertilisation from sexual intercourse between couples (Winslow, 2006).

Despite this position, it is likely that individuals may defy these orders to seek infertility treatment from various sources especially when results delay. Again, the expectations to meet societal roles as parents may make others defy religious and cultural beliefs and resort to other treatment options that are deemed potent. Also, other denominations such as the Protestants, Anglican churches and Judaism accept the use of ART because they are perceived as promoting parenthood (Hynie & Burns, 2006). Therefore, it cannot be generalised that all Christians must reject the use of third-party resources in the procreation processes.

States involvement in the control of assisted reproductive practices involving third parties has emerged recently probably due to the perceived risk and other related factors such as exploitation and human right abuses (Danish Council of Ethics, 2013). These reproductive practices include gamete donation and surrogacy. For example, some European countries like Germany, Italy and Austria have enacted laws that ban gamete donation completely. The

key concerns include: safety, exploitation of donors and the commodification of the human body (Danish Council of Ethics, 2013).

Despite these claims of prohibitions, there are other studies which have disagreed to this position on the basis of infringement on human rights. Article 12 of the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) (United Nations, 1981) indicates that “States Parties shall take all appropriate measures to eliminate discrimination against women in the field of health care in order to ensure, on a basis of equality of men and women, access to health care services, including those related to family planning”. Again, CEDAW further declares under same Article 12 that “States Parties shall ensure to women appropriate services in connection with pregnancy, confinement and the post-natal period, granting free services where necessary, as well as adequate nutrition during pregnancy and lactation”.

Furthermore, Article 15, sub-section B of the International Covenant on Economic, Social and Cultural Rights (ICESCR) (United Nations, 1966) indicates that “States Parties shall recognise the right of everyone to enjoy the benefits of scientific progress and its applications”. These scientific applications may not exclude the use of ART which has emerged as a result of scientific advancement.

From the perspective of the radical libertarians, procreation is a claimed-right for an individual to resolve whether or not to reproduce (Mutcherson, 2017). Per this explanation, the decision to procreate and the technique to use is exclusively human right which should not be decided by any other individual, a group or the state. The liberty or freedom to procreate

embraces the freedom for an individual to apply all the necessary steps at his/her disposal or make informed choices that may end up in the birth of a child (Robertson, 2003).

Furthermore, some Islamic clerics especially from the Shia group have openly agreed to the third-party involvement in the child bearing process. As a result, ART services involving third-party donations such as sperm, embryo donations and gestational surrogacy are accessed by infertile couples in Shia dominant countries like Iran, some parts of Iraq, Lebanon, Bahrain, Syria, Saudi Arabia, Afghanistan, Pakistan, and India (Inhorn & Tremayne, 2012).

Perception about children born through the use of ART varied among the various religions. The Traditionalist believes that children born through the use of ART may have birth defects and exhibit certain abnormalities. This perception is similar to the findings of Williams & Sutcliffe (2009) and Williams, Sutcliffe & Sebire (2010) who observed that children born through the use of ART may experience higher risk of birth defect compared to children conceived spontaneously. Again, data from meta-analyses indicated that birth defects in infants born after ART was higher than their counterparts who were spontaneously conceived (Hansen, Kurinczuk, Milne de Klerk, & Bower, 2013). A national survey in Sweden also depicted increased birth defects in infants after assisted reproduction (IVF) even after maternal age and parity had been adjusted (Källén et al., 2010).

The American College of Obstetrics and Gynaecology (2004) has also outlined a number of factors that are likely to impact on the health of children born through the use of the various assisted reproductive technologies. First, it argues that the pre-existing medical and genetic conditions of parents may be

inherited by the offspring. Second, women who undergo ART take a combination of drugs before and after the process and this may have a detrimental effect on the embryo. Third, it is put forward that human manipulations of egg, sperm, cryopreservation, embryo transfer and other processes may result in alteration of natural processes and this may influence natural developmental outcomes in infants (Squires & Kaplan, 2007).

Several other studies have discussed the birth defects and ART. For example, a survey on the long-term health of children conceived through IVF found that children conceived by IVF procedure may experience higher blood pressure, glucose levels and generalised vascular dysfunction compared to children conceived spontaneously (US Centre for Disease Control & Prevention, 2013). Children born through the use of IVF procedure reported 2 to 3 times higher risk of suffering from some types of muscle and liver cancers than infants born spontaneously (Williams et al., 2013).

It was also found that children conceived through IVF are likely to have premature cardiovascular disease and generalised vascular dysfunction (Scherrer et al., 2012). It is confirmed that children born through IVF are 10 times likely to have genetic disorders including Angelman syndrome, which may result in severe mental retardation, speech impairment, and Beckwith-Wiedemann syndrome (Blackwell, 2010).

Despite the position of the Traditionalist, children born alive from any form of ART procedure have full protection of the law and this law imposes enforceable duties, including the provision of children's health needs and other physical and material needs by the parents (The Children Act. London: HMSO, 1989).

Conclusion

On the whole, ART was viewed as an acceptable procedure by key religious figures from the Islam and the Church of Pentecost as a means by which married couples who are faced with infertility could use to meet their desire of biological parenthood. Donor gametes, surrogacy and other procedures that involved third parties in the procreation processes among married couples were prohibited. The Traditionalist on the other hand, did not believe in the possibility of using ART to meet parenthood desire. Despite these varied positions, children born through the involvement of third-party reproductive products are legitimately recognised and dedicated to God by the Church of Pentecost whiles Islamic laws recognise such a child as illegitimate and does not have the right to any property of the 'adopted father'. The Traditionalist believes that such children may not be normal human beings. From the discussions, it appears that strict belief system influences followers of the various religious groups however; it must be acknowledged that personal interpretation of faith tends to vary from one person to another in times of health challenges including infertility and utilisation of ART.

The next chapter which concludes the thesis covers summary of the main findings, conclusions, policy implications, evaluation of conceptual framework and recommendations for further research.

CHAPTER TEN
SUMMARY OF MAIN FINDINGS, CONCLUSION AND
RECOMMENDATIONS

Introduction

In recent years, the use of ART has made it possible for millions of couples to conceive and give birth in situations which would have been difficult in some years past. This has generated public interest especially after the first IVF child was born in 1978. The use of ART has expanded to include many different options which include the use of third-party reproductive resources, surrogacy and other techniques. The present study was undertaken to explore the experiences of individuals/couples who have successfully delivered through the use of assisted reproduction, assess the experiences of infertile individuals/couples undergoing assisted reproduction processes, investigate assisted reproductive technology services provided to infertile persons and explore religious acceptability of the use of assisted reproductive technology services among Ghanaians.

Literature review on the study was based on models and theories on seeking treatment to infertility and other related empirical issues on ART. Consequently, qualitative approach and interpretive philosophy underpinned the study with the use of in-depth interviews to gather data. The data was thematically analysed. This chapter highlights the key findings, conclusions, contributions to knowledge and recommendations.

Summary of Main Findings

Assisted Reproductive Technology service provision and related issues

Fertility hospitals in Ghana offer nearly all the ART services and programmes. These include IVF, ICSI, GIFT, ZIFT, TESA, gamete donation, embryo freezing and surrogacy. In spite of the number of ART centres in Ghana, there is no standardisation of protocols and reporting on service providers' activities.

Results from the study showed that the provision of ART services was not limited to only the medical practitioners. The process of ART may comprise of other stakeholders outside the medical arena whose services are equally crucial to the birth decisions of ART users. For instance, in addition to the prospective parents, other key players who were involved in the reproduction process included the sperm donor, ova/egg donor, a surrogate mother and reproduction agencies.

The health implications of going through ART procedure were also highlighted by the findings of the study. Basically, risks likely to be related to women who used the technology if not managed well included ovarian hyperstimulation syndrome which comes as a result of the drugs that are used to stimulate follicles. This condition was not common since precautionary measures were always taken to avoid its occurrence. Other conditions that were identified as risks accompanying the use of ART by women included swollen belly, dizziness, weight gain, drowsiness and nausea. However, the rates at which these conditions were recorded were very minimal and were managed to prevent dangers. Multiple pregnancies and its related risks such as

caesarean sections and other abnormalities in children were also identified to be possible outcomes.

The study also identified variations in the understanding and reporting of successes between service providers and clients. To service providers, success was achieved when clients became pregnant while to clients; success was achieved when they delivered live babies. While some service providers quoted the successes achieved with specific treatment techniques and specific ages, others indicated success rate represented the entire ART activities offered in their facilities. The findings also showed that almost all women who delivered through ART went through caesarean sections. This was recommended to women by the medical team in order to prevent pregnancy losses and, in the end, increase the facility's success record.

Assisted reproductive practices in Ghana are not regulated by any national policy and/or regulations. Although service providers claim they use international guidelines and standards, these may not be applicable in the Ghanaian setting due to the differences in political, economic and socio-cultural practices. The implication is that service providers virtually use their own discretion in providing services to clients. This situation may put the health of users especially women at risk.

Experiences of Infertile Persons Undergoing self-cycled Assisted Reproduction Treatment

The study results revealed that women sought ART treatment for various reasons. For example, some women indicated that they were embarrassed by their infertile condition after long period of being in marital relationships. Other women who sought treatment for their infertility through

the use of ART services believed that they were getting older and their condition could only be treated by seeking orthodox treatment through ART. Pains, shame and pressure from spouses, friend and in-laws were also observed to have influenced the decision to seek ART treatment.

Sources of information about the availability of ART to clients included the electronic media (internet, TV and radio), print media (magazines and newspapers) and most importantly, satisfied clients, friends and members of social networks.

It was also found that the cost of infertility treatment was excessively expensive such that some couples who patronised infertility treatment encountered financial difficulty in settling their bills. Again, cost of treatment was not standard among the various hospitals. Despite the complaints about the high cost of accessing ART services in Ghana, couples who needed babies had to save, borrow and even sell their assets in order to get money to go through the procedure.

Relatively, longer period of time was needed for investigations, diagnoses and the recommended treatment for a particular infertility situation. In some cases, hospitals arrange treatment plans and schedules to suit clients but others may not especially when treatment is done in batches. Adversely, jobs of women were affected due to the treatment schedules. Public and civil servants who were involved in the treatment either took their annual leave or took some days off to go through the treatment procedure. Others who were not able to take their leaves were found working even when they were on their hospital beds.

Self-reported health effects of going through ART treatment were also evident. Conditions such as weight loss and/or gain, sleeplessness, whole body pains, breast tenderness and bleeding were reported. Daily course of work was also affected. Some women believed that their sexual lives were significantly affected. However, most women did not consider these factors as impediments to achieving the gender and social roles of being mothers.

Experiences of Persons who have Successfully Delivered through Assisted Reproduction

Infertile women faced hostile and stigmatised treatments from their spouses, families and the entire society. In some cases, infertile women were called names and abused because infertility is frowned upon by the Ghanaian society. However, this hostile treatment ceased as soon as women achieved motherhood status.

Again, most women who gave birth through the use of ART went through caesarean sections to have their babies mainly due to their age and in some cases, based on the recommendation of ART service providers.

Women who gave birth with the use of ART had the intention to give birth again as long as their ages could permit them. Furthermore, women who successfully gave birth through ART indicated their intentions to give birth again to prove to the entire society that they were not barren and so a second or third child would exonerate them from being perceived as barren. For other women, it was necessary to give birth to two or more children so that their homes would become lively while others maintained that two or more children could better cater for them when they were old. On the other hand, women

who had delivered multiple children did not have any intention to give birth again because they had got what their hearts desired.

Women during their infertility periods received instrumental and/or emotional supports from families and friends which influenced their decision to seek treatment. However, this depended on the kind of interaction between the individual, the social network and the rest of the society. For the fear of being stigmatised, other women either concealed their infertility conditions or treatment from family and friends. Others resettled in other communities in order to maintain privacy and confidentiality about their ART usage and children born.

Further, the findings established that children born through ART did not encounter any adverse health implications as a result of the use of the technology. Children were strong and healthy as their counterparts who were conceived and delivered spontaneously.

Religious Acceptability of ART

The teachings of Islam, the Church of Pentecost and Traditional religion revealed that fertility and infertility are determined by the sovereignty of God. Thus, children are considered as gifts from God. Therefore, to have a child or not depends on the will of God. Traditionalist further perceived that inability to have children could be attributed to one's sins and evil spirits as well as one's deed.

The results further revealed that key religious figures from the Church of Pentecost and Islam admonished their members to seek the face of God as the means of treating infertility. In addition, Moslems believe that the use of talisman and drinking or washing the affected parts of the body with

inscriptions from the Quran heals people from all forms of afflictions including infertility. The use of herbal medication was mentioned as the Traditionalist's position on the treatment of infertility.

Generally, ART was regarded as an acceptable procedure by key religious figures from the Islamic and the Church of Pentecost as a means by which married couples who are faced with infertility could use to meet their desire of biological parenthood provided the reproduction resources came from the same couple who have fertility challenges. It was however, emphasised that the use of ART should be promoted after couples did not get pregnancy/child after several years of prayers. On the other hand, the Traditionalist did not accept the use of ART to treat infertility. It was indicated that if technologies are used in the creation of human beings, such children may not be normal.

The use of donor gametes, surrogacy and other procedures that involved third parties in the procreation processes among married couples were prohibited by the Traditionalist, Islam and the Church of Pentecost. This assumed that the use of donor gametes portrays a third-party's interference in sanctified marriages. Despite these perceptions, infertile individuals across the three main religions defy religious and cultural beliefs to seek infertility treatment through the use of ART to meet societal roles and expectations as parents.

Perception about children born through the use of ART varied among the various religions. The Traditionalist believes that children born through the use of ART are not legitimate children and may have birth defects and also exhibit certain abnormalities. Islam does not recognise children born through

the use of third-party reproductive resources as legitimate. Such children do not have the right to inherit the property of supposed father and must bear the name of the donor father. However; when children are born through the use of gametes from married couple, such children are legitimately recognised. Once children are born through the use of ART, the Church of Pentecost recognises such children as legitimate and normal even if third-party reproductive resources were used. Furthermore, the three religions do not accept the utilisation of ART by individuals who are not in marital relationships, gays and lesbians.

Conclusion

The desire for maternity among couples who are faced with fertility challenges especially in the Ghanaian societies has stimulated the search for treatments through the use of ART. Modern methods and techniques such as IVF, ICSI, GIFT, ZIFT, TESA, gamete donation, embryo freezing and surrogacy are operational in the country.

The Church of Pentecost and Islam accept the use of ART provided gametes came from a couple but Traditionalist did not accept the use ART at all. The use of third-party reproductive resources either for commercial or altruistic purposes were not accepted by the key figures of the three main religions in Ghana. This was based on the belief that third-party involvement in the reproduction processes disrupts the natural reproduction decision which is reserved for married couples.

The use of ART to treat infertility is associated with some challenge at the individual, community and policy levels. At the individual level, cost of treatment was identified to be very expensive. Users sold their assets,

borrowed or took bank loans to pay for the treatment due to the importance attached to childbearing in the Ghanaian society. Self-reported health and other implications of going through ART treatment were identified as dizziness, sleeplessness, nausea, body pains and bleeding. At the community level, socio-cultural expectations of parenthood stigmatised infertile couples. The policy level constraints encompass lack of national treatment protocol and regulations for infertility treatment with ART, perception about the use of ART treatment, perception about children born through the use of ART and unavailability of fertility centres across the country.

The use of different facilities and respondents (key religious figures, service providers and clients) in the study enriched the data and the key findings. The use of in-depth interviews also made it possible to capture the various dimensions on the phenomenon under study.

The models, theories and the conceptual framework directed the achievement of the study objectives. The ill-health causation theory and God-Centred healing model were instrumental for the religious acceptability of ART while the Help seeking theory, behavioural and Network Episode models aided the lived experiences of women who used ART. Despite the religious prohibition of the use of third-party reproductive resources, the use of ART has become operational in the country. It is therefore important that the state formulates policies that will rationalise the use of ART since childbirth is a right to be enjoyed by all.

Reflections on the Conceptual Framework

The model for seeking health for infertility was adopted as the conceptual framework for the study. The elements of the conceptual

framework that applied to the study were symptoms salience, life course factors, individual and social cues, enabling and predisposing factors. Generally, the conceptual framework fits with the objectives that guided the study. The symptoms salience component of the conceptual framework was clarified through the reasons why respondents sought ART treatment for their infertility situations. Analysis of the reasons for seeking ART treatment suggested that clients who faced infertility situations were rejected, divorced and in most cases were depressed coupled with other related health conditions. These conditions influenced clients' decision to seek treatment especially when these factors were considered severe.

Life course factors which portray the sequence of events, roles and age categories that an individual goes through from birth until death also affect individual's decision. Discussions on the life course factors such as age, marital status and parity revealed that a couple's decision to seek ART treatment for infertility was influenced by these very factors. For example, women experience declines in fertility as they age towards menopause. This condition is characterised by anxiety, depression, mood swings and less interest in sexual intercourse which may affect childbearing. One's marital status also influenced the decision to seek fertility treatment. The analysis showed that couples who sought fertility treatment were all married. However, those whose marriage had lasted beyond two years without children sought treatment for infertility.

Individual and societal experiences significantly affect individuals in seeking health care especially fertility treatment. Personality attributes of individual family members and other social groups could also influence an

individual's coping styles, functioning, and well-being. Enquiries on individual and social cues revealed that infertile couples who made their infertile conditions known to friends, religious leaders and other social groups received various resources including emotional, informational, and instrumental supports. This supports the Akan adage: 'wo ton wo yare] a, wo nya ano aduro'. This adage literally means that if you make sickness condition known, you are likely to receive help. On the other hand, women who for the fear of being stigmatised kept their infertility conditions secret did not receive any kind of support from any one.

Genetic, life style, attitude, personality, and other enabling factors are associated with health, or lack of it. Analysis on the enabling and predisposing conditions, such as education, health locus of control, general health, and attitudes toward treatment influenced the decision to use ART as the preferred treatment method for their infertility conditions. An individual's level of education has a direct influence on occupation, income and information search on the availability of treatment options for infertility. Further, findings on the enabling and the predisposing constituent of the conceptual framework showed that clients utilised the various fertility clinics and hospitals because of the successes chalked by these fertility hospitals and acceptability of the techniques that were used.

In all, the model delivered a useful support for the study of infertility treatment given the combination of other health seeking models and multiple factors such as the symptoms salience, life course variables, individual and social cues, predisposing and enabling factors that influenced the decision to treat infertility.

Contribution to Knowledge

This study has provided information, knowledge and the understanding of the use of ART in Ghana. It has also provided knowledge and information on the perceived misconceptions and health related challenges about going through ART procedure to achieve parenthood. This is critical since knowledge about assisted ART is an essential parameter to the use of infertility treatment by couple.

Again, existing studies on assisted reproduction generally focused on issues related to infertility treatment and stigmatisation, stress, depression and other mental health issues (Donkor & Sandall, 2007; Donkor, 2008; Donkor & Sandall, 2009; Fledderjohann, 2012; Naab, Brown & Heidrich, 2013; Alhassan, Ziblim, & Muntaka, 2014). Others dealt with setting up and running a successful IVF programme (Adageba, Maya, Annan & Damalie, 2015). Hörbst and Gerrits (2016), Allen (2016) examined the transnational analysis of health professionals and assisted reproduction in Ghana and Uganda while other studies concentrated on the clinical aspect of the use of IVF in Ghana (Yakass, Woodward, Otoo & Hiadzi, 2016). In this study, an attempt has been made to shift the focus on general infertility to issues on individual experiences and other religious discourse in using assisted reproduction to meet parenthood. The implication is that individuals who could not use ART to meet their fertility desires on religious grounds would be informed about their religion's position on the use of ART. It would also help the society to re-evaluate and reconsider its reaction to this new technology.

Theoretically, the study has contributed to knowledge by expanding the variables in the conceptual framework for seeking health for infertility and making it applicable to the present study.

Implications of Findings for Policy

There is the need for state involvement in the provision of ART treatments for its citizens. This will ensure equitable distribution of the health resources across the country for efficient use by individuals who are faced with fertility challenges. State involvement in the provision of ART services may also break the monopoly of private providers and result in competition, efficiency and probable cost reduction.

Assisted reproductive practices in Ghana are not regulated by any national policy and/or regulations. There is therefore the need for national guidelines for the provision and utilisation of ART services to guarantee the safety of users. First of all, the Ministry of Health and Ghana Health Services should ensure that standards and guidelines for treatments are developed and strictly adhered to by service providers.

There is also the need for the state to enforce policies and regulations that will define citizenship issues that may arise due to services such as gamete donation, surrogacy and cross border reproductive services that are currently offered in the country.

Moreover, there is the need for a national policy on who can access ART services in the country. For example, some service providers indicated that they will not offer services to single, gay and lesbian individuals who desire to have children. This may infringe on their human rights.

Furthermore, the cost of ART treatment for infertility was very high. In this vein, the state should intervene to ensure a standardised cost and if possible, subsidise the cost of the importation of drugs and equipment meant for the treatment of infertility to Ghanaian nationals.

Finally, information and counselling were identified as crucial to ART treatment processes. There is therefore the need for standardised information and counselling protocols to be offered by qualified counsellors to clients at every stage of the treatment processes. In providing counselling to clients, health care providers should talk about stigma in addition to the medical aspect of the treatment as a way of boosting the confidence of the infertile women. In a comprehensive infertility treatment, emotional and psychosocial aspects of treatment should not be ignored as they are important factors for increasing the quality of care.

Recommendations

Based on the main findings of the study, a number of recommendations are made. First, the study recommends that, given the value and the premium put on children by the Ghanaian society, the National Health Insurance Scheme (NHIS) should be expanded to cover ART treatments if not fully, certain aspects of infertility treatment. For example, simple treatment procedures and medications could be absorbed by the NHIS. This could offer opportunity to infertile couples who are unable to patronise the services of ART facilities in the country due to financial challenges to do so at a lesser cost. However, this should be done by taking into cognisance the current total fertility rate and population growth. Again, care must be taken in order not to

compromise on the country's population policy which seeks to reduce the population growth rate.

Religion was also identified to play a major role in people's attitudes towards the use of assisted reproduction. Nevertheless, varying levels of acceptance were observed. As a result, the choice to use ART should be opened along with how one chooses to interpret or follow his/her beliefs about the use of ART. Again, the Council of Churches must inform their members on the advancement in reproductive technologies and how they affect families especially women, and counsel members facing infertility and choose, or are pressurised into, utilising the various reproductive techniques appropriately.

Second, misconceptions still persist among Ghanaians about the causes, effects and treatment of infertility. It is therefore recommended that health education, especially reproductive health education, is embarked upon by the Ghana Health Service, Ministries and Departments to demystify these parochial misconceptions about infertility and its treatment. Again, social and behaviour change communication materials should target the promotion of scientific means of infertility treatment.

Again, couples who are contemplating to use ART must be sufficiently informed of both the risks and the benefits to themselves and future children so that they may make informed decision and choices. Children born as a result of the use of ART also have the right that their parents receive appropriate information about risks and the actions that might be taken to prevent or reduce their dignities as human beings.

Strengths and Limitations of the Study

Assessing clients' experiences especially on infertility treatment has helped services providers to better understand clients' challenges, needs and expectations. This will result in improvement in the delivery of quality of care and services to clients.

Analysing ART services provision on the other hand, may allow individuals who are faced with infertility situations to obtain comprehensive and accurate information about what goes into treatment and the possible outcomes. This information will help clients to make informed decisions about where to seek treatment due to the numerous uncertainties/challenges associated with the use of ART.

Furthermore, a number of studies have found relationship between religiosity and health seeking behaviour (Kretchy, Owusu-Daaku & Danquah, 2013; Koenig et al. 2015) however, studies specifically directed to ART treatment adherence and religiosity in Ghana have been limited. As a result, discourse on religious acceptability and the use of ART to avert fertility challenges in Ghana is worth discussing. The study has also, contributed to literature in the area of experiences of users, service providers in Ghana have been achieved. The present study has also made use of in-depth interview to obtain data from a sample size of 45 for a qualitative study. Again, data obtained was analysed thematically. This makes the study outstanding in this topical area in Ghana.

Despite the strengths, limitations were also identified. First, data collection was confined to only five fertility clinics and hospitals out of about 12 in the country. Although an attempt was made to include all facilities, the

very few facilities who accepted to be part of the study were used. The inclusion of all other fertility clinics and hospitals in the study would have generated an improved generalisability of the findings.

Finally, the study utilised only qualitative data collection methodology due to the nature of the study and the kind of research participants involved.

Paucity of data on clients who used ART in Ghana served as a limitation to the study. Data on the total number of clients over the years, total number of deliveries by sex and order of delivery (singleton or multiple) conditions presented, country of origin of clients and failures recorded among clients were not readily available.

Areas for Further Research

The study sought to investigate the acceptability and the experiences with assisted reproduction in Ghana. As part of the study, previous studies related to the topic were reviewed; theories and conceptual models related to the study were also examined. However, there are gaps that could be filled through further research on this topical area.

First of all, the study was conducted in only five out of about twelve ART facilities in Ghana. It is suggested that a similar study is conducted in the rest of the facilities in the country to establish similarities and differences with the present findings.

Secondly, future studies should explore the experiences of clients who failed to achieve pregnancy. Such a study will highlight the challenges women go through after they fail to achieve pregnancy after going through ART treatment and the coping strategies, they adopt to manage their situations. This particular area was not explored in the present study because it was difficult to

locate persons who had failed to achieve pregnancy after going through the ART processes. Some few ones who were identified were not willing to be part of the study because of the anger, pain and disappointment they were going through

Thirdly, there are other aspects of ART discourse such as the experiences of donor cycled clients. These categories of clients do not use their own reproductive resources either for medical or personal reasons. It will therefore be worth studying such experiences.

The contribution of policy making on the utilisation of ART in Ghana is also worth exploring in the future. Such a study will explore the legalities surrounding the establishment of fertility clinics, the type of services facilities will offer and who should benefit from what kind of services in terms of sexual and marital orientations of users in accordance with the country's stand on the delivery of ART services.

BIBLIOGRAPHY

- Abbasi-Shavazi, M., Inhorn, M. C., Razeghi-Nasrabad, H. B., & Toloo, G. (2008). The Iranian ART revolution: Infertility, assisted reproductive technology, and third-party donation in the Islamic Republic of Iran. *J. Middle East Women's Stud.* 4, 1-28.
- Adageba, R. K., Maya, E. T., Annan, J. J., & Damalie, F. J. (2015). Setting up and running a successful IVF program in Africa: Prospects and challenges. *J Obstet Gynaecol*, 65(3), 155-7.
- Adamczyk, A., & Cassady, P. (2009). Shaping attitudes about homosexuality: The role of religion in cultural context. *Social Science Research* 38(2), 338-351.
- Adegunmi, A. A., Etti, E. A., Tayo, A. O., Rabiun, K. A., Akindele, R.A., Ottun, T. A., & Akinlusi, F. M. (2012). Factors associated with acceptability of child adoption as a management option for infertility among women in a developing country. *Int J Women's Health*, 4, 365-372.
- Agarwal, A., & Sekhon, L. H. (2011). Oxidative stress and antioxidants for idiopathic oligoasthenoteratospermia: Is it justified? *Indian J Urol.* 27, 74-85.
- Agnafors, M. J. (2014). The harm argument against surrogacy revisited: Two versions not to forget. *Medicine, Health care and Philosophy*, 17(3), 357-363.
- Albar, M. A. (2002). Ethical considerations in the prevention and management of genetic disorders with special emphasis on religious considerations. *Saudi Med J.* 23 (6), 627-32.

- Alhassan, A., Ziblim, A. R., & Muntaka, S. (2014). A survey on depression among infertile women in Ghana. *BMC Women's Health* 14, 42.
- Allen, F. C. (2016). Commentary on transnational connections of health professionals: Medicoscapes and assisted reproduction in Ghana and Uganda. *Ethn Health*. 21(4), 375-8.
- Amadiume, I. (1987). *Male daughters, female husbands: Gender and sex in an African society*. London: Zed Books
- American College of Obstetrics & Gynaecology (2010). *The limits of conscientious refusal in reproductive medicine. Committee Opinion No. 385*. 2010. Retrieved from <http://www.acog.org/~media/Committeepercent20Opinions/Committeepercent20onpercent20Ethics/co385.pdf?dmc=1&ts=20130827T1325129527>
- American College of Obstetrics and Gynaecology. (2004). *Prenatal diagnosis of fetal chromosomal abnormalities (Practice Bulletin Number 27, May 2001)*. Compendium of selected publications. Washington, DC: Author.
- American Society for Reproductive Medicine. (2012). *Multiple pregnancy and birth: Twins, triplets, and high-order multiples: A Guide for patients*. Retrieved from https://www.asrm.org/uploadedFiles/ASRM_Content/Resources/Patient_Resources/Fact_Sheets_and_Info_Booklets/multiples.pdf 7.
- Andersen, A. N., Gianaroli, L., Felberbaum, R., Mouzon, J., & Nygren, K. G. (2006). European IVF monitoring programme for the European Society of Human Reproduction and Embryology (ESHRE). *Hum Reproduction*. 21(7), 1680-97.

- Andersen, R. (1968). *A Behavioural Model of families' use of health services*. (Research Series No. 25). Chicago, IL: Centre for Health Administration Studies, University of Chicago.
- Andersen, R. (1995). Revisiting the behavioural model and access to medical care: Does it matter? *Journal of Health and Social Behaviour*, 36(1), 1-10.
- Andersen, R., & Davidson, P. L. (2001). Improving access to care in America: Individual and contextual indicators. In R. Andersen, T. Rice, & J. Kominski (Eds.), *In changing the U.S. health care system: Key issues in health services, policy and management* (pp. 3-30). San Francisco: Jossey-Bass.
- Andersen, R., & Newman, J. F. (1973). Societal and individual determinants of medical care utilisation in the United States. *Milbank Mem Fund Q Health Soc.* 51(1),95124.
- Andersen, R., & Newman, J. F. (2005). Societal and individual determinants of medical care utilisation in the United States. *The Milbank Quarterly*, 83(4), 1-28.
- Anderson, R., Marie, M. D., FACOG., & Bruchalski, J. (2004). *Assisted reproductive technologies are anti-woman. Respect life program*. United State Conference of Catholic Bishops. Retrieved from <http://www.usccb.org/issues-and-actions/human-life-and-dignity/reproductive-technology/>.
- Andrews, L. (1995). Beyond doctrinal boundaries: A legal framework for surrogate motherhood. *Virginia Law Review* 8, 2343-2375.

- Anney, V. A. (2014). Ensuring the quality of the findings of qualitative research: Looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies*, 5(2), 272-281.
- Asemota, O. A., & Klatsky, P. (2015). Access to infertility care in the developing world: The family promotion gap. *Seminars in Reproductive Medicine*, 33, 17-22.
- ASRM Practice Committee: Guidelines on number of embryos transferred. *Fertility and Sterility*, 92 (5), 1518–1519.
- Assisted Human Reproduction Act. Royal Assent: (2004). S.C.2004, c. 2. Retrieved from: http://laws.justice.gc.ca/en/ShowFull_Doc/cs/A-13.4//en.
- Assisted Reproductive Technology in Europe, (2002). Results generated from European registers by ESHRE. *Human Reproduction*, 21(7), 1680-169.
- Astuti, R. (1988). Cattle beget children—but women must bear them: Fertility, sterility and belonging among women in Swaziland. In Tielman, H.J. (Ed), *Scenes of change: Visions on Developments in Swaziland*. Paper presented at the seminar on Social sciences. Swaziland: Free University Amsterdam.
- Auger, J., Kunstmann, J. M., Czyglik, F., & Jouannet, P. (1995). Decline in semen quality among fertile men in Paris during the past 20 years. *N Engl J Med*. 332, 281-5.
- Australian Bureau of Statistics (2011). *Births, Australia 2010*. Canberra, Australian Bureau of Statistics.

- Baetens, P., Devroey, P., Camus, M., Van Steirteghem, A., & Ponjaert-Kristoffersen, I. (2000). Counselling couples and donors for oocyte donation: The decision to use either known or anonymous oocytes. *Hum Reprod*; 15, 476-484.
- Balaban, B., Urman, B., Ata, B., Isiklar, A., Larman, M. G, Hamilton R, et al. (2008). A randomized controlled study of human day 3 embryo cryopreservation by slow freezing or vitrification: Vitrification is associated with higher survival, metabolism and blastocyst formation. *Hum Reprod*. 23, 1976-82.
- Balash, J. (2010). Ageing and infertility: An overview. *Gynecol Endocrinol*; 26, 855-60.
- Bardaweel, S. K., Shehadeh, M., Suaifan, G. A., & Kilani, M. V. (2013). Complementary and alternative medicine utilisation by a sample of infertile couples in Jordan for infertility treatment: Clinics-based survey. *BMC Complement Altern Med*, 13, 35.
- Bartolucci, R. (2008). Cross-border reproductive care: Italy, a case example. *Human Reproduction*. 23(1), 88.
- Baxi, A. & Kaushal, M. (2008). Outcome of twin pregnancies conceived after assisted reproductive techniques. *J Hum Reprod Sci*. 1(1), 25-28.
- Beets, G. A. (2011). Contemporary issue in demography: The rising age at first birth, pros and cons. *AUC Geographica*, 46, 5-14.
- Beguiría, R., García, D., Obradors, A., Poisot, F., Vassena, R., Vernaeve, V. (2014). Paternal age and assisted reproductive outcomes in ICSI donor oocytes: Is there an effect of older fathers? *Hum Reprod*, 29(10), 2114-22.

- Bergmann, S. (2011). Fertility Tourism: Circumventive routes that enable access to reproductive technologies and substances. *Signs* 36(2), 280-9.
- Bertolucci, R. (2008). Cross border reproductive care: Italy, a case example. *Hum. Reprod.* 23(1), 88.
- Bharadwaj, A. (2011). Reproductive viability and the State: Embryonic stem cell research in India. In reproduction, globalization, and the State: In Browner, C. H. & Sargent, C. F. (Eds), *New theoretical and ethnographic perspectives*, (pp113-125). Durham: Duke University Press
- Bharadwaj, A. (2003). Why adoption is not an option in India: The visibility of infertility, the secrecy of donor insemination, and other cultural complexities. *Social Science and Medicine.* 56 (9), 1867-80.
- Blackwell, T. (2011, September 25). In-vitro fertilisation linked to rare genetic disorders. *National Post*.
- Blyth, E., & Farrand, A. (2005). Reproductive tourism-a price worth paying for reproductive autonomy? *Crit. Soc. Policy* 25, 91-114.
- Blyth, E. (2010). Fertility patients' experiences of cross-border reproductive care. *Fertility and Sterility*, 94, 11-15.
- Borgatti, S. P., Ajay, M., Daniel, J., Brass. A., & Guiseppe, L. (2009). Network analysis in the Social Sciences. *Science* 13(5916), 892-895.
- Boyd, C. O. (2001). Phenomenology the method. In P.L. Munhall (Ed.), *Nursing research: A qualitative perspective* (3rd. ed.). Sudbury, MA: Jones and Bartlett.

- Brandes, M., vander Steen, J. O., Bokdam, S. B., Hamilton, C. J., deBruin, J. P., Nelen, W. L., & Kremer, J. A. (2009). When and why do sub-fertile couples discontinue their fertility care? A longitudinal cohort study in a secondary care subfertility population. *Hum Reprod*, *24*, 3127-3135.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, *3*, 77-101.
- Brezina, P. R., & Zhao, Y. (2012). The ethical, legal, and social issues impacted by modern assisted reproductive technologies. *Obstetrics and Gynaecology International*, *2012*(7), 686253.
- Brigham, K. B., Cadier, B., & Chevreur, K. (2013). The diversity of regulation and public financing of IVF in Europe and its impact on utilisation. *Hum Reprod*, *28*(3), 666-675.
- Bunting, L., & Boivin, J. (2007). Decision-making about seeking medical advice in an internet sample of women trying to get pregnant. *Human Reproduction*, *22*, 1662-1668.
- Burns, L. H., & Covington, S. N. (2006). Psychology of infertility. In S. N. Covington, L.H. Burns, S. N. Covington, & L. H. Burns (Eds.), *Infertility counselling: A comprehensive handbook for clinicians* (2nd ed., pp. 1–19). New York, NY: Cambridge University Press.
- Burns, N., & Grove, S. K. (2003). *Understanding nursing research*. 3rd ed. Philadelphia: Saunders Company.
- Burr, J. A. (2010). To name or not to name? An overview of the social and ethical issues raised by removing anonymity from sperm donors. *Asian Journal of Andrology*, *12*(6), 801-806.

- Cahill, L. S (1990). What is the 'nature' of the unity of sex, love and procreation? In Edmund Pellegrino et al., (Eds.) *Gift of life: Catholic scholars respond to the Vatican instruction* (pp.137-148) Georgetown: University Press.
- Caldwell, J. C., & Caldwell, P. (1990). Cultural forces tending to sustain high fertility. In Ascadi, G., Johnson-Ascadi, G. & Bulutao, R. (eds.) *Population growth and reproduction in Sub-Saharan Africa: Technical analysis of fertility and its consequences* (pp. 199-214). Washington, DC: The World Bank.
- Centres for Disease Control and Prevention, American Society for Reproductive Medicine, Society for Assisted Reproductive Technology. (2013). *2011 assisted reproductive technology national summary report*. Atlanta GA.
- Retrieved from: <http://www.cdc.gov/art/ART2011>
- Chakravarthi, I. (2016). Regulation of assisted reproductive technologies: Gains and losses. *Indian Journal of Gender Studies*, 23(1), 133-156.
- Chambers, G. M., Hoang, V. P., Lee, E., Hansen, M., Sullivan, E. A., Bower, C., & Chapman, M. (2014). Hospital costs of multiple-birth and singleton-birth children during the first 5 years of life and the role of assisted reproductive technology. *JAMA Pediatr*, 168(11), 1045-1053.
- Chambers, G. M., Sullivan, E. A., Ishihara, O., Chapman, M. G., & Adamson, G. D. (2009). The economic impact of assisted reproductive technology: A review of selected developed countries. *Fertil Steril*. 91, 2281-2294.

- Chamsi-Pasha, H., & Albar, M. A. (2015). Assisted reproductive technology: Islamic Sunni perspective. *Hum Fertil (Camb)* 18(2), 107-112.
- Chen, C. (1986). Pregnancy after human oocyte cryopreservation. *The Lancet*, 327, 884-886.
- Chian, R., Jack, Y. H., Seang, L., Tan, E., ...Sarmiento, J. E. M. (2008). Obstetric and perinatal outcome in 200 infants conceived from vitrified oocytes. *Reproductive Bio. Medicine online* 16, 608-10.
- Chimbatata, N. B. W., & Malimba, C. (2016). Infertility in sub-Saharan Africa: A woman's issue for how long? A qualitative review of literature. *Open Journal of Social Sciences*, 4, 96-102.
- Christian Medical & Dental Association. Assisted reproductive technology (2010). Retrieved from: http://www.cmda.org/wcm/CMDA/Issues2/BeginningofLife1/Reproductive_
- Ciani, F., Cocchia, N., Esposito, L., & Avallone, L. (2012). *Fertility cryopreservation, advances in embryo transfer*. Bin Wu, Intech Open. Retrieved from: <https://www.intechopen.com/books/advances-in-embryo-transfer/fertility-cryopreservation>.
- Cobo, A., Bellver, J., de los Santos, M., & Remohí, J. (2012). Viral screening of spent culture media and liquid nitrogen samples of oocytes and embryos from Hepatitis B, Hepatitis C, and Human Immunodeficiency Virus chronically infected women undergoing *in vitro* fertilisation cycles. *Fertility and Sterility*, 97, 74-78.
- Cockerham, W. C. (1982). *The process of seeking medical care in Medical Sociology* (2nd Ed., pp. 68-100). Englewood Cliffs, NJ: Prentice Hall.

- Collins, J. & Cook, J. (2010). Cross-border reproductive care: Now and into the future. *Fertility and Sterility*, 94 (1), 25-26.
- Collins, J. A. (2002). An international survey of the health economics of IVF and ICSI. *Hum. Reprod.* 8, 265-277.
- Connolly, M. P., Griesinger, G., Ledger, W., & Postma, M. J. (2009). The impact of introducing patient co-payments in Germany on the use of IVF and ICSI: A price-elasticity of demand assessment. *Hum Reprod*, 24, 2796-2800.
- Connolly, M. P., Hoorens, S., & Chambers, G. M. (2010). On behalf of the ESHRE reproduction and society task force: The costs and consequences of assisted reproductive technology: An economic perspective. *Hum Reprod* 16, 603-61.
- Council for Reproductive Genetics, & Gugucheva, M. (2010). *Surrogacy in America*. Cambridge, MA: Council for Reproductive Genetics.
- Courbiere, B., Oborski, V., Braunstein, D., Desparoir, A., Noizet, A., & Gamberre, M. (2011). Obstetric outcome of women within vitro fertilisation pregnancies hospitalized for ovarian hyper stimulation syndrome: A case-control study. *Fertil Steril*, 95, 1629-32.
- Creswell, J. W. (2003). *Research design: Qualitative, quantitative and mixed methods approaches (2nd ed.)*. Thousand Oaks, CA: SAGE Publications.
- Creswell, J. W. (2013). *Qualitative inquiry & research design: Choosing among five approaches*. Los Angeles, CA: Sage.
- Cui, W. (2010). Mother or nothing: The agony of infertility. *Bull World Health Org*; 88, 881-882.

- Culley, L., Hudson, N., & Lohan, M. (2013). Where are all the men? The marginalization of men in social scientific research on infertility. *Reproductive Biomedicine Online*, 27, 225-235.
- Daar, J. (2008). Accessing Reproductive Technologies: Invisible barriers, indelible harms. *Law & Justice*, 23, 18-82.
- Dain, L., Auslander, M., & Dirnfeld, M. (2011). The effect of paternal age on assisted reproduction outcome. *Fertility and Sterility*, 95, 1-8.
- Daisie, M. A. (2015, January 12). *Surrogate mother carrying quadruplets cheated of incentives*. Retrieved from [www. Myjoyonline.com](http://www.Myjoyonline.com)
- Damelio, J., & Sorensen, K. (2008). Enhancing autonomy in paid surrogacy. *Bioethics*, 22, 269-277.
- Danish Council of Ethics. (2013). *International Trade in Human Eggs, Surrogacy and Organs*. Copenhagen: Danish Council of Ethics.
- de Mouzon, J., Goossens, V., Bhattacharya, S., Castilla, J. A., Ferraretti, A. P., Korsak, V.,... Nyboe, A. A. (2012). Assisted reproductive technology in Europe, 2007: Results generated from European registers by ESHRE. *Hum Repro*, 27, 954-966.
- Deomampo, D. (2015). Defining parents, making citizens: Nationality and citizenship. In Dhont, M., Luchters, S., Ombelet, W., Vyankandondera, J., Gasarabwe, A., van de Wijgert, J., Temmerman, M., (2010). *Gender differences and factors associated with treatment-seeking behaviour for infertility in Rwanda*. *Hum. Reprod.* 25, 2024-2030.

- Deonandan, R. Green, S., & van Beinum, A. (2012). Ethical concerns for maternal surrogacy and reproductive tourism *Journal of Medical Ethics*, 38, 742-745.
- Domar, A. D. (2004). *Conquering infertility: Dr. Alice Domar's mind/body guide to enhancing fertility and coping with infertility*. London, UK: Penguin Books.
- Donkor, E. S., & Sandall, J. (2009). Coping strategies of women seeking infertility treatment in southern Ghana. *Afr J Reprod Health*, 13, 81-93.
- Donkor, E. S., & Sandall, J., (2007). The impact of perceived stigma and mediating social factors on infertility-related stress among women seeking infertility treatment in Southern Ghana. *Soc Sci Med*. 65, 1683-94.
- Donkor, S. E. (2008). Socio-cultural perceptions of infertility in Ghana. *Africa Journal of Nursing and Midwifery* 10 (1), 22-34.
- Duran, E. H., Dowling-Lacey, D, Bocca, S., Stadtmauer, L., & Oehninger, S. (2010). Impact of male age on the outcome of assisted reproductive technology cycles using donor oocytes. *Reprod Biomed Online*; 20, 848-856.
- Dyer, S., & Patel, M. (2012). The economic impact of infertility on women in developing countries a systematic review. Facts views. *OBGYN Monogr*, 38-45.
- Edirne, T., Arica, S. G., Gucuk, S., Yildizhan, R., Kolusari, A., Adali, E., & Can, M. (2010). Use of complementary and alternative medicines by a sample of Turkish women for infertility enhancement: A descriptive study. *BMC Complement Altern Med* 2010(10) ,11

- Ekberg, M. E. (2014). Ethical, legal and social issues to consider when designing a surrogacy law. *J Law Med*, 21,728-738.
- Eriksson, P., & Kovalainen, A. (2008), *Qualitative Methods in Business Research*, 1st ed, SAGE Publications Ltd., London.
- Esteve, S. C, Miyaoka, R., & Agarwal, A. (2011). An update on the clinical assessment of the infertile male. *Clinics (Sao Paulo)*. 2011(66), 691-700.
- Ethics Committee of the American Society for Reproductive Medicine. (2013). Oocyte or embryo donation to women of advanced age: A committee opinion. *Fertil Steril*. 100 (2), 337-340.
- European Society of Human Reproduction and Embryology (ESHRE) (2012). *ART Fact Sheet*. Retrieved from <http://www.eshre.eu/ESHRE/English/Guidelines-Legal/ART-fact-sheet/page.aspx/1061>
- European Society of Human Reproduction and Embryology Assisted Reproductive Technology in Europe (2009). Results generated from European registers by ESHRE. *Hum Reprod*, 2013(28), 2318-2331.
- European Society of Human Reproduction and Embryology. (2005). Fertility and aging. *Human Reproduction Journal* 11, 261-276.
- European Society of Human Reproduction and Embryology fact sheet 2. (2017). *The funding of IVF treatment 1*. Retrieved from: <https://www.eshre.eu/~media/sitecore-files/Press-room/.../4Reimbursement.pdf?la.10/07/2017>
- Family Health International. (2003). Preserving fertility. *Network*, 23(2), 3-23.

- Feder, A., Nestler, E. J., Westphal, M., & Charney, D. S. (2010). Psychological mechanisms of resilience to stress. In J. W. Reich, A. J. Zautra, & J. S. Hall (Eds.), *Handbook of adult resilience* (pp. 35–54). New York: The Guilford Press.
- Ferraretti, A. P., Goossens, V., Kupka, M., Bhattacharya, S., de Mouzon, J., Castilla, J. A.... & Nyboe, A. A. (2013). Assisted reproductive technology in Europe, 2009. Results generated from European registers by ESHRE. *Human Reproduction Update*, 28, 2318-2331.
- Fisch, H., Goluboff, E. T., Olson, J. H., Feldshuh, J., Broder, S. J., & Barad, D. H. (1996). Semen analyses in 1,283 men from the United States over a 25-year period: No decline in quality. *Fertil Steril*. 65, 1009-1014.
- Fledderjohann, J. J. (2012). Zero is not good for me: Implications of infertility in Ghana. *Hum Reprod*, 27, 1383-1390.
- Folkman, S., & Moskowitz, J. T. (2004). Coping: Pitfalls and promise. *Annual Review of Psychology*, 55, 745-774.
- Foote, R. H. (2002). The history of artificial insemination: Selected notes and notables. *J Anim Sci*, 80 (2), 1-10.
- Fortunato, A., & Tosti, E. (2011). Is sperm chromatin packaging relevant for IVF success? *J Fertiliz In-vitro I*: 107.
- Friedrich, D. (2013). A duty to adopt? *Journal of Applied Philosophy*, 30(1), 25-39.
- Galpern, E. (2007). *Assisted Reproductive Technologies: Overview and perspective using a reproductive justice framework*. centre for genetics and society, Oakland, CA

- Gamble, N. (2009). Crossing the line: the legal and ethical problems of foreign surrogacy. *Reproductive Bio Medicine*, 19(2), 151-152.
- Gameiro, S., Boivin, J., Peronace, L., & Verhaak, C. M. (2012). Why do patients discontinue fertility treatment? A systematic review of reasons and predictors of discontinuation in fertility treatment. *Hum Reprod Update*, 18, 652-669.
- Gerrits, T., & Shaw, M. (2010). Biomedical infertility care in sub-Saharan Africa: A social science review of current practices, experiences and viewpoints. *Facts, Views & Vision in ObGyn*, 2, 194-207.
- Gerrits, T. (1997). Social and cultural aspects of infertility in Mozambique. *Patient Education and Counselling*, 31, 39-48.
- Gerrits, T. (2016). Assisted reproductive technologies in Ghana: Transnational undertakings, local practices and 'more affordable' IVF. *Reproductive Biomedicine and Society Online (2016)2*, 32-38.
- Gerrits, T. (2018). Reproductive travel to Ghana: Testimonies, transnational relationships, and stratified reproduction, *Medical Anthropology*, (37)2, 131-144.
- Ghana Statistical Service (2011). *Ghana population and housing census Report 2010*. Ghana Statistical Service, Accra.
- Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF Macro. (1989). *Ghana demographic and health survey 1989*. Accra, Ghana: GSS, GHS, and ICF Macro.
- Ghana Statistical Service (GSS), Ghana Health Service (GHS), and ICF Macro. (2015). *Ghana demographic and health survey 2014*. Accra, Ghana: GSS, GHS, and ICF Macro.

- Giwa-Osagie, cited in Ola (2012) Ola, T. M. (2012). Assisted Reproductive Technology in Nigeria: Flawed or favoured? *International Journal of Social Science and Humanity*, 2, 4.
- Giwa-Osagie, O. F. (2007). *The development of assisted conception in sub-Saharan Africa: An insight into the need for infertility services in developing countries*. Paper presented at the Alexandria Women's Health Forum, Egypt, 22 March 2007. Retrieved from <https://www.coursehero.com/file/p781ejl/Giwa-Osagie-OF-The-development-of-assisted-conception-in-sub-Saharan-Africa-an/>
- Goffman, E. (1963). *Stigma: Notes on the management of spoiled identity*. Englewood Cliffs, NJ: Prentice Hall.
- Golombok, S., Readings, J. Blake, L., Casey, P., Marks, A., & Jadv, V. (2011). Families created through surrogacy: Mother-child relationships and children's psychological adjustment at age 7. *Development Psychology*, 47, 1579-1588.
- Goody, J. (1956). *The Social Organisation of the Lo Wiili*. London: Oxford University Press.
- Goold, I., & Savulescu, J. (2009). In favour of freezing eggs for non-medical reasons. *Bioethics*, 23, 47-58.
- Greil, A. L., McQuillan, J., Lowry, M., & Shreffler, K. M. (2011). Infertility treatment and fertility specific distress: A longitudinal analysis of a population-based sample of U.S. women. *Social Science and Medicine*, 73, 87-94.

- Greil, A. L., McQuillan, J., Shreffler, K. M., Johnson, K. M., & Slauson-Blevins, K. S. (2011). Race-ethnicity and medical services for infertility: Stratified reproduction in a population-based sample of U.S. women. *Journal of Health and Social Behaviour*, 52,493-509.
- Griffiths, A., Dyer, S. M., Lord, S. J., Pardy, C., Fraser, I. S., & Eckermann, S. (2010) A cost-effectiveness analysis of in-vitro fertilisation by maternal age and number of treatment attempts. *Human Reproduction*, 25(4), 924-931.
- Gwandure, C., & Mayekiso, T. (2012). Sexual desire and expression among girls in a Traditional Shona context. *Anthropologist*, 14, 415-423.
- Hansen, M., Kurinczuk, J. J., Milne, E., de Klerk, N., & Bower, C. (2013). Assisted reproductive technology and birth defects: A systematic review and meta-analysis. *Hum Reprod Update*. 19, 330-353.
- Harms, R. (2011). *Infertility: Causes*. Retrieved from: <http://www.Mayoclinic.com/health/infertility/DS00310/DSECTION=causes>.
- Harrel-Bond, B. (1975). Some influential attitudes about family limitation and the use of contraceptives among the professional group in Sierra Leone. In Caldwell, J. C. (ed) *Population Growth and Socioeconomic change in West Africa*. New York: Columbia University Press.
- Hellstrom, W. J., Overstreet, J. W., Sikka, S. C, Denne, J., Ahuja, S., Hoover, A.M., & Androl, J. (2006). Semen and sperm reference ranges for men 45 years of age and older. *J. Androl*, 27 (3), 421-8.
- Hollos, M., & Whitehouse, B. (2014). Women in limbo: Life course consequences of infertility in a Nigerian community. *Human Fertility Cambridge*, 17, 188-191.

- Hörbst, V., & Gerrits, T. (2016). Transnational connections of health professionals: Medicoscapes and assisted reproduction in Ghana and Uganda. *Ethn Health*, 21(4), 357-74.
- Hörbst, V. (2010). Male perspectives on infertility and assisted reproductive technologies in Sub-Saharan contexts. *Facts, Views & Vision in ObGyn Monograph*, 8, 22-27.
- Hossain, M. M., Fatima, P., Rahman, D., & Hossain, H. B. (2012). Semen parameters at different age groups of male partners of infertile couples. *Mymensingh Med J.* (2012)21, 306-15.
- Huddleston, H. G., Cedars, M. I., Sohn, S. H., Giudice, L. C. & Fujimoto, V. Y. (2010). Racial and ethnic disparities in reproductive endocrinology and infertility. *Am J Obstet Gynecol*, 202, 413-419.
- Hudson, N., Culley, L., Blyth, E., Norton, W., Rapport, F., & Pacey, A. (2011). Cross-border reproductive care: A review of the literature. *Reproductive BioMedicine Online*, 22, 673-685.
- Hughes, E., & DeJean, D. (2010). Cross-border fertility services in North America: A survey of Canadian and American providers. *Fertil Steril*, 94, 16-9.
- Human Fertilisation & Embryology Authority (HFEA) Authority Meeting Paper. (2007). *Multiple births and single embryo transfer review: Evidence base and policy analysis*. London. Retrieved from: [http://www.hfea.gov.uk/docs/AM_MB_and_SET_review_Oct07.pdf].

- Human Fertilisation and Embryology Authority. (2006). *Thinking of going abroad? Think twice about going abroad for fertility treatment*. Press Release. Retrieved from: <http://www.hfea.gov.uk/cps/rde/xchg/SID-3F57D79B-E684FCAA/hfea/hs.xsl/1123>
- Humbyrd, C. (2009). Fair trade international surrogacy: *Developing world Bioethics*, 9(3), 111-118.
- Husain, F. A. (2003). Reproductive issues from the Islamic perspective. *Hum Fertil (Camb)* 3(2), 124 - 8.
- Hycner, R. H. (1999). Some guidelines for the phenomenological analysis of interview data. In A. Bryman & R. G. Burgess (Eds.), *Qualitative research*, 3, 143-164.
- Hynie, M., & Burns, L. (2006). Cross-cultural issues in infertility counselling. In S. N. Covington & L. Burns (Eds.), *Infertility counseling: A comprehensive handbook for clinicians*. New York, NY: Cambridge University Press.
- Imrie, S., Jadvá, V., & Golombok, S. Surrogacy does not have a negative effect on the surrogate's own children (British Cambridge, 2012); In A. Bryman & R. G. Burgess (Eds.), *Qualitative research*. London: Sage.
- Inhorn, M., & Patrizio, P. (2012). The global landscape of cross-border reproductive care: Twenty key findings for the new millennium. *Current Opinion in Obstetrics and Gynaecology*, 24(3), 158-163.
- Inhorn, M. C., & Gürtin, Z. (2011). Cross-border reproductive care: A future research agenda. *Reprod Biomed Online*, 23, 665-76.

- Inhorn, M. C., & Tremayne, S. (2012). (eds.) *Islam and Assisted Reproductive Technologies: Sunni and Shia perspectives*. Berghahn: New York.
- Inhorn, M. C. (1996). *Infertility and patriarchy: The cultural politics of gender and family life in Egypt*. Philadelphia, University of Pennsylvania Press.
- Inhorn, M. C. (2003a). The worms are weak: Male infertility and patriarchal paradoxes in Egypt. *Men and Masculinities J* 5(3), 236-256.
- Inhorn, M. C. (2003b). Global infertility and the globalization of new reproductive technologies: Illustration from Egypt. *Soc. Sci. Med.* 56, 1837-1851.
- Inhorn, M. C. (2011a). Globalisation and gametes: Islam, Assisted Reproductive Technologies, and the Middle Eastern State. *In reproduction, globalization, and the state*, ed. CH Browner, CF Sargent, Volume 8 (pp.126-137). Durham, NC: Duke Univ. Press.
- Inhorn, M. C. (2011b). Globalisation and gametes: Reproductive 'tourism,' Islamic bioethics, and Middle Eastern modernity. *Anthropol. Med.* 18(1), 87-103.
- Inhorn, M. C. (2012). *The new Arab Man: Emergent masculinities, technologies, and Islam in the Middle East*. Princeton, nJ: Princeton University press.
- Inhorn, M. C., & Birenbaum-Carmeli, D. (2008). Assisted reproductive technologies and culture change. *Annu. Rev. Anthropol.* 37, 177-96.
- Inhorn, M. C., & Patrizio, P. (2015). Infertility around the globe: New thinking on gender, reproductive technologies and global movements in the 21st century. *Human Reproduction Update*, 21(4) ,411-426.

- Inhorn, M. C., Gurtin, Z. B., & Lanmam. W. K. (2012). Infertility and assisted reproduction in the Muslim Middle East: Social, religious, and resource considerations. *FVV in ObGyn, MOnOGraph*: 24-29.
- Inhorn, M. C., Patrizio, P., & Serour, G. (2010). Third-party reproductive assistance around the Mediterranean: Comparing Sunni Egypt, Catholic Italy and multi sectarian Lebanon. *Reprod BioMed Online* 21(7), 848-853.
- Institut National de la Statistiques et des Etudes Economiques: Fe 'condite ' par groupe d'a ^ges (2010). Retrieved from: <http://www.insee.fr>.
- Issah, Z. (2016, April 20). Health Ministry seeks legislation on surrogacy. Retrieved from: [https:// www.grapghic.com,gh/news/general-news](https://www.grapghic.com,gh/news/general-news)
- Jacoby, A. (1994). Felt versus enacted stigma: A concept revisited. *Social Science and Medicine*, 8(2), 269-274.
- Jadva, V., & Imrie, S. (2013). The significance of relatedness for surrogates and their families. In M. Richards, T. Freeman, F. Ebtehaj, & S. Graham (Eds.), *We are family?* Cambridge: Cambridge University Press.
- Jadva, V., Freeman, T., Kramer, W., & Golombok, S (2011). Sperm and oocyte donors experiences of anonymous donation and subsequent contact with their donor offspring. *Human Reproduction*, 26(3), 638-645.
- Jadva, V., Murray, C., Lycett, E., MacCallum, F., & Golombok, S. (2003). Surrogacy: The experiences of surrogate mothers. *Human Reproduction* 18 (10), 2196-2204.

- James, S., Chilvers, R., Havemann, D., & Phelps, J. Y. (2010). Avoiding legal pitfalls in surrogacy arrangements. *Reproductive BioMedicine*, 21(7), 862-867.
- Joffe, M. (2010). What has happened to human fertility? *Hum Reprod*, 25(2), 295
- Johnson, R. B., & Onwuegbuzie, A. T. (2004). Mixed method research: A research paradigm whose time has come. *Educational Researcher*, 33(7), 14-26.
- Johnston, D. R. (1963). The history of human infertility. *Fertil Steril*, 14,261-269.
- Jones, H. W, Cooke I, Kempers R, Brinsden P., & Saunders D. (2010). *International Federation of Fertility Societies: Surveillance 2010*. Retrieved from: <http://www.iffs-reproduction>
- Jones, H. W., Cooke, I., Kempers, R., P. Brinsden, P., & Saunders, D. (2011). International Federation of Fertility Societies Surveillance. *Fertility and Sterility*, 95(2), 491.
- Källén B, Finnström O, Lindam A, Nilsson E, Nygren KG, et al. (2010). Congenital malformations in infants born after in vitro fertilisation in Sweden. *Birth Defects Res A Clin Mol Teratol*, 88, 137-143.
- Karatas, J. C., Barlow-Stewart, K., Meiser, B., McMahon, C., Strong, K. A., Hill, W., Roberts, C., & Kelly, P. J. (2011). A prospective study assessing anxiety, depression and maternal-fetal attachment in women using PGD. *Hum Reprod*, 26,148156.

- Kelly, S. M., Buckett, W. M., Abdul-Jalil, A. K., & Tan S.L. (2003). The cryobiology of assisted reproduction, *Minerva Ginecol*, 55(5), 389-398.
- Krisher, R. L. (2004). The effect of oocyte quality on development, *Journal of Animal Science* 82,14-23.
- Kershaw, G. (1973). The Kikuyu of central Kenya. In Molnos, A. (ed) *Beliefs and Practices*. Nairobi: East Africa Publishing House.
- Kharb, D. (2007). Assisted reproductive techniques: Ethical and legal concerns. *The Internet Journal of Law, Healthcare and Ethics*, 4(2), 112-126.
- Kissil, K., & Davey, M. (2012): Health disparities in procreation: Unequal access to assisted reproductive technologies, *Journal of Feminist Family Therapy*, 24(3), 197-212.
- Knoll, M., Hamm, T. M., Wagner, F., Martinez, V., & Pleiss, J. (2009). The PHA depolymerase engineering database: A systematic analysis tool for the diverse family of polyhydroxyalkanoate (PHA) depolymerases. *BMC Bioinformatics*, 10, 89.
- Kocourkova, J., Burcin, B., & Kucera, T. (2014). Demographic relevancy of increased use of assisted reproduction in European countries. *Reproductive Health*, 11, 37.
- Koenig, J., Oelkers-Ax, R., Parzer, P., Haffner, J., Brunner, R., Resch, F., & Kaess, M. (2015). The association of self-injurious behaviour and suicide attempts with recurrent idiopathic pain in adolescents: Evidence from a population-based study. *Child and Adolescent Psychiatry and Mental Health* (2015) 9, 32

- Koivurova, S., Hartikainen, A. L., Gissler, M., Hemminki, E., & Jarvelin, M. R. (2007). Post-neonatal hospitalisation and health care costs among IVF children: A 7-year follow-up study. *Hum Reprod*; 22, 2136-2141.
- Laborie, F. (1993). Social alternatives to infertility. In: P Stephenson, M Wagner, eds. *Tough Choices: In Vitro Fertilisation and the Reproductive Technologies*. Philadelphia: Temple University Press.
- Lanzieri, G. (2011). *The greying of the baby boomers. A century-long view of ageing in European populations, OECD, 2011*. Retrieved from: <http://epp.eurostat.ec.europa.eu/cache/ITY_OFFPUB/KS-SF-11-023/EN/KS-SF-1023-EN.PDF>.
- Larsen, U., (2000). Primary and secondary infertility in sub-Saharan Africa. *Int J Epidemiol*, 29, 285-91.
- Laruelle, C., Place, I., Demeestere, I., Englert, Y., & Delbaere, A. (2011). Anonymity and secrecy options of recipient couples and donors, and ethnic origin influence in three types of oocyte donation. *Hum Reprod*; 26, 382390.
- Leather, S. (2006). *Enhancing life, extending life*. Speech given to the world forum on science, & civilisation, Oxford University. Retrieved from: http://www.hfea.gov.uk/docs/Suzi_Leather_speech_at_World_Forum.pdf
- Ledger, W. L., Anumba, D., Marlow, N., Thomas, C. M., & Wilson, E. C. (2006). The costs to the NHS of multiple births after IVF treatment in the UK. *Journal of Obstetrics and Gynaecology*, 113(1), 21-25.

- Levens, E. D., & DeCherney, A. H. (2008). Human oocyte research: The ethics of donation and donor protection. *Journal of the American Medical Association*, 300(18), 2174-2176.
- Levine, A. D. (2011). The oversight and practice of oocyte donation in the United States, United Kingdom and Canada. *HEC Forum*, 23(1), 15-30.
- Levine, J. A. (2011). Poverty and obesity in the U.S. *Diabetes*, 60(11), 2667-2668.
- Levitas, E., Lunenfeld, E., Weisz N, Friger, M., & Potashnik G. (2007). Relationship between age and semen parameters in men with normal sperm concentration: Analysis of 6022 semen samples. *Andrologia*. (2007)39, 45-50.
- Lietz, C. A., & Zayas, L. E. (2010). Evaluating qualitative research for social work practitioners. *Advances in Social Work*, 11(2), 188-202.
- Lindheim, S. R., Coyne, K., Ayensu-Coker, L., O'Leary, K., Sinn, S., & Jaeger, A. S. (2014). The impact of assisted reproduction on socio-cultural values and social norms. *Advances in Anthropology*, 4, 227-242.
- Link, B. G., Struening, E. L., Rahave, M., Phelam, J. C., et al. (1997). On stigma and its consequences: Evidence from longitudinal study of men with dual diagnoses of mental illness and substance abuse. *Journal of Health and Social Behaviour* 38 (2), 177-190.

- Lo Russo, G., Spinelli, G. P., Tomao, S., Rossi, B., Frati, L., Panici, P. B., Vici, P., Codacci Pisanelli, G. & Tomao, F. (2013). Breast cancer risk after exposure to fertility drugs. *Expert Rev Anticancer Ther.* 13(2), 149–157.
- Ludford, I., Scheil, W., Tucker, G., & Grivell, R. (2012). Pregnancy outcomes for nulliparous women of advanced maternal age in South Australia, 1998–2008. *Australian and New Zealand Journal of Obstetrics and Gynaecology*, 52, 235-241.
- Mabasa, L. F. (2002). *The Psychological impact of infertility on the African women and their families*. Unpublished Doctoral thesis. University of South Africa, Pretoria
- Macaldowie, A., Wang, Y. A., Chughtai, A. A., & Sullivan, E. A. (2012). *Assisted Reproductive Technology in Australia and New Zealand 2012*. Sydney National Perinatal Epidemiology and Statistics Unit, University of New South Wales
- MacIver, C., (2015). *Procreation or appropriation?* In Hannan, Brennan, and Vernon. *Journal of Health and Social Behaviour* 2015, 107-128.
- Markens, S. (2012). The global reproductive health market: U.S. media framings and public discourses about transnational surrogacy. *Soc. Sci. Med.* 74, 1745-53.
- Marsh, M., & Ronner, W. (1996). *The empty cradle: Infertility in America from colonial times to the present*. Baltimore: Johns Hopkins University Press.

- Mascarenhas, M. N., Flaxman, S. R., Boerma, T., Vanderpoel, S., & Stevens, G. A. (2012). National, regional, and global trends in infertility prevalence since 1990: a systematic analysis of 277 health surveys. *PLoS Med.* 2012b (9), 1-12.
- Mason, M. (2010). Sample size and saturation in PhD studies using qualitative interviews. *Forum Qualitative Sozialforschung/Forum. Qualitative Social Research*, 11(3), 8.
- Matorras Weinig, J. R. (2011). Infertility in Spain: Current situation and perspective (La infertilidad en España: situación actualy perspectivas) Sociedad Española de Fertilidad, Las Matas, Madrid. *Rev. Iberoam. Fertil.*, 18, 149-153
- McLernon, D., J., Harrild, K., Bergh, C., et al., (2010). Clinical effectiveness of elective single versus double embryo transfer: Meta-analysis of individual patient data from randomised trials. *BMJ*, 341,6945.
- Mechanic, D. (1978). *Medical Sociology: A comprehensive text* (2nd ed.). New York, NY: Free Press.
- Miller, A., Siffel, C., Lu, C. et al. (2010). Long-term survival of infants with atrioventricular septal defects. *J Pediatr.* 156, 994-1000.
- Millman, M. (1993). *Access to health care in America*. Washington, DC: National Academy Press.
- Mills, M., & Präg, P. (2015). *Norms, politics, and Assisted Reproductive Technology (ART) policies. A cross-national comparative analysis*. San Diego, CA: Paper presented at the Annual Meeting of the Population Association of America.

- Mills, M., Rindfuss, R., McDonald, P., & Velde, E. (2011). Why do people postpone parenthood? Reasons and social policy incentives. *Human Reproduction Update* 17, 848-860.
- Ministry of Health & Family Welfare, Government of India. (2010). *Assisted Reproductive Technologies (Regulation) Bill*. New Delhi, India.
- Ministry of Health (2007). National Health Policy: *Creating wealth through health*. MOH, Accra.
- Mishra, S. K. (2014). An insight into access to fertility treatment by gays, lesbians, and unmarried persons-changing nature of reproduction and family. *Int J Reprod Fertil Sex Health*, 1(3), 14-19.
- Morshed-Behbahani, B., Mossalanejad, L., Shahsavari, S., & Dastpak, M. (2012). The experiences of infertile women on assistant reproductive treatments: A phenomenological study. *Iran Red Crescent Med J.*(14) 6, 382-3.
- Moyo, S., & Muhwati, I. (2013). Socio-cultural perspectives on causes and intervention strategies of male infertility: A case study of Mhondoro-Ngezi, Zimbabwe. *African Journal of Reproductive Health*, 17, 89-101.
- Moyo, S. (2013). Indigenous knowledge systems and attitudes towards male infertility in Mhondoro-Ngezi, Zimbabwe. *Culture Health & Sexuality*, 15, 667-679.
- Murdock, G. P. (1980). *Theories of Illness: A world survey*. Pittsburgh: University of Pittsburgh Press
- Murphy, T. F. (2009). Ethics and the prohibition of donor gametes in fertility medicine. *Reproductive Bio Medicine*, 18(1), 60-67.

- Mutcherson, K. (2017). Reproductive rights without resources or recourse, just reproduction: Reimagining autonomy in reproductive medicine, special report, *Hastings Center Report*, 47(6),12-18.
- Naab, F., Brown, R., & Heidrich, S. (2013). Psychosocial health of infertile Ghanaian women and their infertility beliefs. *J Nurs Scholarsh.* 45, 132-40.
- Nachtigall, R. D. (2006). International disparities in access to infertility services. *Fertil. Steril.* 85(4), 871-5.
- Nahar, P. (2010). Invisible women in Bangladesh: Stakeholders' views on infertility services. *FVVin ObGyn*, 2012, 30-37.
- Nahar, O., & Richters, A. (2011). Suffering of childless women in Bangladesh: The interaction of social identities of gender and class. *Anthropol Med* 2011(18), 327-338.
- Nahar, P. (2012). Misery of empty laps: Life of childless women in Bangladesh. *FV & V in ObGyn* 2010, 28-34.
- Nahar, P., Sharma, A., Sabin, K., Begum, L., Ahsan, S. K., & Baqui, A. H. (2000). Living with infertility: Experiences from urban slum populations in Bangladesh. *Reproductive Health Matters*, (15), 33-44.
- National Collaboration Centre for Women and Children Health. (2012). Fertility: Assessment and Treatment for People with Fertility Problems. *Obgyn.*2012, 30-37.
- Nelson, E. (2013). Global Trade and Assisted Reproductive Technologies: Regulatory challenges in international surrogacy, 41 *J. L. Medicine & ethics*, 240, 241

- Neuman, W. L. (2003). *Social research methods: Qualitative and quantitative approaches* (5th ed.). Boston: Allyn and Bacon.
- Nisker, J., Shanner, L., & Nisker, J. (2001). Bioethics for clinicians: Assisted Reproductive Technologies. *Canadian Medical Association Journal*, 164 (11)1589-1593.
- Noumi, E., Eboule, A. F., & Nanfa, R., (2011). Traditional health care of male infertility in Bansa, West Cameroon. *International Journal of Pharmacy and Biomedical Sciences* 2(2), 42-50.
- Noyes, N., Porcu, E., & Borini, A. (2009). Over 900 oocyte cryopreservation babies born with no apparent increase in congenital anomalies. *Reproductive BioMedicine Online*, 18, 769-776.
- Nygren, K., Adamson, D., Zegers-Hochschild, F., & De Mouzon, J. (2010). Cross-border fertility care-international committee monitoring assisted reproductive technologies global survey: 2006 data and estimates. (2010). *Fertil Steril*; 94, 4–10.
- Oboler, R. S. (1980). Is the female husband a man? Woman/woman marriage among the Nandi of Kenya. *Ethnology*. 19(1), 69-88.
- Odom, L. N., & Segars, J. (2010). Imprinting disorders and assisted reproductive technology: Current opinion in endocrinology. *Diabetes and Obesity*, vol. 17(6), 517–522.
- Ola, T. M. (2012). Assisted reproductive technology in Nigeria: Flawed or favoured? *International Journal of Social Science and Humanity*, 2, 4.
- Ombelet, W. (2009). Reproductive healthcare systems should include accessible infertility diagnosis and treatment: An important challenge for resource-poor countries. *Int J Gynaecol Obstet*. 106, 168-71.

- Onah, N. (1992). The sociocultural perception and implications of childlessness in Anambra State. In Kisekka, M. N. (ed) *Women's health Issues in Nigeria*. Nigeria: Tamza Publishing Company Limited.
- Ooki, S. (2012) Birth defects after Assisted Reproductive Technology in Japan: 2004-2009. *ISRN Epidemiology, 2013* (452085), 8.
- Ory, S. J., Devroey, P., Banker, M., Brinsden, P., Buster, J., Fiadjoe, M., et al. (2014). IFFS surveillance 2013. Preface and conclusions. *Fertility and Sterility, 101*, 1582-1583.
- Padela, A. I., Gunter, K., Killawi, A., & Heisler, M. (2012). Religious values and healthcare accommodations: Voices from the American Muslim Community. *Journal of General Internal Medicine, 27*(6), 708-715.
- Parks, J. (2010). Care ethics and the global practice of commercial surrogacy. *Bioethics 24*, 333-340.
- Parsons, T. (1951). *The Social System*. Glencoe, IL: Free Press.
- Paulk, L. B. (2014). Embryonic personhood: Implications for Assisted Reproductive Technology in international human rights law. *American University Journal of Gender Social Policy and Law, 22*(4) 781-823.
- Pawan, K. P., Inder D., & Sharma, N., (2013). Surrogacy and women's right to health in India: Issues and perspective. *Indian J Public Health, 57*(2), 65-70.
- Pellegrino, E. D., Harveyand, J. C., & Langan, J. P. (Eds). (1990). *Gift of Life: Catholic Scholars Respond to the Vatican Instruction* Washington, D.C.: Georgetown University Press.

- Pennings, G., de Wert, G., & Shenfield, F. et al. (2012). ESHRE Task force on ethics and law. Providing infertility treatment in resource poor countries. *Hum Reprod*, 24, 108-111.
- Pequegnat, W., & Bell, C. C. (2012). *Family and HIV/AIDS*. New York: Springer.
- Pescosolido, B. (1991). Illness careers and network ties: A conceptual model of utilisation and compliance. *Advances in Medical Sociology*, 2, 164-184.
- Pescosolido, B. A. (1992). Beyond rational choice: The social dynamics of how people seek help. *American Journal of Sociology*, 97, 1096–1138.
- Petraglia, F., Serour, G. I., & Chapron, C. (2013). The changing prevalence of infertility. *Int J Gynaecol Obstet*, 7292(13), 435-439.
- Pfeffer, N. (2011). Eggs-piloting women: A critical feminist analysis of the different principles in transplant and fertility tourism *Reprod. BioMed. Online* 23, 634-41.
- Practice Committee of American Society for Reproductive Medicine. Multiple gestation associated with infertility therapy: An American Society for Reproductive Medicine Practice Committee opinion. *Fertil Steri*, 97, 825-34.
- President's Council on Bioethics. (2003). *Beyond therapy: Biotechnology and the pursuit of happiness. A report of the President's Council on Bioethics*. 1st edition. Regan Books. New York, New York, USA.
- Rachels, J. (2014). The immorality of having children, *ethical theory and moral practice*, 17(3), 567-582.

- Rank, N. (2010). Barriers for access to assisted reproductive technologies by lesbian women: The search for parity within the healthcare system. *Houston Journal of Health Law & Policy*, 115, 30-46.
- Riggs, D. W. & Russell, L. (2011). Characteristics of men willing to act as sperm donors in the context of identity-release legislation. *Human Reproduction*, 26(1), 266-272.
- Robertson, J. A. (1996). Genetic selection of offspring characteristics, 76 *B.U. L. REV.* 421, 468-74.
- Robertson, J. A. (2003). Extending preimplantation genetic diagnosis: Medical and non-medical uses. *J Med Ethics*; 29, 213-216.
- Robertson, J. A. (2004). Procreative liberty and harm to offspring in assisted reproduction. *American Journal of Law and Medicine*, 30(1), 7-40.
- Rosenstock, I. M. (1996). Why people use health services. *Milbank Memorial Fund Quarterly Health and Society*, 44(2), 94-124.
- Rubin, A., & Babbie, E. R. (2010). *Essential research methods for social work*. Belmont, CA: Brooks/Cole, Cengage Learning
- Rulli, T. (2014). Preferring a genetically-related child. *Journal of Moral Philosophy*, 6, 669-698.
- Sacks, K. (1982). *Sisters and wives: The past and future of Sexual equality*. Westport, CT: Greenwood Press.
- Saengsook, W. (2010). A critical and comparative study of parentage through assisted human reproductive technology in the legal systems of the UK, the USA and Thailand. *International Journal of Arts and Sciences* 3(15), 623-632.

- Said, T. M., Gaglani, A., & Agarwal, A. (2010). Implication of apoptosis in sperm cryoinjury. *Reproductive BioMedicine Online*, 21(4), 456–462.
- Sartorius, G., & Nieschlag, E. (2010). Paternal age and reproduction. *Human Reproduction Update* 16, 65-79.
- Satz, D. (2010). *Why some things should not be for sale: The moral limits of markets*. Oxford, UK: Oxford University Press.
- Sauer, J. L. (2009). Competing interests and gamete donation: The case for anonymity. *Seton Hall Law Review*, 39(3), 919-954.
- Scambler, G. (2004). Refraining stigma: Felt and enacted stigma and challenges to sociology of chronic and disabling conditions. *Social Theory and Health*, 2, 29-46.
- Schenker, J. G. (2005). Assisted reproductive practice: Religious perspectives. *Reproductive BioMedicine Online*, 10(3), 310-19.
- Scherrer, U. et al., (2012). Systemic and pulmonary vascular dysfunction in children conceived by assisted reproductive technologies. *Circulation* 125(2012), 1890-1896
- Schmidt, L., Sobotka, T., Bentzen, J., & Andersen, N. (2011). Demographic and medical consequences of the postponement of parenthood. *Human Reproduction Update* 18, 29-43.
- Schwartz, D., Mayaux, M. J., Spira, A., Moscato, M. L., Jouannet, P., Czyglik, F., & David G. (1983). Semen characteristics as a function of age in 833 fertile men. *Fertil Steril.* 39, 530-535.

- Serour, G. I. (2002). Attitudes and cultural perspectives on infertility and its alleviation in the Middle East area. In: Vayena E, Rowe PJ, Griffin PD (eds). *Current Practices and Controversies in Assisted Reproduction* (pp. 41-49). Geneva, Switzerland: World Health Organization.
- Serour, G. I. (2008). Medical and socio-cultural aspects of infertility in the Middle East: Monograph on Developing countries and infertility. *Hum Reprod.* 2008, 34-41.
- Setti, P. E. L, Albani, E., & Cesana, A., et al., (2011). Italian constitutional court modifications of a restrictive Assisted Reproduction Technology law significantly improve pregnancy rate. *Human Reproduction*, 26 (2), 376-381.
- Sha, J. L. (1990). *Mothers of Thyme: Customs and rituals of infertility and miscarriage*. Ann Arbor, MI: Lida Rose Press.
- Shannon, T. A. (2004). Reproductive Technologies: Ethical and religious issues. In Thomas, A. Shannon (Eds.), *Reproductive technologies*. New York: Rowman and Littlefield.
- Shaw, C., Brittain, K., Tansey, R., & Williams, K. (2008). How people decide to seek health care: A qualitative study. *International Journal of Nursing Studies* 45, 1516-24.
- Shenfield, F., de Mouzon, J., Pennings, G., Ferraretti, A., Andersen, A., deWert, G., & Goossens, V. (2010). The ESHRE Taskforce on Cross Border Reproductive Care: Cross border reproductive care in six European countries. *Human Reproduction*, 25, 1361-1368.

- Sheppard, J., Kumar, C. D., Buckley, K. L., Shaw, K. L., & Raza, R. (2008). I just thought it was normal aches and pains: A qualitative study of decision-making processes in patients with early rheumatoid arthritis. *Rheumatology* 47, 1577-1582.
- Shetty, P. (2012). India's unregulated surrogacy industry. *The Lancet* 380, 1633-1634.
- Singer, P. (2011). *Practical ethics*. New York: Cambridge University Press.
- Slade, P., O'Neill, C., Simpson, A. J., & Lashen, H. (2007). The relationship between perceived stigma, disclosure patterns, support and distress in new attendees at an infertility clinic. *Human Reproduction*, 22, 2309-2317.
- Slauson-Blevins, K. S. (2011). Infertility help seeking and social support: Do conventional theories explain internet behaviours and outcomes. *Sociology Department, Faculty Publications*. 234. Retrieved from: <http://digitalcommons.unl.edu/sociologyfacpub/234>
- Smith, G. D., Serafini, P. C., Fioravanti, J., Yadid, I., Coslovsky, M., Hassun, P., Alegretti, J. R., & Motta, E. L. (2010) Prospective randomized comparison of human oocyte cryopreservation with slow-rate freezing or vitrification. *Fertility and Sterility* 94, 2088-95.
- Smith, J., & Noble, H. (2014). Bias in research. *Evid Based Nurs* 2014(17), 2-3.
- Soladoye, M. O., Chukwuma, E. C., Sulaiman, O. M., & Feyisola, R. T. (2014). Ethnobotanical survey of plants used in the traditional treatment of female infertility in Southwestern Nigeria. *Ethnobotany Research & Applications* 12, 81-90.

- Squires, J., & Kaplan, P. (2007). Developmental outcomes of children born after assisted reproductive technologies. *Infants & Young Children*, 20(1), 2-10.
- Srinivasan, S. (2010). *Assisted reproductive technologies, rights and choices in making babies: Birth markets and assisted reproductive technologies in India*. New Delhi, Zubaan Publications.
- Stankiewicz, M. Smith, C. Alvino, H., & Norman, R. (2007). The use of complementary medicine and therapies by patients attending a reproductive medicine unit in South Australia: A prospective survey. *Aust N Z J Obstet Gynaecol*, 47(2), 145-149.
- Statistics New Zealand (2011). *National population estimates*. Retrieved from: <<http://www.stats.govt.nz/publications/populationstatistics/demographic-trends-2009.aspx>>.
- Stone, B. A., Alex, A., Werlin, L. B., & Marrs, R. P. (2013). Age thresholds for changes in semen parameters in men. *Fertil Steril*; 100, 952 -958.
- Storrow, R. F. (2010). The pluralism problem in cross-border reproductive care. *Hum Reprod*; 25, 2939-2943.
- Stuart-Smith, S. J., Smith, J. A., & Scott, E. J. (2012). To know or not to know? Dilemmas for women receiving unknown oocyte donation. *Human Reproduction*, 27(7), 2067-2075.
- Suchman, E. (1965). Social patterns of illness and medical care. *Journal of Health and Human Behaviour*, 6(3), 114-28.

- Sullivan, E., Wang, Y., Chapman, M., & Chambers, G. (2008). Success rates and cost of a live birth following fresh assisted reproduction treatment in women aged 45years and older, Australia 2002 – 2004. *Hum Repro*, (23),1639-1643.
- Sunderam, S. Kissin, D. M., Crawford, S. B., Folger, S. G., Jamieson, D. J., & Warner, L., et al. (2015). Assisted reproductive technology surveillance-United States, 2013. Centres for Disease Control and Prevention (CDC). *MMWR Surveill Summ*, 64,1-25.
- Sunderam, S., Kissin, D. M., Crawford, S., Anderson, J. E., Folger, S.G., Jamieson, D. J., & Barfield, W. D. (2013). Assisted reproductive technology surveillance-United States, 2010. *MMWR Surveill Summ*. 2013(62), 1-24.
- Suzuki, K., Rintaro, K. M., Satoshi K., Kouji B., & Zentaro Y. (2011). Risk perception of pregnancy promotes disapproval of gestational surrogacy: Analysis of a nationally representative opinion survey in japan. *International Journal of Fertility & Sterility* 5, 78-85.
- Tabi, M. M., Doster, C., & Cheney, T. (2010). A qualitative study of women in polygynous marriage. *Int Nurs Rev*. 57(1),121-7.
- Tabong, P. T. N., & Adongo, P. B. (2013). Understanding the social meaning of infertility and childbearing: A qualitative study of the perception of childbearing and childlessness in Northern Ghana. *PLOS ONE* 8(1), 54429.
- Talaulikar, V. S., & Arulkumaran, S. (2012). Reproductive outcomes after assisted conception. *Obstet Gynecol Survey*; 67, 566-83.

- Taylor, S. E., & Stanton, A. L. (2007). Coping resources, coping processes, and mental health. *Annual Review of Clinical Psychology*, 3, 377-401.
- Tepper, N. K., Farr, S. L., Cohen, B. B., Nannini, A., Zhang, Z., & Anderson, J. E., et al. (2012). Singleton preterm birth: Risk factors and association with Assisted Reproductive Technology. *Matern Child Health J.* 16, 807-813.
- The Holy Bible, New International Version (1978). Biblical Incorporated. Colorado Springs: U.S.A.
- The Holy Quran, The Translation and Commentary (1983). Beirut, Lebanon. Dar Al- Arabia
- Tracy, S. J. (2013). *Qualitative research methods: collecting evidence, crafting analysis, communicating impact*. John Wiley & Sons.
- Ueda, H. (1973). The Kamba of central Kenya. In Molnos, A. (ed) *Beliefs and practices*. Nairobi, Kenya: East Africa Publishing House.
- United Kingdom Parliament. *Human Fertilisation and Embryology Act 1990*. UK Legislation, Chapter 37. Retrieved from: <http://www.legislation.gov.uk/ukpga/1990/37/contents>
- United Kingdom Parliament. *Surrogacy Arrangements Act 1985*. London, Her majesty's stationery office. Retrieved from: http://www.legislation.gov.uk/ukpga/1985/49/pdfs/ukpga_19850049_en.pdf
- United Nation (1948). *Universal Declaration of Human Rights*. Retrieved from: [https://www.ohchr.org/EN/Issues/Education/Training/Compilation/Pages/UniversalDeclarationofHumanRights\(1948\).aspx](https://www.ohchr.org/EN/Issues/Education/Training/Compilation/Pages/UniversalDeclarationofHumanRights(1948).aspx)

- United Nation (1979). *Convention on the Elimination of All Forms of Discrimination against Women*. Retrieved from: www.unhchr.ch/html/menu3/b/e1cedaw.Htm.
- United Nations (1966). *International Covenant on Economic, Social and Cultural Rights. Treaty Series, 993, 14531*. Retrieved from: www.unhchr.ch/html/menu3/b/a_cesscr.htm
- Upton, R. L. (2001). Infertility makes you invisible: Gender, health and negotiation of fertility in Northern Botswana. *Journal of South African Studies* 27(2), 349-362.
- Valji, E. (2010). Third-party gametes and the Christian. *Cedar Ethics Online. Paper7*. Retrieved from: http://digitalcommons.cedarville.edu/cedar_ethics_online/7
- van Loendersloot, L., van Wely, M., Bossuyt, P., Repping, S. & van der Veen, F. (2010). Predictive factors in in vitro fertilisation (IVF): A systematic review and meta-analysis. *Human Reproduction Update* 16, 577-589.
- Vayena, E., Rowe, J. P., & Peterson, H. B. (2002). Assisted reproductive technology in developing countries: Why should we care? *Fertil Steril*.78, 13-15.
- Vienna Institute of Demography, Austrian Academy of Sciences, and International Institute for Applied Systems Analysis (IIASA): *European Demographic Data Sheet2012*. Retrieved from: <http://www.oeaw.ac.at/vid/datasheet/index.html>.
- Vogel, D. L., Wade, N. G., Wester, S. R., Larson, L., & Hackler, A. H. (2007). Seeking help from a mental health professional: The influence of one's social network. *Journal of Clinical Psychology*, 63(3), 233-45.

- Volgsten, H., Ekselius, L., Poromaa, I. S., & Svanberg, A. S. (2010). Personality traits associated with depressive and anxiety disorders in infertile women and men undergoing in vitro fertilisation treatment. *Acta Obstetricia Gynecologica*, 89, 27-34.
- Walker, B. G. (1983). *The woman's encyclopaedia of myths and secrets*. New York: Harper & Collins.
- Wang, Y. A., Chambers, G. M., Mbathio, D. & Sullivan, E. A. (2009). Assisted reproduction technology in Australia and New Zealand 2007. *Assisted Reproduction Technology Series no. 13*. Canberra: AIHW, 2009, 47.
- Wang, Y. A., Macaldowie, A., Hayward, I., Chambers, G. M., & Sullivan, E. A. (2011). Assisted reproductive technology in Australia and New Zealand 2009. *Assisted Reproduction Technology series no. 15*. Cat. No. PER 51. Canberra: AIHW.
- Washija, N. R. & Pool, R. (2001). Traditional healers, STDs and infertility in Northwest Tanzania. In: Boerma JT, Mgalla Z (eds). *Women and Infertility in Sub-Saharan Africa: A Multi-Disciplinary Perspective*. Amsterdam, NL: KIT Publishers.
- Wennerholm, U. B., Soderstrom-Anttila, V., Bergh, C., Aittomaki, K., Hazekamp, J., Nygren, K. G., Selbing, A., & Loft, A. (2009). Children born after cryopreservation of embryos or oocytes: a systematic review of outcome data. *Hum Reprod.* (2009)24, 2158–2172.

- Whitcomb, B. W., Turzanski-Fortner, R., Richter, K. S., Kipersztok, S., Stillman, R. J., Levy, M. J., & Levens, E. D. (2011). Contribution of male age to outcomes in assisted reproductive technologies. *Fertil Steril*, (2011)95, 147-151.
- White, L., McQuillan, J., & Greil, A. L. (2006). Explaining disparities in treatment seeking: The case of *infertility*. *Fertility & Sterility*, 85(4), 853-57.
- Whittaker A, Speier A. (2010). Cycling overseas: Care, commodification, and stratification in cross-border reproductive travel. *Med. Anthropol.* 29(4), 363.
- Wiener-Megnazi Z, Auslender, R., & Dirnfeld, M. (2012). Advanced paternal age and reproductive outcome. *Asian Journal of Andrology* (2012)14, 69-76.
- Williams, C., & Sutcliffe, A. (2009). Infant outcomes of Assisted Reproduction. *Early Hum Dev.* 85, 673-677.
- Williams, C. et al., (2013). Cancer risk among children born after assisted conception. *New England Journal of Medicine* 369(2013), 1819-27.
- Williams, C., Sutcliffe, A., & Sebire, N. J. (2010). Congenital malformations after assisted reproduction: Risks and implications for prenatal diagnosis and foetal medicine. *Ultrasound Obstet Gynecol* 35, 255-259.
- Winslow, G. R. (2006). *Christian principles for assisted procreation: The Bible and Bioethics*. 3rd symposium on the Bible and Adventist Scholarship Akumal, Riviera Maya, Estado Quintana Roo, Mexico. Retrieved from: http://fae.adventist.org/essays/34B_Winslow_G.pdf

- Wischmann, T., Korge, K., Scherg, H., Strowitzki, T., & Verres, R. (2012). A 10-year follow-up study of psychosocial factors affecting couples after infertility treatment. *Hum Reprod*; 27, 3226-3232.
- Wolinsky, F. (1988a). *The sick role concepts. In the Sociology of Health* (2nd ed.). Belmont, CA: Wadsworth.
- Wolinsky, F. (1988b). *Seeking and using health services. In the Sociology of Health* (2nd ed.). Belmont, CA: Wadsworth.
- Wolinsky, F. (1978). Assessing the effects of predisposing, enabling, and illness-morbidity characteristics on health service utilisation. *Journal of Health and Social Behavior*, 19(4), 384-396.
- Woods, M., & Trexler, C. (2001). Linking interpretive theory to practice: Examining an underused research tool in agricultural education. *Journal of Agricultural Education*, 42(2), 68-78.
- World Health Organisation (2000). *Traditional Medicine Strategy 2002–2005. Geneva, Switzerland*. Retrieved from: whqlibdoc.who.int/hq/2002/who_edm_trm_2002.1.pdf.
- World Health Organisation (2009). *International Committee for Monitoring Assisted Reproductive Technology (ICMART) and the World Health Organization (WHO) revised glossary of ART terminology. Fertility and Sterility* 92(5), 1520-1524.
- World Health Organization (2003). *Progress in reproductive health research. Geneva, Switzerland: Department of Reproductive Health and Research*. Retrieved from: whqlibdoc.who.int/hq/2009/WHO_RHR_09.02_eng.pdf

World Health Organization. (2014). *Infertility definitions and terminology*.

Retrieved from:

<http://www.who.int/reproductivehealth/topics/infertility/definitions/en/>

Yakass, M. B., Woodward B. J., Otoo, M. A., & Hiadzi, E. K. (2016).

Prevalence of blood borne viruses in IVF: An audit of a fertility Centre. *JBRA Assist Reprod.* 20(3),132-136.

Yan, J., Huang, G., Sun, Y., Zhao, X., & Chen, S. et al. (2011). Birth defects

after assisted reproductive technologies in China: Analysis of 15,405 offspring in seven centres (2004 to 2008). *Fertil Steril* 95,458-460.

Young, J. C. (1981). *Medical choice in a Mexican village*. New Brunswick,

NJ: Rutgers University Press

Zhang, X. H., Qiu, L. Q., & Huang, J. P. (2011). Risk of birth defects

increased in multiple births. *Birth Defects Res a Clin Mol Teratol* 91, 34-38.

APPENDICES

Appendix A: In-depth interview guide for service providers

UNIVERSITY OF CAPE COAST

FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF POPULATION AND HEALTH

Topic: Acceptability and Experiences with Assisted Reproduction in Ghana

In-depth interview guide for service providers

Section 1

Background information

1. What are the different Assisted Reproductive Technologies used by you in this clinic? **Probe more on the commencement**, average number of clients seen in a day/month? How many of these are accessing your clinic for the first time? How do users find out about your clinic/hospital?
2. Profile of users who access ART services in your facility
(Age, Religion, Income, Educational background and Marital Status)
Are there Non-Resident Ghanaian couples accessing ARTs and Surrogacy at your clinic?
What country do they generally come from? Why and how did they find about your facility?

Section 2

ART Team

What is the composition of your team for ART service at this clinic?

What is the function of each team member?

Section 3

Practice

What is the appropriate reference period (number of years) for couples before seeking medical intervention for infertility?

When do you decide to discontinue the procedure for a couple?

Section 4

Egg retrieval and embryo transfer

Describe the processes of egg retrieval and embryo transfer? What happens to the spare eggs?

Section 5

Donor services

What is the source of donor sperms, oocytes, embryos? Probe to find out:

How donors are selected and the average cost for the use of a donor

Section 7

Surrogacy

Does your facility accept surrogacy arrangement, how much is charged?

How do you get women to act as surrogates? What is their general background (age, income, marital status, religion, etc.)

Section 8

Information and counselling

Is counselling optional or mandatory? Who provides counselling?

What is the content of the counselling provided? (Procedures, Costs, Side effects, success and failure)

Section 9

Cost

What is the total cost of going through the procedure? Probe further to find out the cost of each specific process. Find out whether there is any payment package (insurance, discount etc.) for clients.

Section 10

Health risks

What are the health risks involved with the use of ART with regards to mothers and children? Probe to find out if chances of risks higher with any particular procedure or method.

Section 11

Success rate

What is the success rate per cycle with the various technologies used here? (Pregnancy rate, implantation rate and take-home baby rate)

How many babies have been born at the clinic through the use of ART? How many of these were: Through normal deliveries/Caesarean sections, Single children, twins, triplets, other multiple births.

Section 12

Perception

What is your opinion on the provision of ART services to people who are faced with infertility?

Do providers' characteristics (religion, tradition, sex orientation, marriage etc) influence the provision of services to client? Probe to find out how specific socio-cultural characteristic influence the delivery of services

Section 12

Regulations

Are your activities regulated by any state institution in Ghana? Probe for specific regulatory measures that underpin their work.

Section 13

Others

Is there anything else you want to share about your work?

Appendix B: In-depth interview guide for clients seeking ART services

UNIVERSITY OF CAPE COAST

FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF POPULATION AND HEALTH

Topic: Acceptability and Experiences with Assisted Reproduction in Ghana

In-depth interview schedule for clients seeking ART services

SECTION A

Socio-demographic profile

Age

Sex

Education

Marital status

Duration of marriage

Religion

SECTION B

Treatment trajectory

How long have you been childless before seeking ART services

How did you get to know about ART as a procedure to have a child?

Why did you decide to use ART to address your situation?

SECTION C

Decision

How did you arrive at the decision to use ART? Probe to find out if the consent of the partner, friends, relatives or in-laws were sought. How has your socio-cultural background influenced you in your decision to

use ART as a treatment option for your current situation? Probe on the influence of age, marital status, religion etc.

SECTION D

Cost

How much does it cost to have this procedure done?

How would you describe the cost of ART?

What is the source of funds for your treatment cost?

SECTION E

Information and counselling

Were you given prior information/education on the processes involved in the procedure before you started the treatment?

What specifically were you educated on? Probe on the following:

- Procedure (drug use, gamete retrieval, gamete donation, cryopreservation etc).
- Side-effect
- Success rate
- Cost
- Any other

Did you understand the entire process before the initiation?

SECTION F

Informed consent

Were you or your spouse given informed consent form (s) to fill before the procedure?

Tell me what was explained in the form (s) and whether or not you understood it. Probe to enquire how clients who could not read and write were dealt with.

SECTION H

Health Risks

Are you experiencing/have you experienced any health risks/side effects of the ART procedures you have gone through so far? Probe on the following risks/side effects:

- Weight gain
- Depression/Anxiety/Mood swings
- Severe abdominal pain
- Irregular periods
- Sleeplessness
- Any other

SECTION I

Perception

What is your general perception about the use ART treatment for infertility? (Could you share with me your experience throughout this process?)

Would you recommend this treatment (ART) to other women/ couple who are faced with fertility challenges? What is your perception about fertility clinics and their providers?

SECTION J

Other Implications/Experiences

Is the treatment affecting your general routine of activities? Probe to find out how treatment is affecting the following:

- Daily course of work
- Sexual life
- Relationship with your partner/family (negative and positive).

What is your general view about the use of ART as a treatment option for infertility?

Is there any other experience you want to share?

Appendix C: In-depth interview guide for key religious figures

UNIVERSITY OF CAPE COAST

FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF POPULATION AND HEALTH

Topic: Acceptability and Experiences with Assisted Reproduction in Ghana

In-depth interview schedule for key religious figures

1. How does your religion perceive infertility? Probe further to ascertain the belief about the causes, effects.
2. What does the religion say about the treatment of infertility among your religious members?
3. How does the religion perceive the utilisation of Assisted Reproductive Technology services as treatment option for infertility? Probe for views on specific practices such as gamete donation, surrogacy, cryopreservation, utilisation by individuals who are single, lesbian and gay partners etc).
4. In your view, should infertile couples who belong to your religion pursue ART as the treatment option for their situation? Why?
5. How does the religion perceive children who are born through the use of Assisted Reproductive Technologies?
6. Is there anything about ART and your religious belief you would like to share?

**Appendix D: In-depth interview guide for women who have delivered
through the use of ART**

UNIVERSITY OF CAPE COAST

FACULTY OF SOCIAL SCIENCES

DEPARTMENT OF POPULATION AND HEALTH

**Topic: Acceptability and Experiences with Assisted Reproduction in
Ghana**

**In-depth interview schedule for women who have delivered through the
use of Assisted Reproductive Technologies**

1. Socio-demographic profile

Age

Sex

Education

Marital status

Duration of marriage before delivery

Religion

2. How long they had tried to have a child without success before the decision to go for ART
3. What was your relationship with your husband, friends and family when you had no child? Probe further on the answer/answers given
4. What has changed with your husband, family and friends since you had a child?
5. What about your relationship with other members of your community then and now?

6. What kind of support did you receive from being a member of a group (*if any*) when you had no child? Probe to find out the benefits she received from
 - a. Religious groups
 - b. Other social groups
7. How does it feel to be a mother?
8. How was your baby born? Probe to find out whether the child was delivered normally or through caesarean section.
9. I will want to know if you have had a child or you intend to have a child/children after your first child.
10. What will be your reasons for intending to/not to have more children?
11. How have you integrated in your community especially with your new status? (probe for specific family members and other people)
12. What will be your major form of assistance to people who do not have children in your community?
13. Please share with me any other issues on your status that I have not covered that you want me to know.

Appendix E: Consent form for ART service users

Title of Study: Acceptability of and Experiences with Assisted Reproduction in Ghana

Introduction

My name is Kwadwo Asante-Afari (principal investigator) a student of the College of Humanities and Legal Studies, Department of Population and Health, University of Cape Coast, Ghana. Contact: 0200267796/0244843981. E-mail: akwadwo2003@yahoo.com

General information

Infertility continues to pose a major challenge to individuals and couples in both developed and developing countries. As a result, it has been argued that exploring and utilising scientific therapies such as Assisted Reproductive Technologies (ART) will offer an alternative solution to individuals who are challenged with infertility. Although the use ART is very common in the Western world, its efficiency and acceptability is yet to be ascertained in the Ghanaian setting. This study among other things will contribute to the discourse on the analysis of the general acceptability of Assisted Reproduction in Ghana and also inform policy decision on the subject. The study is purely an academic work (Ph.D programme) at the University of Cape Coast, Ghana. Your confidentiality is therefore assured as the information you provide will not be disclosed to any third-party.

Procedure and duration

To find answers that will meet the study objectives; I invite you to take part in this research. If you accept, you will be required to participate in an interview with the principal investigator (Kwadwo Asante-Afari) or a representative.

Your selection into this interview is purposive given your experience in going through fertility treatment. You are assured that any information you provide will be kept strictly confidential and anonymous and will be used for the purpose of this study.

Benefits

Your involvement in this study will not directly benefit you but indirectly your response may influence decision making as to how to make the service efficient to the benefit of the at risk population in the Ghana.

Cost

The study is purely academic work and so there is no financial incentives attached to it. Your involvement will also not cost you in any form.

Compensation/Payment

There will be no compensation either in cash or kind for your involvement in this study.

Confidentiality

Information provided will be protected to the best of my ability. You will not be named and any information that could lead to your identification will not be presented in the study. Where there is the need to quote statements verbatim, anonymity will be ensured.

Voluntary participation/Withdrawal

Your participation in this study is voluntary. You therefore have the right to withdraw from the study at any point in time and this will not affect your treatment. If you wish to withdraw, you may have to inform the interviewer and your request would be granted. Nonetheless, your full participation is highly encouraged.

Outcome and feedback

Feedback about the study will be provided through dissemination in public presentations including but not limited to audio, slide-tape presentations, plays, or exhibits. Information gathered may be used for publications including but not limited to articles, books, or newsletters. Key finding will be shared with Ghana Health Service and the Ministry of Health

Funding

This study is fully funded by the principal investigator without any financial support from any organisation or institution.

Contact for Clarification

If you have any question, you can ask me now. For further clarification on this study whiles I am no longer here, you can contact Kwadwo Asante-Afari (Principal investigator) Department of Population and Health, University of Cape Coast. Telephone: 0244843981/0200267796.

Appendix F: Consent form for Key Religious Leaders

Title of Study: Acceptability of and Experiences with Assisted Reproduction in Ghana

Introduction

My name is Kwadwo Asante-Afari (principal investigator) a student of the College of Humanities and Legal Studies, Department of Population and Health, University of Cape Coast, Ghana. Contact: 0200267796/0244843981. E-mail: akwadwo2003@yahoo.com

General information

Infertility continues to pose a major challenge to individuals and couples in both developed and developing countries. As a result, it has been argued that exploring and utilising scientific therapies such as Assisted Reproductive Technologies (ART) will offer an alternative solution to individuals who are challenged with infertility. Although the use ART is very common in the Western world, its efficiency and acceptability is yet to be ascertained in the Ghanaian setting. This study among other things will contribute to the discourse on the analysis of the general acceptability of Assisted Reproduction in Ghana and also inform policy decision on the subject. The study is purely an academic work (Ph.D programme) at the University of Cape Coast, Ghana. Your confidentiality is therefore assured as the information you provide will not be disclosed to any third-party.

Procedure and duration

To find answers that will meet the study objectives, I invite you to take part in this research. If you accept, you will be required to participate in an interview with the principal investigator (Kwadwo Asante-Afari) or a representative.

Your selection into this interview is purposive and as a key religious leader who have knowledge on the religious perspective of fertility treatment. You are assured that any information you provide will be kept strictly confidential and anonymous and will used for the purpose of this study.

Benefits

Your involvement in this study will not directly benefit you but indirectly your response may influence decision making as to how to make the service efficient to the benefit of the at risk population in the Ghana.

Cost

The study is purely academic work and so there is no financial incentives attached to it. Your involvement will also not cost you in any form.

Compensation/Payment

There will be no compensation either in cash or kind for your involvement in this study.

Confidentiality

Information provided will be protected to the best of my ability. You will not be named and any information that could lead to your identification will not be presented in the study. Where there is the need to quote statements verbatim, anonymity will be ensured.

Voluntary participation/Withdrawal

Your participation in this study is voluntary. You therefore have the right to withdraw from the study at any point in time. If you wish to withdraw, you may have to inform the interviewer and your request would be granted. Nonetheless, your full participation is highly encouraged.

Outcome and feedback

Feedback about the study will be provided through dissemination in public presentations including but not limited to audio, slide-tape presentations, plays, or exhibits. Information gathered may be used for publications including but not limited to articles, books, or newsletters. Key finding will be shared with Ghana Health Service and the Ministry of Health.

Funding

This study is fully funded by the principal investigator without any financial support from any organisation or institution.

Contact for Clarification

If you have any question, you can ask me now. For further clarification on this study whiles I am no longer here, you can contact Kwadwo Asante-Afari (Principal investigator) Department of Population and Health, University of Cape Coast. Telephone: 0244843981/0200267796.

Appendix G: Consent form for ART Service Providers

Title of Study: Acceptability of and Experiences with Assisted Reproduction in Ghana

Introduction

My name is Kwadwo Asante-Afari (principal investigator) a student of the College of Humanities and Legal Studies, Department of Population and Health, University of Cape Coast, Ghana. Contact: 0200267796/0244843981. E-mail: akwadwo2003@yahoo.com

General information

Infertility continues to pose a major challenge to individuals and couples in both developed and developing countries. As a result, it has been argued that exploring and utilising scientific therapies such as Assisted Reproductive Technologies (ART) will offer an alternative solution to individuals who are challenged with infertility. Although the use ART is very common in the Western world, its efficiency and acceptability is yet to be ascertained in the Ghanaian setting. This study among other things will contribute to the discourse on the analysis of the general acceptability of Assisted Reproduction in Ghana and also inform policy decision on the subject. The study is purely an academic work (Ph.D programme) at the University of Cape Coast, Ghana. Your confidentiality is therefore assured as the information you provide will not be disclosed to any third-party.

Procedure and duration

To find answers that will meet the study objectives, I invite you to take part in this research. If you accept, you will be required to participate in an interview with the principal investigator (Kwadwo Asante-Afari) or a representative.

Your selection into this interview is purposive given your experience in the treatment of clients with fertility challenges. You are assured that any information you provide will be kept strictly confidential and anonymous and will be used for the purpose of this study.

Benefits

Your involvement in this study will not directly benefit you but indirectly your response may influence decision making as to how to make the service efficient to the benefit of the at risk population in the Ghana.

Cost

The study is purely an academic work and so there is no financial incentives attached to it. Your involvement will also not cost you in any form.

Compensation/Payment

There will be no compensation either in cash or kind for your involvement in this study.

Confidentiality

Information provided will be protected to the best of my ability. You will not be named and any information that could lead to your identification will not be presented in the study. Where there is the need to quote statements verbatim, anonymity will be ensured.

Voluntary participation/Withdrawal

Your participation in this study is voluntary. You therefore have the right to withdraw from the study at any point in time. If you wish to withdraw, you may have to inform the interviewer and your request would be granted. Nonetheless, your full participation is highly encouraged.

Outcome and feedback

Feedback about the study will be provided through dissemination in public presentations including but not limited to audio, slide-tape presentations, plays, or exhibits. Information gathered may be used for publications including but not limited to articles, books, or newsletters. Key finding will be shared with Ghana Health Service and the Ministry of Health

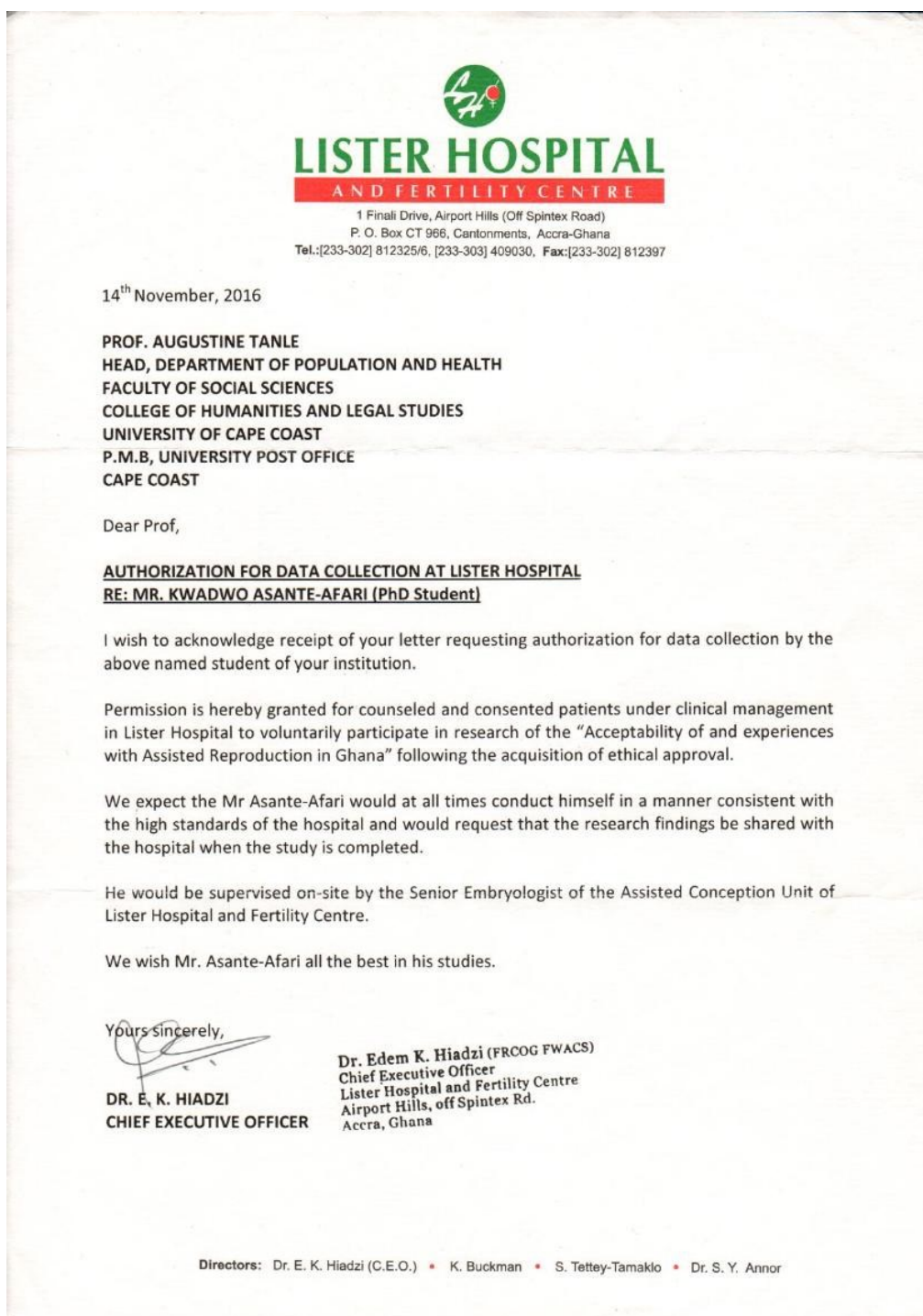
Funding

This study is fully funded by the principal investigator without any financial support from any organisation or institution.

Contact for Clarification

If you have any question, you can ask me now. For further clarification on this study whiles I am no longer here, you can contact Kwadwo Asante-Afari (Principal investigator) Department of Population and Health, University of Cape Coast. Telephone: 0244843981/0200267796.

Appendix J: Letters received from ART facilities



TRUSTCARE SPECIALIST HOSPITAL LTD.
(Trust God For Your Care)

BANKERS:
Eco Bank Ltd.
SSNIT House, Adum

P. O. BOX KS 14214,
Kumasi - Ashanti
TEL: 03220-34421/020-8181056/0578 - 118333
Email: trustcarehospital@yahoo.com
Web: www.trufert.com

Our Ref:.....

Your Ref:.....

Date: *16/09/2016*

**PERMISSION TO CARRY OUT RESEARCH AT THE TRUSTCARE SPECIALIST
HOSPITAL AND FERTILITY CENTRE, KUMASI**

Permission has been granted to Mr. Kwadwo Asante-Afow, a PhD student of the Department of Population and Health, Faculty of Social Sciences, University of Cape Coast, to carry out a research at the Trustcare Specialist Hospital and Fertility Centre, Kumasi.

The title of the research is "Acceptability of and Experiences with Assisted Reproduction in Ghana".

The permission to carry out the research in this hospital is conditional to having obtained the requisite ethical clearance from University of Cape Coast.

The Trustcare Specialist Hospital must have a copy of the thesis after successful completion and defense.


Professor A. T. Odoi



**FINNEY HOSPITAL
AND FERTILITY CENTRE**

Mallam-Weija Road
New Bortiahor
P.O. Box AN 11894
Accra

Tel: (+233) (0302) 851702, 851703
Fax: (+233) (0302) 851704

www.finneyhospital.com

Your Ref: DPH/1.8/70

9th August 2016

The Head
Department of Population and Health
University of Cape Coast

Dear Sir


RE: LETTER OF INTRODUCTION – MR. KWADWO ASANTE-AFARI

We write in connection with the above subject. The Management of the Hospital has given approval to enable the above named student undertake his research work in our hospital.

We will not hesitate to give him all necessary assistance he might need to make his research work a success.

Thank you.

Yours faithfully


Ellis Fleischer-Djoletto
(Clinical Director)

**FINNEY HOSPITAL &
FERTILITY CENTRE**



TEMA WOMEN'S HOSPITAL

P. O. BOX CO 1632, TEMA, GHANA TEL: 0303304332, 0303304227 FAX: 0303306355

17TH AUGUST, 2016

UNIVERSITY OF CAPE COAST
COLLEGE OF HUMANITIES AND LEGAL STUDIES
FACULTY OF SOCIAL SCIENCES
DEPARTMENT OF POPULATION AND HEALTH

Dear Sir,

RE: MR KWADWO ASANTE-AFARI

This is to confirm that the above named presented an introductory letter to our facility to conduct a research.

The hospital is ready to allow him and also give him the necessary assistance.

Thank you.

Yours faithfully

DR PAUL OWUSU-BAAH
MB ChB; FACOG, FGCS; FWACS
MEDICAL DIRECTOR

Health Care with Dignity




Appendix K: Ethical Clearance letter received from Ghana Health Service

GHANA HEALTH SERVICE ETHICS REVIEW COMMITTEE

In case of reply the number and date of this Letter should be quoted.

*My Ref. GHS/RDD/ERC/Admin/App/17/208
Your Ref. No.*

Kwadwo Asante-Afari
Department of Population and Health
University of Cape Coast
Cape Coast.
Central Region.



Research & Development Division
Ghana Health Service
P. O. Box MB 190
Accra
Tel: +233-302-681109
Fax + 233-302-685424
Email: ghserc@gmail.com

The Ghana Health Service Ethics Review Committee has reviewed and given approval for the implementation of your Study Protocol.

GHS-ERC Number	GHS-ERC: 02/10/16
Project Title	"Acceptability of and Experiences with Assisted Reproduction in Ghana"
Approval Date	2 nd February, 2017
Expiry Date	1 st February, 2018
GHS-ERC Decision	Approved

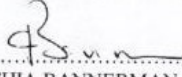
This approval requires the following from the Principal Investigator

- Submission of yearly progress report of the study to the Ethics Review Committee (ERC)
- Renewal of ethical approval if the study lasts for more than 12 months,
- Reporting of all serious adverse events related to this study to the ERC within three days verbally and seven days in writing.
- Submission of a final report **after completion** of the study
- Informing ERC if study cannot be implemented or is discontinued and reasons why
- Informing the ERC and your sponsor (where applicable) before any publication of the research findings.

Please note that any modification of the study without ERC approval of the amendment is invalid.

The ERC may observe or cause to be observed procedures and records of the study during and after implementation.

Kindly quote the protocol identification number in all future correspondence in relation to this approved protocol

SIGNED..........
DR. CYNTHIA BANNERMAN
(GHS-ERC CHAIRPERSON)

Cc: The Director, Research & Development Division, Ghana Health Service, Accra

Appendix L: Ethical Clearance letter received from University of Cape Coast

